abcam

ab213701

Anti-HDAC1 antibody [EPR460(2)] - 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	Monoclonal
Immunogen	The exact immunogen used to generate this antibody is proprietary information.
Carrier free	Yes
Clone number	EPR460(2)
Purification technique	Affinity purification Protein A
Concentration	1.027 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →

Reactivity data

Flow Cyt (Intra)

Tested

Species	Human
Dilution info	-

Notes	ab199376 - Rabbit monoclonal IgG, is suitable for use as an isotype control with this antibody.

Expected

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

IHC-P

Tested

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

Expected

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

IP

Expected

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

WB

Tested

Species	Mouse, Rat, Human
Dilution info	-
Notes	-

ICC/IF

Expected

Species	Mouse, Rat, Human
Dilution info	Use at an assay dependent concentration.
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	Blue Ice
Appropriate short-term storage conditions	+4°C
Appropriate long-term storage conditions	+4°C

Storage information	Do Not Freeze

Notes

ab213701 is the carrier-free version of ab109411.

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	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

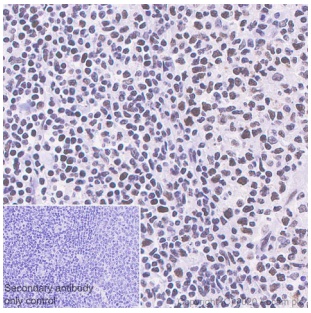
We do not recommend this combination. It is not covered by our product promise.

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.

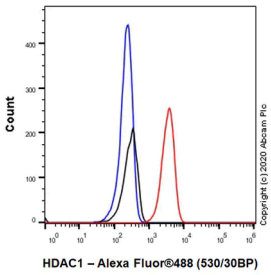
12 product images



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-HDAC1 antibody [EPR460(2)] - BSA and Azide free (ab213701)

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

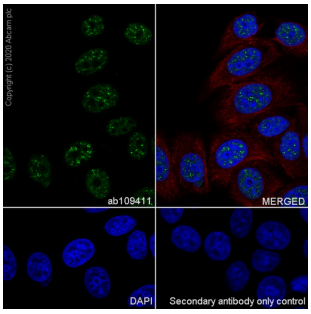
Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) analysis of human tonsil tissue sections labeling HDAC1 with Purified ab109411 at 1:100 dilution (1.2 µg/ml). Heat mediated antigen retrieval was performed using . Tissue was counterstained with Hematoxylin. Perform heat mediated antigen 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.
This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, glycerol, and sodium azide (ab109411).



Flow Cytometry (Intracellular) - Anti-HDAC1 antibody [EPR460(2)] - BSA and Azide free (ab213701)

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

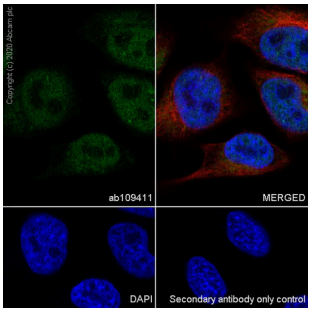
Flow Cytometry analysis of Jurkat (Human T cell leukemia T lymphocyte) cells labelling HDAC1 with Purified ab109411 at 1:20 dilution (5 µg/ml) (Red). Cells were fixed with 4% Paraformaldehyde and permeabilised with 90% Methanol. A Goat anti rabbit IgG (Alexa Fluor® 488, ab150081) secondary antibody was used at 1:2000. Isotype control - Rabbit monoclonal IgG (Black). Unlabelled control - Cell without incubation with primary antibody and secondary antibody (Blue).
This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, glycerol, and sodium azide (ab109411).



Immunocytochemistry/ Immunofluorescence - Anti-HDAC1 antibody [EPR460(2)] - BSA and Azide free (ab213701)

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.
This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, glycerol, and sodium azide (ab109411).



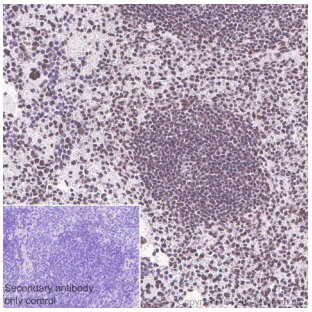
Immunocytochemistry/ Immunofluorescence - Anti-HDAC1 antibody [EPR460(2)] - BSA and Azide free (ab213701)

HDAC1 Immunocytochemistry/ Immunofluorescence staining using rabbit Anti-HDAC1 antibody

This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, glycerol, and sodium azide (ab109411).

Immunocytochemical analysis of 4% paradormaldehyde fixed, 0.1% Triton X-100 permeabilised HeLa cells labeling HDAC1 with ab109411 at 1/50 (10.92 µg/ml) dilution, followed by ab150077 Goat Anti-Rabbit IgG H&L (Alexa Fluor® 488) secondary at 1/1000 (2 µg/ml) dilution. ab195889 Anti-alpha Tubulin mouse monoclonal antibody - Microtubule Marker (Alexa Fluor® 594) was used to counterstain at 1/200 (2.5 µg/ml) dilution. Nuclear counterstain: DAPI.

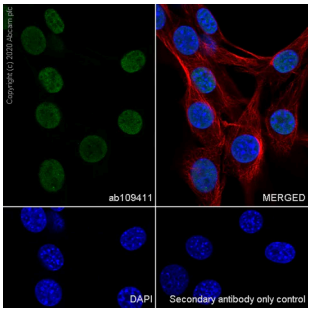
Confocal image showing mainly nuclear staining in HeLa cell line



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-HDAC1 antibody [EPR460(2)] - BSA and Azide free (ab213701)

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.
This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, glycerol, and sodium azide (ab109411).

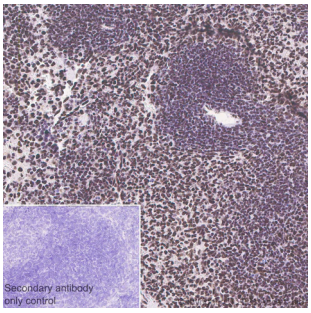


Immunocytochemistry/ Immunofluorescence - Anti-HDAC1 antibody [EPR460(2)] - BSA and Azide free (ab213701)

HDAC1 Immunocytochemistry/ Immunofluorescence staining using rabbit Anti-HDAC1 antibody

This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, glycerol, and sodium azide (ab109411).
Immunocytochemical analysis of 4% paradormaldehyde fixed, 0.1% Triton X-100 permeabilised NIH/3T3 cells labeling HDAC1 with ab109411 at 1/50 (10.92 µg/ml) dilution, followed by ab150077 Goat Anti-Rabbit IgG H&L (Alexa Fluor® 488) secondary at 1/1000 (2 µg/ml) dilution. ab195889 Anti-alpha Tubulin mouse monoclonal antibody - Microtubule Marker (Alexa Fluor® 594) was used to counterstain at 1/200 (2.5 µg/ml) dilution. Nuclear counterstain: DAPI.

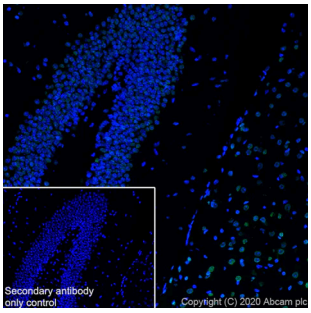
Confocal image showing nuclear staining in NIH/3T3 cell line



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-HDAC1 antibody [EPR460(2)] - BSA and Azide free (ab213701)

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.
This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, glycerol, and sodium azide (ab109411).



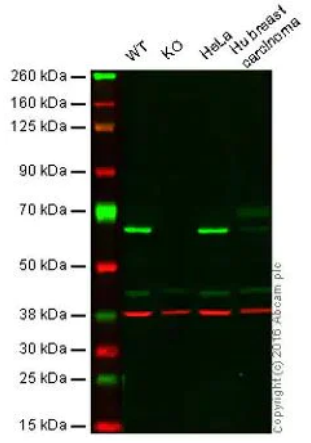
Immunohistochemistry (Frozen sections) - Anti-HDAC1 antibody [EPR460(2)] - BSA and Azide free (ab213701)

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.<\p>

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

This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, glycerol, and sodium azide (ab109411).



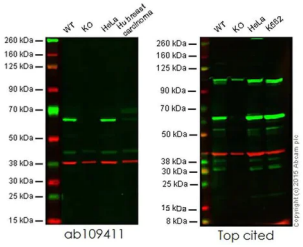
Western blot - Anti-HDAC1 antibody [EPR460(2)] - BSA and Azide free (ab213701)

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
This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, glycerol, and sodium azide (ab109411).

All lanes:
Western blot - Anti-HDAC1 antibody [EPR460(2)] - BSA and Azide free (ab213701)

Predicted band size: 55 kDa



Western blot - Anti-HDAC1 antibody [EPR460(2)] - BSA and Azide free (ab213701)

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.

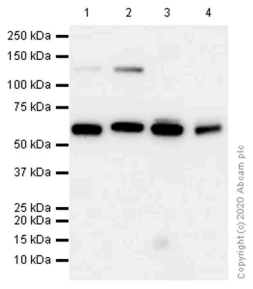
Lane 1: Wild-type HAP1 cell lysate (20 µg)
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This western blot image is a comparison between ab109411 and a competitor's top cited rabbit polyclonal antibody.

This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, glycerol, and sodium azide (ab109411).

All lanes:
Western blot - Anti-HDAC1 antibody [EPR460(2)] - BSA and Azide free (ab213701)

Predicted band size: 55 kDa



Western blot - Anti-HDAC1 antibody [EPR460(2)] - BSA and Azide free (ab213701)

HDAC1 Western blot staining using rabbit Anti-HDAC1 antibody

This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, glycerol, and sodium azide (ab109411).
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

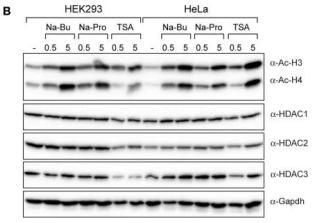


Image collected and cropped by CiteAb under a CC-BY license from the publication

Western blot - Anti-HDAC1 antibody [EPR460(2)] - BSA and Azide free (ab213701)

HDAC1 Western blot staining using rabbit Anti-HDAC1 antibody

HDAC1 western blot using anti-HDAC1 antibody [EPR460(2)] - BSA and Azide free ab213701. Publication image and figure legend from Lin, M. Y., de Zoete, M. R., et al., 2015, Front Immunol, PubMed 26579129.

ab213701 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 ab213701 please see the product overview.

Immunomodulatory effects of SCFAs are mimicked by the histone deacetylase inhibitor TSA. (A) HDAC activity in HeLa lysates in the presence of 10 mM Na-butyrate, Na-propionate or 2 µM TSA. (B) Immunoblots of HEK293 and HeLa 57A incubated with 10 mM Na-Bu, 10 mM Na-Pro or 2 µM TSA for 30 min or 5 h analyzed with anti-acetyl-lysine antibody to visualize total histone acetylation and anti-HDAC1, HDAC2, HDAC3, and GAPDH antibodies. (C,D). Immunomodulatory effects of SCFAs are mimics by histone deacetylase inhibitor TSA. TLR5-NF-κB assays of HEK293 or HeLa 57A expressing TLR5 and an NF-κB-luciferase reporter. Cells were incubated with 10 mM Na-Bu, 10 mM Na-Pro or 2 µM TSA for 30 min followed by stimulation with S. enteriditis flagellin for 5 h. (E) TLR4-NF-κB assays of HEK293 or HeLa 57A expressing TLR4 and an NF-κB-luciferase reporter incubated with SCFA and LPS. Bars depict mean and SEM of three independent experiments. $p < 0.05$ (*), $p < 0.01$ (**), $p < 0.005$ (***).

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