abcam

ab283864

Anti-HDAC1 antibody [RM1004] - BSA and Azide free

Recombinant | RabMAb | KO Validated

Key facts

Isotype	IgG
Host species	Rabbit
Storage buffer	pH: 7.2 - 7.4 Constituents: PBS
Form	Liquid
Clonality	Multiclonal
Immunogens	The exact immunogen used to generate this antibody is proprietary information.
Carrier free	Yes
Clone number	RM1004
Purification technique	Affinity purification Protein A
Concentration	1.007 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →

Reactivity data

ICC/IF

Tested

Species	Mouse, Human
Dilution info	-

Notes	-

Expected

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

IP

Tested

Species	Human
Dilution info	-
Notes	-

Expected

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

ChIP

Not recommended

Species	Human, Mouse, Rat
Dilution info	-
Notes	-

Flow Cyt (Intra)

Tested

Species	Mouse, Human
Dilution info	-
Notes	-

Expected

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

WB

Tested

Species	Mouse, Rat, Human
Dilution info	-
Notes	-

IHC-P

Tested

Species	Mouse, Rat, Human
Dilution info	-
Notes	-

IHC-Fr

Tested

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

Species	Mouse
Dilution info	-
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	-

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	Blue Ice

Appropriate short-term storage conditions	+4°C
Appropriate long-term storage conditions	+4°C
Storage information	Do Not Freeze

Notes

ab283864 is the carrier-free version of ab281585.

What are recombinant multiclonals?

Recombinant multiclonals are a mixture of recombinant antibodies co-expressed from a library of heavy and light chains. They offer several advantages including:

- The sensitivity of polyclonal antibodies by recognising multiple epitopes
- High batch-to-batch consistency and reproducibility
- Improved sensitivity and specificity
- Long-term security of supply
- Animal-free batch production

View our range of recombinant multiclonal antibodies.

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.

Conjugation ready

Our carrier-free antibodies are typically supplied in a PBS-only formulation, purified and free of BSA, sodium azide and glycerol. This conjugation-ready format is designed for use with fluorochromes, metal isotopes, oligonucleotides, and enzymes, which makes them ideal for antibody labelling, functional and cell-based assays, flow-based assays (e.g. mass cytometry) and Multiplex Imaging applications.

Use our conjugation kits for antibody conjugates that are ready-to-use in as little as 20 minutes with 1 minute hands-on-time and 100% antibody recovery: available for fluorescent dyes, HRP, biotin and gold.

Compatibility

This product is compatible with the Maxpar® Antibody Labeling Kit from Fluidigm, without the need for antibody preparation. Maxpar® is a trademark of Fluidigm Canada Inc.

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

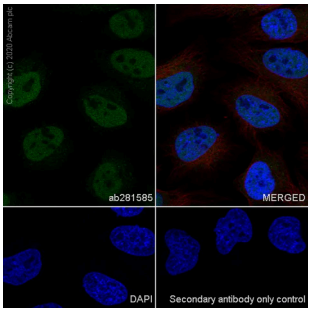
We do not recommend this combination. It is not covered by our product promise.

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.

13 product images

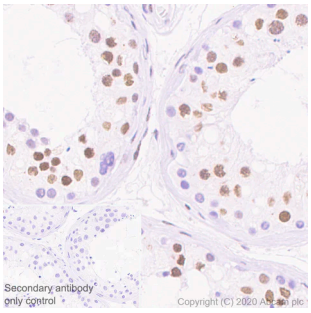


Immunocytochemistry/ Immunofluorescence - Anti-HDAC1 antibody [RM1004] - BSA and Azide free (ab283864)

HDAC1 Immunocytochemistry/ Immunofluorescence staining using rabbit Anti-HDAC1 antibody

This data was developed using ab281585, the same antibody clone in a different buffer formulation.Immunofluorescent analysis of 4% Paraformaldehyde-fixed, 0.1% Triton X-100 permeabilized HeLa cells labelling HDAC1 with ab281585 at 1/50 (10.4 µg/ml) dilution, followed by ab150077 Goat Anti-Rabbit IgG H&L (Alexa Fluor® 488) antibody at 1/1000 dilution (Green). ab195889 Anti-alpha Tubulin mouse monoclonal antibody - Microtubule Marker (Alexa Fluor® 594) was used to counterstain tubulin at 1/200 dilution (Red). The nuclear counterstain was DAPI (Blue).
Confocal image showing mostly nuclear staining in HeLa cell line.

Secondary antibody only control: Secondary antibody is ab150077 Goat Anti-Rabbit IgG H&L (Alexa Fluor® 488) at 1/1000 dilution.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-HDAC1 antibody [RM1004] - BSA and Azide free (ab283864)

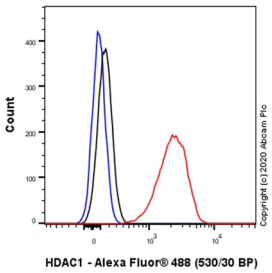
HDAC1 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-HDAC1 antibody

This data was developed using ab281585, the same antibody clone in a different buffer formulation.Immunohistochemical analysis of paraffin-embedded human testis tissue labelling HDAC1 with ab281585 at 1/4000 (0.13 µg/ml) dilution followed by ready to use Rabbit specific IHC polymer detection kit HRP/DAB (ab209101).
Nuclear staining on human testis (PMID:16960727).

The section was incubated with ab281585 for 30 mins at room temperature. The immunostaining was performed on a Leica Biosystems BOND® RX instrument Counterstained with Hematoxylin.

Secondary antibody only control: Secondary antibody is ready to use Rabbit specific IHC polymer detection kit HRP/DAB (ab209101).

Heat mediated antigen retrieval with Tris-EDTA buffer (pH 9.0, epitope retrieval solution2) for 20 mins.

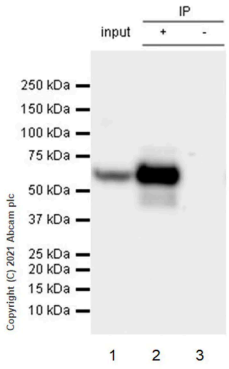


Flow Cytometry (Intracellular) - Anti-HDAC1 antibody [RM1004] - BSA and Azide free (ab283864)

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

This data was developed using ab281585, the same antibody clone in a different buffer formulation.Flow cytometric analysis of 4% paraformaldehyde fixed 90% methanol permeabilized HeLa (Human cervix adenocarcinoma cell) cells labelling HDAC1 with ab281585 at 1/500 dilution

(0.1 µg) (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.



Immunoprecipitation - Anti-HDAC1 antibody [RM1004] - BSA and Azide free (ab283864)

This data was developed using ab281585, the same antibody clone in a different buffer formulation.HDAC1 was immunoprecipitated from 0.35 mg Jurkat (human T cell leukemia T lymphocyte), whole cell lysate 10 µg with ab281585 at 1/30 dilution (2 µg in 0.35 mg lysates). Western blot was performed on the immunoprecipitate using ab281585 at 1/1000 dilution. VeriBlot for IP Detection Reagent (HRP)(ab131366) was used at 1/5000 dilution.
Lane 1: Jurkat whole cell lysate 10 µg

Lane 2: ab281585 IP in Jurkat whole cell lysate

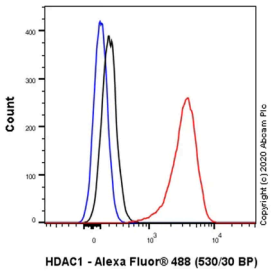
Lane 3: Rabbit monoclonal IgG (ab172730) instead of ab281585 in Jurkat whole cell lysate

Blocking and dilution buffer and concentration: 5% NFDM/TBST.

Exposure time: 3 seconds.

All lanes:
Immunoprecipitation - Anti-HDAC1 antibody [RM1004] - Nuclear Loading Control (ab281585)

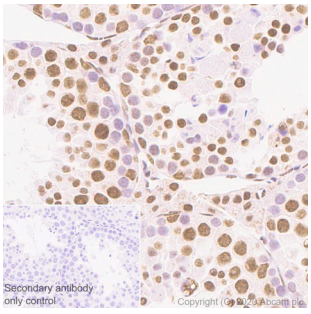
Predicted band size: 55 kDa



Flow Cytometry (Intracellular) - Anti-HDAC1 antibody [RM1004] - BSA and Azide free (ab283864)

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

This data was developed using ab281585, the same antibody clone in a different buffer formulation.Flow cytometric analysis of 4% paraformaldehyde fixed 90% methanol permeabilized NIH/3T3 (Mouse embryonic fibroblast) cells labelling HDAC1 with ab281585 at 1/500 dilution (0.1 µg) (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 [RM1004] - BSA and Azide free (ab283864)

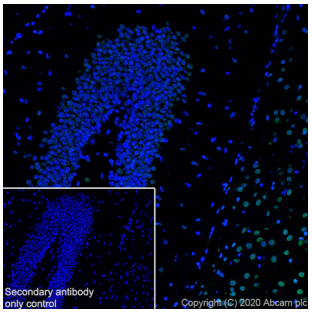
HDAC1 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-HDAC1 antibody

This data was developed using ab281585, the same antibody clone in a different buffer formulation.Immunohistochemical analysis of paraffin-embedded mouse testis tissue labelling HDAC1 with ab281585 at 1/4000 (0.13 µg/ml) dilution followed by ready to use Rabbit specific IHC polymer detection kit HRP/DAB (ab209101).
Nuclear staining on mouse testis.

The section was incubated with ab281585 for 30 mins at room temperature. The immunostaining was performed on a Leica Biosystems BOND® RX instrument Counterstained with Hematoxylin.

Secondary antibody only control: Secondary antibody is ready to use Rabbit specific IHC polymer detection kit HRP/DAB (ab209101).

Heat mediated antigen retrieval with Tris-EDTA buffer (pH 9.0, epitope retrieval solution2) for 20 mins.



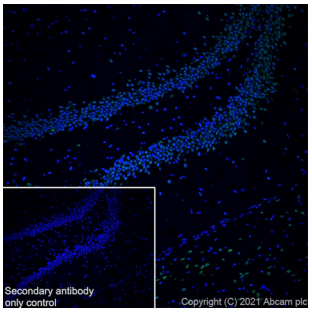
Immunohistochemistry (Frozen sections) - Anti-HDAC1 antibody [RM1004] - BSA and Azide free (ab283864)

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

This data was developed using ab281585, the same antibody clone in a different buffer formulation.Immunohistochemical analysis of 4% PFA-fixed, 0.2% Triton X-100 permeabilized frozen mouse hippocampus tissue labeling HDAC1 with ab281585 at 1/100 (5.55 µg/ml) dilution followed by ab150077 AlexaFluor®488 Goat anti-Rabbit secondary at 1/1000 dilution (Green). The nuclear counterstain was DAPI (Blue).
Nuclear staining on mouse hippocampus is observed.

Secondary antibody control: Secondary antibody is ab150077 AlexaFluor®488 Goat anti-Rabbit secondary at 1/1000 dilution.

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



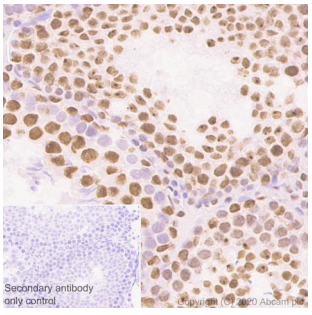
Immunohistochemistry (Frozen sections) - Anti-HDAC1 antibody [RM1004] - BSA and Azide free (ab283864)

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

This data was developed using ab281585, the same antibody clone in a different buffer formulation.Immunohistochemical analysis of 4% PFA-fixed, 0.2% Triton X-100 permeabilized frozen rat hippocampus tissue labeling HDAC1 with ab281585 at 1/100 (5.55 µg/ml) dilution followed by ab150077 AlexaFluor®488 Goat anti-Rabbit secondary at 1/1000 dilution (Green). The nuclear counterstain was DAPI (Blue).
Nuclear staining on rat hippocampus is observed.

Secondary antibody control: Secondary antibody is ab150077 AlexaFluor®488 Goat anti-Rabbit secondary at 1/1000 dilution.

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



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-HDAC1 antibody [RM1004] - BSA and Azide free (ab283864)

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

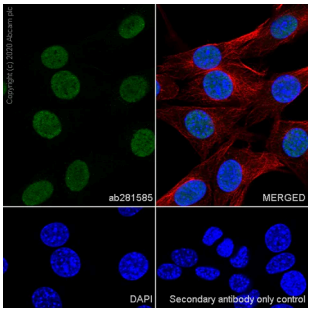
This data was developed using ab281585, the same antibody clone in a different buffer formulation.Immunohistochemical analysis of paraffin-embedded rat testis tissue labelling HDAC1

with ab281585 at 1/4000 (0.13 µg/ml) dilution followed by ready to use Rabbit specific IHC polymer detection kit HRP/DAB (ab209101).
Nuclear staining on rat testis.

The section was incubated with ab281585 for 30 mins at room temperature. The immunostaining was performed on a Leica Biosystems BOND® RX instrument Counterstained with Hematoxylin.

Secondary antibody only control: Secondary antibody is ready to use Rabbit specific IHC polymer detection kit HRP/DAB (ab209101).

Heat mediated antigen retrieval with Tris-EDTA buffer (pH 9.0, epitope retrieval solution2) for 20 mins.

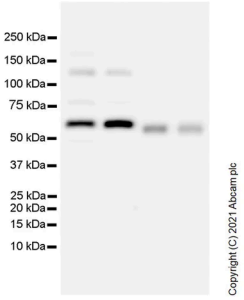


Immunocytochemistry/ Immunofluorescence - Anti-HDAC1 antibody [RM1004] - BSA and Azide free (ab283864)

HDAC1 Immunocytochemistry/ Immunofluorescence staining using rabbit Anti-HDAC1 antibody

This data was developed using ab281585, the same antibody clone in a different buffer formulation.Immunofluorescent analysis of 4% Paraformaldehyde-fixed, 0.1% Triton X-100 permeabilized NIH/3T3 cells labelling HDAC1 with ab281585 at 1/50 (10.4 µg/ml) dilution, followed by ab150077 Goat Anti-Rabbit IgG H&L (Alexa Fluor® 488) antibody at 1/1000 dilution (Green). ab195889 Anti-alpha Tubulin mouse monoclonal antibody - Microtubule Marker (Alexa Fluor® 594) was used to counterstain tubulin at 1/200 dilution (Red). The nuclear counterstain was DAPI (Blue).
Confocal image showing mostly nuclear staining in NIH/3T3 cell line.

Secondary antibody only control: Secondary antibody is ab150077 Goat Anti-Rabbit IgG H&L (Alexa Fluor® 488) at 1/1000 dilution.



Western blot - Anti-HDAC1 antibody [RM1004] - BSA and Azide free (ab283864)

HDAC1 Western blot staining using rabbit Anti-HDAC1 antibody

This data was developed using ab281585, the same antibody clone in a different buffer formulation.
Blocking and diluting buffer and concentration: 5% NFDM/TBST

Exposure time: 5 seconds

All lanes:
Western blot - Anti-HDAC1 antibody [RM1004] - Nuclear Loading Control (ab281585) at 1/1000 dilution

Lane 1:
HeLa (human epithelial cell line from cervix adenocarcinoma), whole cell lysate at 20 µg

Lane 2:
Jurkat (human T cell leukemia T lymphocyte), whole cell lysate at 20 µg

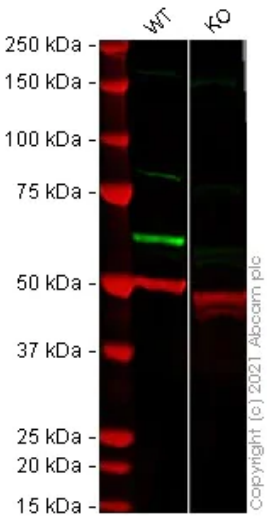
Lane 3:
NIH/3T3 (mouse embryonic fibroblast), whole cell lysate at 20 µg

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 1/50000 dilution

Predicted band size: 55 kDa



Western blot - Anti-HDAC1 antibody [RM1004] - BSA and Azide free (ab283864)

HDAC1 Western blot staining using rabbit Anti-HDAC1 antibody

This data was developed using ab281585, the same antibody clone in a different buffer formulation.
False colour image of Western blot: Anti-HDAC1 antibody [RM1004] staining at 1/1000 dilution, shown in green; Mouse anti-Alpha Tubulin [DM1A] (ab7291) loading control staining at 1/20000 dilution, shown in red. In Western blot, ab281585 was shown to bind specifically to HDAC1. A band was observed at 60 kDa in wild-type HAP1 cell lysates with no signal observed at this size in HDAC1 knockout cell line. To generate this image, wild-type and HDAC1 knockout HAP1 cell lysates were analysed. First, samples were run on an SDS-PAGE gel then transferred onto a nitrocellulose membrane. Membranes were blocked in 5 % milk in TBS-0.1 % Tween® 20 (TBS-T) before incubation with primary antibodies overnight at 4 °C. Blots were washed four times in TBS-T, incubated with secondary antibodies for 1 h at room temperature, washed again four times then imaged. Secondary antibodies used were Goat anti-Rabbit IgG H&L (IRDye® 800CW) preabsorbed (ab216773) and Goat anti-Mouse IgG H&L (IRDye® 680RD) preabsorbed (ab216776) at 1/20000 dilution.

All lanes:
Western blot - Anti-HDAC1 antibody [RM1004] - BSA and Azide free (ab283864) at 1/1000 dilution

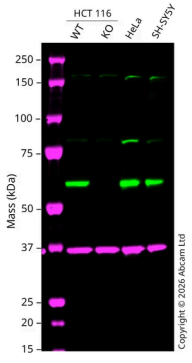
Lane 1:
Wild-type HAP1 cell lysate at 40 µg

Lane 2:
HDAC1 knockout HAP1 cell lysate at 40 µg

Performed under reducing conditions.

Predicted band size: 55 kDa

Observed band size: 60 kDa



Western blot - Anti-HDAC1 antibody [RM1004] - BSA and Azide free (ab283864)

HDAC1 Western blot staining using rabbit Anti-HDAC1 antibody

This data was developed using ab281585, the same antibody clone in a different buffer formulation.

Western blot: Anti-HDAC1 antibody [RM1004] - Nuclear Loading Control ab281585 staining at 1/1000 dilution, shown in green; Mouse anti GAPDH ab8245 loading control staining at 1/20000 dilution, shown in magenta. A band was observed at 55 kDa in Wild-type HCT 116 cell lysates with no signal observed at this size in HDAC1 knockout HCT 116 cell line. To generate this image, samples were run on an SDS-PAGE gel then transferred onto a nitrocellulose membrane. Membranes were blocked in 3% Milk in TBS-0.1 % Tween® 20 (TBS-T) before incubation with primary antibodies overnight at 4 °C. Blots were washed four times in TBS-T, incubated with

secondary antibodies for 1 h at room temperature, washed again four times then imaged. Secondary antibodies used were Goat anti-Rabbit 800CW and Goat anti-Mouse 680RD at 1/20,000 dilution.
All lanes:
Western blot - Anti-HDAC1 antibody [RM1004] - Nuclear Loading Control (ab281585) at 1/1000 dilution

Lane 1:
Western blot - Human wild-type HCT116 cell line (ab288559) at 20 µg

Lane 2:
Western blot - Human HDAC1 knockout HCT116 cell line (ab286673) at 20 µg

Lane 3:
HeLa at 20 µg

Lane 4:
SH-SY5Y at 20 µg

Secondary

All lanes:
Goat anti-Rabbit 800CW & Goat anti-Mouse 680RD at 1/20000 dilution

Performed under reducing conditions.

Predicted band size: 55 kDa

Observed band size: 55 kDa

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