abcam

ab309471

Anti-KMT1A / SUV39H1 antibody [EPR24200-179]

Recombinant | RabMAb | 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	EPR24200-179
Purification technique	Affinity purification Protein A
Concentration	0.514 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →

Reactivity data

WB

Tested

Species	Human
Dilution info	1/1000
Notes	-

Species	Mouse

Dilution info	1/1000
Notes	-

Species	Rat
Dilution info	1/1000
Notes	-

ICC/IF

Tested

Species	Human
Dilution info	1/500
Notes	-

Expected

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

Not recommended

Species	Mouse
Dilution info	-
Notes	-

Flow Cyt (Intra)

Tested

Species	Human
Dilution info	1/50
Notes	-

Expected

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

Not recommended

Species	Mouse
Dilution info	-
Notes	-

IHC-P

Not recommended

Species	Human, Mouse, Rat
Dilution info	-
Notes	-

IP

Not recommended

Species	Human, Mouse, Rat
Dilution info	-
Notes	-

Target data

See full target information SUV39H1

Function	Histone methyltransferase that specifically mediates trimethylation of 'Lys-9' of histone H3 (H3K9me3) using monomethylated H3 'Lys-9' (H3K9me1) as substrate (PubMed:10949293, PubMed:11242053, PubMed:18004385, PubMed:40440427). Also weakly methylates histone H1 (in vitro) (PubMed:10949293). H3 'Lys-9' trimethylation represents a specific tag for epigenetic transcriptional repression by recruiting HP1 (CBX1, CBX3 and/or CBX5) proteins to methylated histones (PubMed:10949293, PubMed:11242053, PubMed:18004385). Mainly functions in heterochromatin regions, thereby playing a central role in the establishment of constitutive heterochromatin at pericentric and telomere regions (By similarity). H3 'Lys-9' trimethylation is also required to direct DNA methylation at pericentric

repeats (By similarity). SUV39H1 is targeted to histone H3 via its interaction with RB1 and is involved in many processes, such as repression of MYOD1-stimulated differentiation, regulation of the control switch for exiting the cell cycle and entering differentiation, repression by the PML-RARA fusion protein, BMP-induced repression, repression of switch recombination to IgA and regulation of telomere length (PubMed:11484059, PubMed:14765126, PubMed:16449642, PubMed:16818776, PubMed:16858404, PubMed:30111536). Involved in the maintenance of H3K9me3 mark following DNA replication, when histone marks are diluted: HP1 recognizes the preexisting H3K9me3 mark and serves as a platform to recruit SUV39H1 to modify the adjacent newly incorporated histones (PubMed:10949293, PubMed:11242053, PubMed:40440427). Component of the eNoSC (energy-dependent nucleolar silencing) complex, a complex that mediates silencing of rDNA in response to intracellular energy status and acts by recruiting histone-modifying enzymes (PubMed:18485871). The eNoSC complex is able to sense the energy status of cell: upon glucose starvation, elevation of NAD(+)/NADP(+) ratio activates SIRT1, leading to histone H3 deacetylation followed by dimethylation of H3 at 'Lys-9' (H3K9me2) by SUV39H1 and the formation of silent chromatin in the rDNA locus (PubMed:18485871). Recruited by the large PER complex to the E-box elements of the circadian target genes such as PER2 itself or PER1, contributes to the conversion of local chromatin to a heterochromatin-like repressive state through H3 'Lys-9' trimethylation (By similarity). (Microbial infection) Plays a role in defense against mycobacterial infections. Methylates M.tuberculosis HupB on 'Lys-140', probably methylates HupB of M.bovis also. Methylation has an inhibitory effect on mycobacterial growth in the host. Macrophages expressing about 60% SUV39H1 are slightly more susceptible to M.bovis or M.tuberculosis infection. Chaetocin (an inhibitor of this enzyme) increases macrophage survival of M.tuberculosis. This protein inhibits biofilm formation by M.tuberculosis via 'Lys-140' trimethylation.

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	KMT1A also known as SUV39H1 is a well-studied histone methyltransferase responsible for trimethylating histone H3 at lysine 9 (H3K9me3) an important marker for heterochromatin formation. This enzyme plays a critical role in chromatin organization and gene regulation. KMT1A has a molecular weight of approximately 48 kDa. Researchers have observed its expression across a range of tissues including the brain heart and muscle which suggests its importance in various physiological processes.
Biological function summary	KMT1A functions as part of a Suv39H1/HP1 complex that maintains the integrity of pericentric heterochromatin essential for chromosome stability during cell division. Its influence extends over the transcriptional silencing of specific genes by modifying chromatin structure to a closed state. KMT1A also collaborates with other proteins like HP1 to silence repetitive elements and prevent genomic instability which is often important for safeguarding genomic fidelity in cells.
Pathways	Researchers identify KMT1A as a significant player in the regulation of epigenetic pathways particularly the histone methylation process. It interacts closely with other histone methyltransferases and demethylases contributing to a dynamic epigenetic landscape that controls gene expression. Additionally KMT1A is involved in the DNA damage response pathway in collaboration with proteins like ATM which coordinates repair mechanisms to maintain genetic stability and respond to cellular stress.
Associated diseases and disorders	Researchers have linked KMT1A with cancer and neurodegenerative diseases such as Huntington's disease. Abnormal expression or function of KMT1A can lead to disrupted heterochromatin structure and uncontrolled gene expression which contributes to tumorigenesis. Furthermore in the context of neurodegenerative conditions interactions with proteins such as HTT can exacerbate neuronal damage and cell death. Studying these associations provides insights into potential therapeutic targets for managing such diseases.

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.

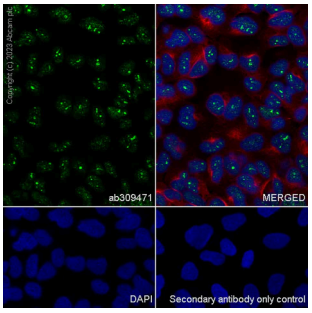
We are dedicated to supporting your work with high quality reagents and we are here for you every step of the way should you need us.

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.

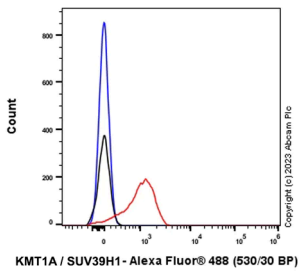
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4 product images



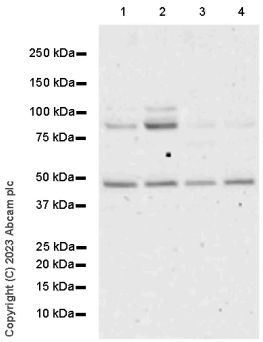
Immunocytochemistry/ Immunofluorescence - Anti-KMT1A / SUV39H1 antibody [EPR24200-179] (ab309471)

Immunofluorescent analysis of 100% methanol-fixed, 0.1% TritonX-100 permeabilized U-2 OS (human bone osteosarcoma epithelial cell) cells labelling KMT1A / SUV39H1 with ab309471 at 1/500 (1.028 ug/ml) dilution, followed by ab150081 Goat Anti-Rabbit IgG H&L (Alexa Fluor® 488) preadsorbed antibody at 1/1000 2 ug/mL dilution (Green). Confocal image showing nuclear staining in U-2 OS cell line.Image was taken with a confocal microscope(Leica-Microsystems, TCS SP8). is observed. 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 ab150081 Goat Anti-Rabbit IgG H&L (Alexa Fluor® 488) preadsorbed at 1/1000 2 ug/mL dilution.



Flow Cytometry (Intracellular) - Anti-KMT1A / SUV39H1 antibody [EPR24200-179] (ab309471)

Flow cytometric analysis of 4% paraformaldehyde fixed 90% methanol permeabilized U-2 OS (human bone osteosarcoma epithelial cell) cells labelling KMT1A / SUV39H1 with ab309471 at 1/50 dilution (1 ug)/Red (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, ab150081) at 1/5000 dilution was used as the secondary antibody.



Western blot - Anti-KMT1A / SUV39H1 antibody [EPR24200-179] (ab309471)

KMT1A / SUV39H1 Western blot staining using rabbit Anti-KMT1A / SUV39H1 antibody

Blocking and diluting buffer and concentration: 5% NFDM/TBST The molecular weight observed is consistent with what has been described in the literature (PMID: 10202156). Extra bands above 75 kDa were observed. Lysates were freshly made and used for Western blotting immediately to minimize protein degradation. Exposure time: 3 minutes
All lanes:
Western blot - Anti-KMT1A / SUV39H1 antibody [EPR24200-179] (ab309471) at 1/1000 dilution

Lane 1:
HeLa (human cervical adenocarcinoma epithelial cell) whole cell lysate at 20 µg

Lane 2:
293T (human embryonic kidney epithelial cell) whole cell lysate at 20 µg

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

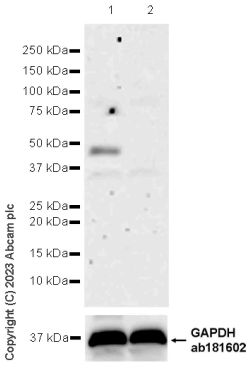
Lane 4:
PC-12 (rat adrenal gland pheochromocytoma cell) whole cell lysate at 20 µg

Secondary

All lanes:
Western blot - Goat Anti-Rabbit IgG H&L (HRP) (ab97051) at 1/1000000 dilution

Observed band size: 48 kDa

Exposure time: 3min



Western blot - Anti-KMT1A / SUV39H1 antibody [EPR24200-179] (ab309471)

Blocking and diluting buffer and concentration: 5% NFDM/TBST In Western blot, Anti-GAPDH antibody (ab181602) loading control staining at 1/200000 dilution Exposure time: 3 minutes
All lanes:
Western blot - Anti-KMT1A / SUV39H1 antibody [EPR24200-179] (ab309471) at 1/1000 dilution

Lane 1:
U-2 OS (human bone osteosarcoma epithelial cell) transfected with scrambled siRNA control whole cell lysate at 20 µg

Lane 2:
U-2 OS transfected with siRNA specifically targeti KMT1A / SUV39H1 whole cell lysate 20 at 20 µg

Secondary

All lanes:
Western blot - Goat Anti-Rabbit IgG H&L (HRP) (ab97051) at 1/20000 dilution

Observed band size: 48 kDa

Exposure time: 3min

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