abcam

ab251561

Anti-HDAC2 antibody [EPR20117] - BSA and Azide free

Recombinant | RabMAb | Advanced Validation | KO Validated

Key facts

Isotype	IgG
Host species	Rabbit
Storage buffer	pH: 7.2 - 7.4 Constituents: PBS
Form	Liquid
Clonality	Monoclonal
Immunogen	The exact immunogen used to generate this antibody is proprietary information.
Carrier free	Yes
Clone number	EPR20117
Purification technique	Affinity purification Protein A

Reactivity data

ChIC/CUT&RUN-seq

Tested

Species	Human
Dilution info	-
Notes	-

Expected

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

IP

Tested

Species	Human
Dilution info	-
Notes	-

Expected

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

WB

Tested

Species	Rat, Human, Mouse
Dilution info	-
Notes	-

IHC-P

Tested

Species	Mouse
Dilution info	-
Notes	Perform heat-mediated antigen retrieval with Tris/EDTA buffer pH 9.0 before commencing with IHC staining protocol.

Species	Rat

Dilution info	-
Notes	Perform heat-mediated antigen retrieval with Tris/EDTA buffer pH 9.0 before commencing with IHC staining protocol.

Species	Human
Dilution info	-
Notes	Perform heat-mediated antigen retrieval with Tris/EDTA buffer pH 9.0 before commencing with IHC staining protocol.

ICC/IF

Tested

Species	Mouse, Human
Dilution info	-
Notes	-

Expected

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

Flow Cyt (Intra)

Tested

Species	Mouse
Dilution info	-
Notes	-

Expected

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

Target data

See full target information HDAC2

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:28497810). Histone deacetylation gives a tag for epigenetic repression and plays an important role in transcriptional regulation, cell cycle progression and developmental events (By similarity). Histone deacetylases act via the formation of large multiprotein complexes (By similarity). Forms transcriptional repressor complexes by associating with MAD, SIN3, YY1 and N-COR (PubMed:12724404). 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). Acts as a component of the histone deacetylase NuRD complex which participates in the remodeling of chromatin (PubMed:16428440, PubMed:28977666). Component of the SIN3B complex that represses transcription and counteracts the histone acetyltransferase activity of EP300 through the recognition H3K27ac marks by PHF12 and the activity of the histone deacetylase HDAC2 (PubMed:37137925). Also deacetylates non-histone targets: deacetylates TSHZ3, thereby regulating its transcriptional repressor activity (PubMed:19343227). May be involved in the transcriptional repression of circadian target genes, such as PER1, mediated by CRY1 through histone deacetylation (By similarity). Involved in MTA1-mediated transcriptional corepression of TFF1 and CDKN1A (PubMed:21965678). In addition to protein deacetylase activity, also acts as a protein-lysine deacylase by recognizing other acyl groups: catalyzes removal of (2E)-butenoyl (crotonyl), lactoyl (lactyl) and 2-hydroxyisobutanoyl (2-hydroxyisobutyryl) acyl groups from lysine residues, leading to protein decrotonylation, delactylation and de-2-hydroxyisobutyrylation, respectively (PubMed:28497810, PubMed:29192674, 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

ab251561 is the carrier-free version of ab219053.

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.

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	HDAC2 or Histone Deacetylase 2 is an important enzyme that plays a role in chromatin remodeling and gene expression regulation. It removes acetyl groups from histone tails allowing chromatin to condense and silencing gene expression. HDAC2 has a molecular weight of approximately 55 kDa. It is expressed in various tissues including brain heart and skeletal muscles indicating its importance in different physiological areas. HDAC2 proteins are often studied using methods like HDAC2 ELISA and HDAC2 anticuero in research settings.
Biological function summary	HDAC2 is involved in cell cycle regulation and differentiation. It is part of the co-repressor complex and interacts with other proteins such as Sin3 and NuRD to repress transcription. These interactions are vital for maintaining normal cellular functions and ensuring proper response to external signals. This protein is also connected to HEK293T cells which are a common model in scientific studies due to their robust expression of proteins like HDAC2.
Pathways	HDAC2 participates in the regulation of transcriptional activity and cellular stress response. It is an important player in the histone modification pathway interacting with proteins such as HDAC1 and transcriptional regulators like REST. HDAC2 is also linked with the Notch signaling pathway which is essential for cell fate decisions. These pathways highlight its role in both maintaining cellular homeostasis and adapting to changes in the cellular environment.
Associated diseases and disorders	HDAC2 has a significant connection to neurodegenerative diseases and various cancers. Alzheimer's disease for instance shows altered expression levels of HDAC2 affecting synaptic plasticity and memory formation. In cancer HDAC2 interacts with oncogenic proteins such as p53 influencing tumor progression and

metastasis. Monitoring HDAC2 levels and activity could provide insights into disease mechanisms and potential therapeutic targets.

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

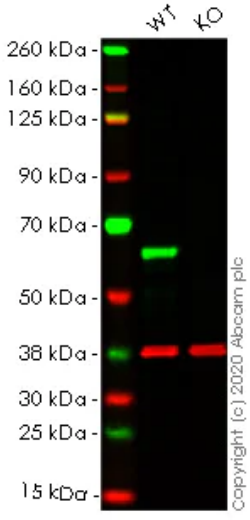
We do not recommend this combination. It is not covered by our product promise.

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.

6 product images



Western blot - Anti-HDAC2 antibody [EPR20117] - BSA and Azide free (ab251561)

HDAC2 Western blot staining using rabbit Anti-HDAC2 antibody

This data was developed using the same antibody clone in a different buffer formulation (ab219053).
Lanes 1- 2: Merged signal (red and green). Green - ab219053 observed at 55 kDa. Red - Anti-GAPDH antibody [6C5] - Loading Control (ab8245) observed at 37 kDa.

ab219053 was shown to react with HDAC2 in wild-type HEK-293T cells in western blot. Loss of signal was observed when knockout cell line ab266589 (knockout cell lysate ab256938) was used. Wild-type HEK-293T and HDAC2 knockout HEK-293T cell lysates were subjected to SDS-PAGE. Membrane was blocked for 1 hour at room temperature in 0.1% TBST with 3% non-fat dried milk. ab219053 and Anti-GAPDH antibody [6C5] - Loading Control (ab8245) overnight at 4°C at a 1 in 1000 dilution and a 1 in 20000 dilution respectively. 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 in 20000 dilution for 1 hour at room temperature before imaging.
All lanes:
Western blot - Anti-HDAC2 antibody [EPR20117] (ab219053) at 1/1000 dilution

Lane 1:
Wild-type HEK-293T cell lysate at 20 µg

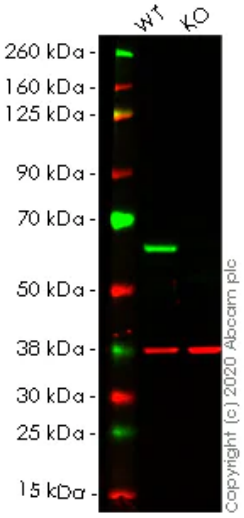
Lane 2:
HDAC2 knockout HEK-293T cell lysate at 20 µg

Lane 2:
Western blot - Human HDAC2 knockout HEK-293T cell line (ab266589)

Performed under reducing conditions.

Predicted band size: 55 kDa

Observed band size: 55 kDa



Western blot - Anti-HDAC2 antibody [EPR20117] - BSA and Azide free (ab251561)

HDAC2 Western blot staining using rabbit Anti-HDAC2 antibody

This data was developed using the same antibody clone in a different buffer formulation (ab219053).
Lanes 1-2: Merged signal (red and green). Green - ab219053 observed at 60 kDa. Red - loading control ab8245 observed at 37 kDa.

ab219053 Anti-HDAC2 antibody [EPR20117] was shown to specifically react with HDAC2 in wild-type HEK-293T cells. Loss of signal was observed when knockout cell line ab266590 (knockout cell lysate ab256939) was used. Wild-type and HDAC2 knockout samples were subjected to SDS-PAGE. ab219053 and Anti-GAPDH antibody [6C5] - Loading Control (ab8245) were incubated overnight at 4°C at 1 in 1000 and 1 in 20000 dilution respectively. 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 in 20000 dilution for 1 hour at room temperature before imaging.

All lanes:
Western blot - Anti-HDAC2 antibody [EPR20117] (ab219053) at 1/1000 dilution

Lane 1:
Wild-type HEK-293T cell lysate at 20 µg

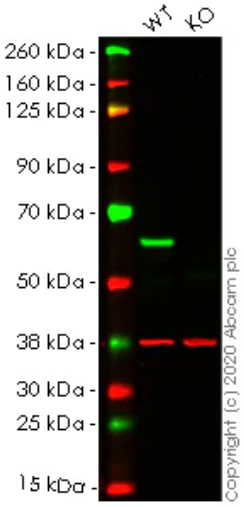
Lane 2:
HDAC2 knockout HEK-293T cell lysate at 20 µg

Lane 2:
Western blot - Human HDAC2 knockout HEK-293T cell line (ab266590)

Performed under reducing conditions.

Predicted band size: 55 kDa

Observed band size: 60 kDa



Western blot - Anti-HDAC2 antibody [EPR20117] - BSA and Azide free (ab251561)

HDAC2 Western blot staining using rabbit Anti-HDAC2 antibody

This data was developed using the same antibody clone in a different buffer formulation (ab219053).
Lanes 1-2: Merged signal (red and green). Green - ab219053 observed at 60 kDa. Red - loading control ab8245 observed at 37 kDa.

ab219053 Anti-HDAC2 antibody [EPR20117] was shown to specifically react with HDAC2 in wild-type HEK-293T cells. Loss of signal was observed when knockout cell line ab266588 (knockout cell lysate ab256937) was used. Wild-type and HDAC2 knockout samples were subjected to SDS-PAGE. ab219053 and Anti-GAPDH antibody [6C5] - Loading Control (ab8245) were incubated overnight at 4°C at 1 in 1000 and 1 in 20000 dilution respectively. 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 in 20000 dilution for 1 hour at room temperature before imaging.

All lanes:
Western blot - Anti-HDAC2 antibody [EPR20117] (ab219053) at 1/1000 dilution

Lane 1:
Wild-type HEK-293T cell lysate at 20 µg

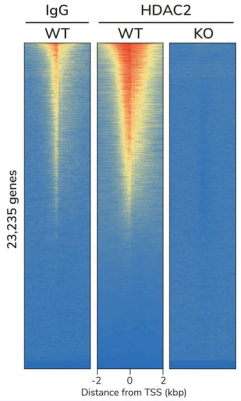
Lane 2:
HDAC2 knockout HEK-293T cell lysate at 20 µg

Lane 2:
Western blot - Human HDAC2 knockout HEK-293T cell line (ab266588)

Performed under reducing conditions.

Predicted band size: 55 kDa

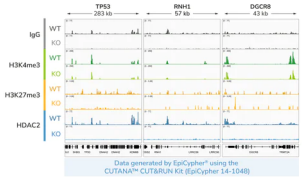
Observed band size: 60 kDa



ChIC/CUT&RUN sequencing - Anti-HDAC2 antibody [EPR20117] - BSA and Azide free (ab251561)

This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, glycerol, and sodium azide (ab219053).

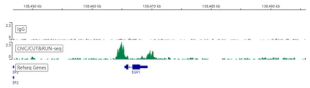
CUT&RUN profiling with HDAC2 antibody demonstrates robust genome-wide enrichment in wild-type (WT) cells, which is markedly diminished in HDAC2 knockout (KO) cells. Heatmaps of genome-wide signal flanking annotated transcription start sites (TSSs, +/- 2 kbp) display CUT&RUN data generated using the CUTANA™ CUT&RUN Kit (EpiCypher 14-1048) with HDAC2 antibody (Abcam ab219053, 0.5 µg). 500,000 HEK293T WT or KO (Abcam ab266590) cells were used per reaction. IgG antibody was included as a negative control to assess non-specific background. Libraries were prepared using the CUTANA™ CUT&RUN Library Prep Kit (EpiCypher 14-1001). Sequencing was performed with paired-end 50 bp reads, and data were processed on CUTANA™ Cloud (cloud.epicypher.com) by alignment to the hg38 genome. Heatmaps were generated using deepTools (Ramнrez et al., Nucleic Acids Res. 2014; PMID: 24799436). Row-linked data are ranked by intensity relative to HDAC2 WT, with red indicating high localized enrichment and blue denoting background. Validated antibodies show genome-wide enrichment above IgG background consistent with HDAC2 binding in WT cells and near complete loss of signal in KO cells.



ChIC/CUT&RUN sequencing - Anti-HDAC2 antibody [EPR20117] - BSA and Azide free (ab251561)

This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, glycerol, and sodium azide (ab219053).

CUT&RUN profiling with HDAC2 antibody reveals the expected genomic enrichment pattern in wild-type (WT) cells, which is substantially reduced in HDAC2 knockout (KO) cells. Representative genome browser tracks show CUT&RUN data generated using the CUTANA™ CUT&RUN Kit (EpiCypher 14-1048) with HDAC2 antibody (Abcam ab219053, 0.5 µg). 500,000 HEK293T WT or KO (Abcam ab266590) cells were used per reaction. IgG, H3K4me3, and H3K27me3 antibodies were included as controls to assess non-specific background, active promoters, and repressed chromatin, respectively. Libraries were prepared using the CUTANA™ CUT&RUN Library Prep Kit (EpiCypher 14-1001). Sequencing was performed with paired-end 50 bp reads, and data were processed on CUTANA™ Cloud (cloud.epicypher.com) by alignment to the hg38 genome. Images were generated using Integrative Genomics Viewer (IGV, Broad Institute).



ChIC/CUT&RUN sequencing - Anti-HDAC2 antibody [EPR20117] - BSA and Azide free (ab251561)

ChIC/CUT&RUN was performed using a pAG-MNAse at a final concentration of 700 ng/mL, 2 x 10^5 K-562 (Human chronic myelogenous leukemia lymphoblast) cells and 5µg of ab219053 [EPR20117]. 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. This data was developed using the same antibody clone in a different buffer formulation (ab219053).

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