abcam

ab133493

Anti-HDAC6 antibody [EPR1698(2)]

Recombinant | RabMAb | Advanced Validation | KO Validated | 20ul selling size

Key facts

Isotype	IgG
Host species	Rabbit
Storage buffer	pH: 7.2 - 7.4 Preservative: 0.05% Sodium azide Constituents: 50% Tissue culture supernatant, 40% Glycerol (glycerin, glycerine), 9.85% Tris glycine, 0.1% BSA
Form	Liquid
Clonality	Monoclonal
Immunogen	The exact immunogen used to generate this antibody is proprietary information.
Clone number	EPR1698(2)
Purity	Tissue culture supernatant

Reactivity data

ChIC/CUT&RUN-seq

Tested

Species	Human
Dilution info	-
Notes	-

Expected

Species	African green monkey

Dilution info	Use at an assay dependent concentration.
Notes	-

Predicted

Species	Monkey
Dilution info	-
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.

Expected

Species	African green monkey
Dilution info	Use at an assay dependent concentration.
Notes	-

Predicted

Species	Monkey
Dilution info	-
Notes	-

WB

Tested

Species	Human
Dilution info	1/10000 - 1/50000

Notes	-

Species	African green monkey
Dilution info	1/10000 - 1/50000
Notes	-

Predicted

Species	Monkey
Dilution info	-
Notes	-

Flow Cyt (Intra)

Tested

Species	Human
Dilution info	1/200
Notes	-

Expected

Species	African green monkey
Dilution info	Use at an assay dependent concentration.
Notes	-

Predicted

Species	Monkey
Dilution info	-
Notes	-

Target data

See full target information HDAC6

Function	Deacetylates a wide range of non-histone substrates (PubMed:12024216, PubMed:18606987, PubMed:20308065, PubMed:24882211, PubMed:26246421, PubMed:30538141, PubMed:31857589, PubMed:30770470, PubMed:38534334, PubMed:39567688). Plays a central role in microtubule-dependent cell motility by mediating deacetylation of tubulin (PubMed:12024216, PubMed:20308065, PubMed:26246421). Required for cilia disassembly via deacetylation of alpha-tubulin (PubMed:17604723, PubMed:26246421). Alpha-tubulin deacetylation results in destabilization of dynamic microtubules (By similarity). Promotes deacetylation of CTTN, leading to actin polymerization, promotion of autophagosome-lysosome fusion and completion of autophagy (PubMed:30538141). Deacetylates SQSTM1 (PubMed:31857589). Deacetylates peroxiredoxins PRDX1 and PRDX2, decreasing their reducing activity (PubMed:18606987). Deacetylates antiviral protein RIGI in the presence of viral mRNAs which is required for viral RNA detection by RIGI (By similarity). Sequentially deacetylates and polyubiquitinates DNA mismatch repair protein MSH2 which leads to MSH2 degradation, reducing cellular sensitivity to DNA-damaging agents and decreasing cellular DNA mismatch repair activities (PubMed:24882211). Deacetylates DNA mismatch repair protein MLH1 which prevents recruitment of the MutL alpha complex (formed by the MLH1-PMS2 heterodimer) to the MutS alpha complex (formed by the MSH2-MSH6 heterodimer), leading to tolerance of DNA damage (PubMed:30770470). Deacetylates RHOT1/MIRO1 which blocks mitochondrial transport and mediates axon growth inhibition (By similarity). Deacetylates transcription factor SP1 which leads to increased expression of ENG, positively regulating angiogenesis (PubMed:38534334). Deacetylates KHDRBS1/SAM68 which regulates alternative splicing by inhibiting the inclusion of CD44 alternate exons (PubMed:26080397). Deacetylates PRDM16 (By similarity). Acts as a valine sensor by binding to valine through the primate-specific SE14 repeat region (PubMed:39567688). In valine deprivation conditions, translocates from the cytoplasm to the nucleus where it deacetylates TET2 which promotes TET2-dependent DNA demethylation, leading to DNA damage (PubMed:39567688). Promotes odontoblast differentiation following IPO7-mediated nuclear import and subsequent repression of RUNX2 expression (By similarity). In addition to its protein deacetylase activity, plays a key role in the degradation of misfolded proteins: when misfolded proteins are too abundant to be degraded by the chaperone refolding system and the ubiquitin-proteasome, mediates the transport of misfolded proteins to a cytoplasmic juxtanuclear structure called aggresome (PubMed:17846173). Probably acts as an adapter that recognizes polyubiquitinated misfolded proteins and targets them to the aggresome, facilitating their clearance by autophagy (PubMed:17846173). Involved in the MTA1-mediated epigenetic regulation of ESR1 expression in breast cancer (PubMed:24413532). (Microbial infection) Deacetylates the SARS-CoV-2 N protein which promotes association of the viral N protein with human G3BP1, leading to disruption of cellular stress granule formation and facilitating viral replication.

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	Avoid freeze / thaw cycle

Notes

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	HDAC6 or histone deacetylase 6 is a protein that primarily functions as a cytoplasmic deacetylase. It is part of the class IIb HDAC family and is known for its distinctive molecular weight of approximately 121 kDa. HDAC6 is expressed in various tissues with higher levels observed in the brain kidney and liver. This protein is unique as it contains two catalytic domains unlike other HDACs which contributes to its specific deacetylation of non-histone substrates including tubulin and Hsp90 influencing cell motility and stress response.
Biological function summary	HDAC6 plays a significant role in processes like protein degradation and cell signaling. It is an important component of the protein quality control system involving itself in the aggresome pathway where it facilitates the removal of misfolded proteins through interaction with dynein motor proteins. In addition to its presence in the cytoplasm HDAC6 influences cell migration and immune response regulation by de-phosphorylating cortactin and affecting actin filament dynamics. Its integral role in the aggresome-autophagy pathway positions it as important for cellular homeostasis maintenance.
Pathways	HDAC6 participates prominently in both autophagy and stress response pathways. In the autophagic process HDAC6 operates alongside ubiquitinated proteins to manage protein quality control. Moreover HDAC6 engages in stress response

	pathways like the heat shock response interacting directly with Hsp90 to regulate client protein activation. These pathways highlight HDAC6's relationships with key proteins such as Hsp70 and tau linking it to cellular stress and neurodegeneration responses.
Associated diseases and disorders	HDAC6 exhibits connections to neurodegenerative diseases and cancer. Dysregulated HDAC6 activity associates with Alzheimer's disease where it affects tau protein accumulation and degradation. The protein is also implicated in various cancers such as breast and ovarian cancer due to its influence on cell migration and invasion. It interacts with p53 impacting apoptosis and tumor progression making HDAC6 a potential target for therapeutic interventions with HDAC6 inhibitors which aim to restore normal cellular functions disrupted by abnormal HDAC6 activity.

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

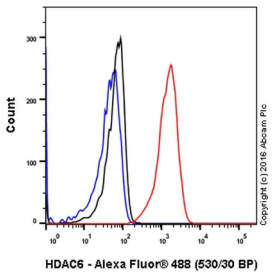
We do not recommend this combination. It is not covered by our product promise.

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.

8 product images

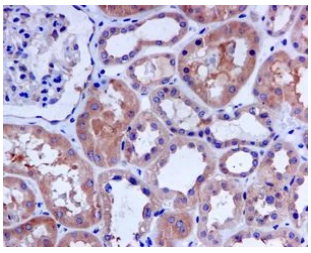


Flow Cytometry (Intracellular) - Anti-HDAC6 antibody [EPR1698(2)] (ab133493)

HDAC6 Flow Cytometry (Intracellular) staining using rabbit Anti-HDAC6 antibody

ab133493 staining HDAC6 in K562 (human chronic myelogenous leukemia) by intracellular flow cytometry. Cells were fixed with 4% paraformaldehyde, permabilised with 90% methanol and the sample was incubated with the primary antibody at a dilution of 1/200. A goat anti rabbit IgG (Alexa Fluorr® 488) at a dilution of 1/2000 was used as the secondary antibody.
Isoytype control: Rabbit monoclonal IgG (Black)

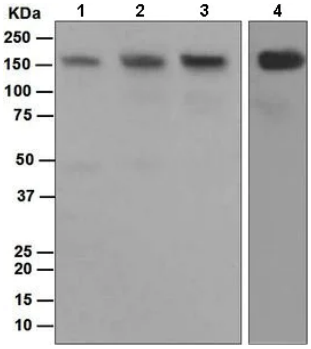
Unlabelled control: Cell without incubation with primary antibody and secondary antibody (Blue)



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-HDAC6 antibody [EPR1698(2)] (ab133493)

HDAC6 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-HDAC6 antibody

Immunohistochemical analysis of paraffin embedded Human kidney tissue labelling HDAC6 with ab133493 antibody at a dilution of 1/50.
Perform heat mediated antigen retrieval with citrate buffer pH 6 before commencing with IHC staining protocol.



Western blot - Anti-HDAC6 antibody [EPR1698(2)] (ab133493)

All lanes:
Western blot - Anti-HDAC6 antibody [EPR1698(2)] (ab133493) at 1/10000 dilution

Lane 1:
HeLa cell lysate at 10 µg

Lane 2:
Jurkat cell lysate at 10 µg

Lane 3:
K562 cell lysate at 10 µg

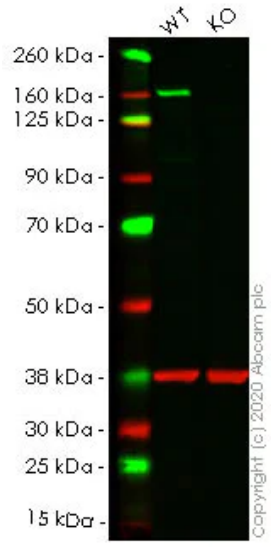
Lane 4:
COS-1 cell lysate at 10 µg

Secondary

All lanes:
HRP labelled goat anti-rabbit at 1/2000 dilution

Predicted band size: 131 kDa

Observed band size: 160 kDa



Western blot - Anti-HDAC6 antibody [EPR1698(2)] (ab133493)

HDAC6 Western blot staining using rabbit Anti-HDAC6 antibody

Lanes 1- 2: Merged signal (red and green). Green - ab133493 observed at 160 kDa. Red - Anti-GAPDH antibody [6C5] - Loading Control (ab8245) observed at 37 kDa.
ab133493 was shown to react with HDAC6 in wild-type HeLa cells in western blot. Loss of signal was observed when knockout cell line was used. Wild-type HeLa and HDAC6 knockout HeLa 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. ab133493 and Anti-GAPDH antibody [6C5] - Loading Control (ab8245) overnight at 4°C at a 1 in 10000 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-HDAC6 antibody [EPR1698(2)] (ab133493) at 1/10000 dilution

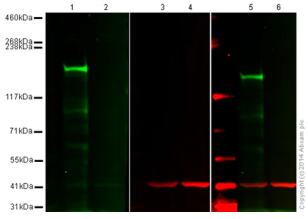
Lane 1:
Wild-type HeLa cell lysate at 20 µg

Lane 2:
HDAC6 knockout HeLa cell lysate at 20 µg

Performed under reducing conditions.

Predicted band size: 131 kDa

Observed band size: 160 kDa



Western blot - Anti-HDAC6 antibody [EPR1698(2)] (ab133493)

Lanes 1 and 2: Green signal from target – ab133493 observed at 160 kDa
Lanes 3 and 4: Red signal from loading control – ab8226 observed at 42 kDa
Lanes 5 and 6: Merged (red and green) signal
ab133493 was shown to specifically react with HDAC6 when HDAC6 knockout samples were used. Wild-type and HDAC6 knockout samples were subjected to SDS-PAGE. ab133493 and ab8226 (loading control to beta actin) were diluted 1/10 000 and 1/1000 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 1/10 000 dilution for 1 h at room temperature before imaging.

Lanes 1 - 2:
Western blot - Anti-HDAC6 antibody [EPR1698(2)] (ab133493) at 1/10000 dilution

Lanes 3 - 4:
Western blot - Anti-HDAC6 antibody [EPR1698(2)] (ab133493) at 1/1000 dilution

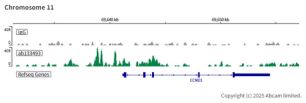
Lanes 5 - 6:
Western blot - Anti-HDAC6 antibody [EPR1698(2)] (ab133493)

Lanes 1, 3 and 5:
Wild-type HAP1 cell lysate at 20 µg

Lanes 2 and 4:
HDAC6 knockout HAP1 cell lysate at 20 µg

Lane 6:
HDAC6 knockout HAP1 cell lysate

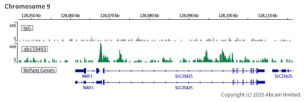
Predicted band size: 131 kDa



ChIC/CUT&RUN sequencing - Anti-HDAC6 antibody [EPR1698(2)] (ab133493)

ChIC/CUT&RUN was performed using a pAG-MNase at a final concentration of 700 ng/mL, 2.5 x 10^5 HeLa (human cervix adenocarcinoma epithelial cell) cells and 5 µg of ab133493 [EPR1698(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.

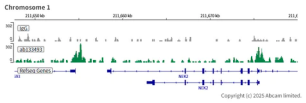
The University of Geneva owns patents relevant to ChIC (Chromatin Immuno-Cleavage) methods.



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