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(Mouse) Dnmt1 Antibody (Center)

Purified Rabbit Polyclonal Antibody (Pab)
Catalog # AP21131a

Product Information

Application	WB, IHC-P, IF, E
Primary Accession	P13864
Reactivity	Human, Mouse
Predicted	Rat, Bovine, Canine
Host	Rabbit
Clonality	polyclonal
Isotype	Rabbit IgG
Clone Names	RB51461
Calculated MW	183189

Additional Information

Gene ID	13433
Other Names	DNA (cytosine-5)-methyltransferase 1, Dnmt1, Met-1, DNA methyltransferase MmuI, DNA MTase MmuI, MMmuI, MCMT, Dnmt1, Dnmt, Met1, Uim
Target/Specificity	This MouseDnmt1 antibody is generated from a rabbit immunized with a KLH conjugated synthetic peptide between 881-914 amino acids from the Central region of mouse Dnmt1.
Dilution	WB~~1:1000 IHC-P~~1:100~500 IF~~1:50 E~~Use at an assay dependent concentration.
Format	Purified polyclonal antibody supplied in PBS with 0.09% (W/V) sodium azide. This antibody is purified through a protein A column, followed by peptide affinity purification.
Storage	Maintain refrigerated at 2-8°C for up to 2 weeks. For long term storage store at -20°C in small aliquots to prevent freeze-thaw cycles.
Precautions	(Mouse) Dnmt1 Antibody (Center) is for research use only and not for use in diagnostic or therapeutic procedures.

Protein Information

Name	Dnmt1 {ECO:0000303|PubMed:11063128, ECO:0000312|MGI:MGI:94912}
Function	DNA methyltransferase that methylates CpG residues (PubMed: 11290321, PubMed:11399088, PubMed:17576694, PubMed:17893328, PubMed:22323818). Preferentially methylates hemimethylated DNA

	(PubMed:11399088, PubMed:17576694, PubMed:17893328, PubMed:22323818). Associates with DNA replication sites in S phase maintaining the methylation pattern in the newly synthesized strand, that is essential for epigenetic inheritance (PubMed:11399088, PubMed:17576694, PubMed:22323818). Associates with chromatin during G2 and M phases to maintain DNA methylation independently of replication (PubMed:11399088, PubMed:15550930, PubMed:17576694). It is responsible for maintaining methylation patterns established in development (PubMed:11399088, PubMed:17576694). DNA methylation is coordinated with methylation of histones (By similarity). Mediates transcriptional repression by direct binding to HDAC2 (By similarity). In association with DNMT3B and via the recruitment of CTCFL/BORIS, involved in activation of BAG1 gene expression by modulating dimethylation of promoter histone H3 at H3K4 and H3K9 (By similarity). Probably forms a corepressor complex required for activated KRAS-mediated promoter hypermethylation and transcriptional silencing of tumor suppressor genes (TSGs) or other tumor-related genes in colorectal cancer (CRC) cells (By similarity). Also required to maintain a transcriptionally repressive state of genes in undifferentiated embryonic stem cells (ESCs) (By similarity). Associates at promoter regions of tumor suppressor genes (TSGs) leading to their gene silencing (By similarity).
Cellular Location	Nucleus. Chromosome. Cytoplasm. Note=It is nucleoplasmic through most of the cell cycle and Associates with replication foci during S-phase: recruited to hemimethylated DNA sites via its RFTS domain, which specifically recognizes and binds histone H3 ubiquitinated at 'Lys-14', 'Lys-18' and 'Lys-23' (H3K14ub, H3K18ub and H3K23ub, respectively) (PubMed:11290321, PubMed:17893328, PubMed:26065575, PubMed:29053958). In germ cells, spermatogonia, preleptotene and leptotene spermatocytes all express high levels of nuclear protein, while the protein is not detected in pachytene spermatocytes, despite the fact they expressed high levels of mRNA (PubMed:9449671). In females, the protein is not detected in non- growing oocytes, in contrast to the growing oocytes (PubMed:9449671) During the growing, the protein is no longer detectable in nuclei but accumulates to very high levels first throughout the cytoplasm (PubMed:9449671). At the time of ovulation, all the protein is cytoplasmic and is actively associated with the oocyte cortex (PubMed:9449671). After fecondation, in the preimplantation embryo, the protein remains cytoplasmic and after implantation, it is exclusively nuclear in all tissue types (PubMed:9449671). Isoform 2 is sequestered in the cytoplasm of maturing oocytes and of preimplantation embryos, except for the 8-cell stage, while isoform 1 is exclusively nuclear (PubMed:9449671).
Tissue Location	[Isoform 1]: Expressed in embryonic stem cells and in somatic tissues.

Background

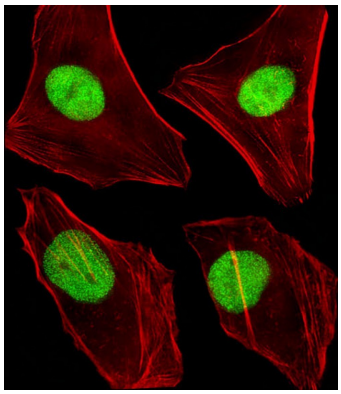
Methylates CpG residues. Preferentially methylates hemimethylated DNA. Associates with DNA replication sites in S phase maintaining the methylation pattern in the newly synthesized strand, that is essential for epigenetic inheritance. Associates with chromatin during G2 and M phases to maintain DNA methylation independently of replication. It is responsible for maintaining methylation patterns established in development. DNA methylation is coordinated with methylation of histones. Mediates transcriptional repression by direct binding to HDAC2. In association with DNMT3B and via the recruitment of CTCFL/BORIS, involved in activation of BAG1 gene expression by modulating dimethylation of promoter histone H3 at H3K4 and H3K9.

References

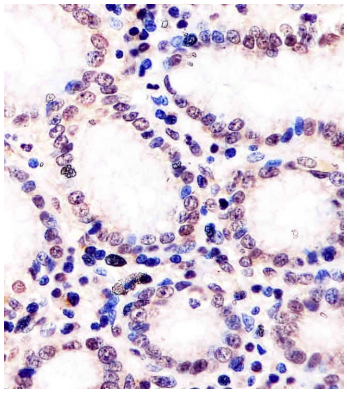
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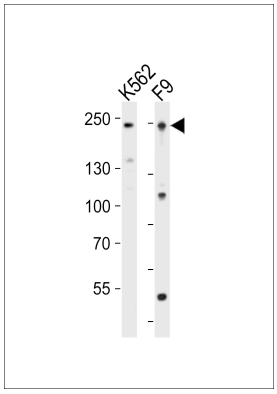
Images



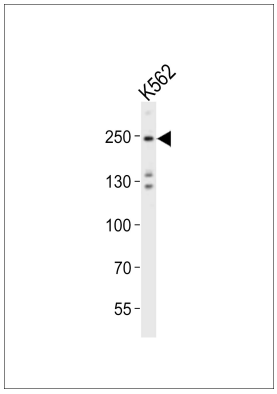
Immunofluorescent analysis of 4% paraformaldehyde-fixed, 0.1% Triton X-100 permeabilized HeLa (human cervical epithelial adenocarcinoma cell line) cells labeling Dnmt1 with AP21131a at 1/50 dilution, followed by Dylight® 488-conjugated goat anti-rabbit IgG (NK179883) secondary antibody at 1/200 dilution (green). Immunofluorescence image showing nucleus staining on HeLa cell line. Cytoplasmic actin is detected with Dylight® 554 Phalloidin (PD18466410) at 1/100 dilution (red).



AP21131a staining (Mouse) Dnmt1 in human stomach tissue sections by Immunohistochemistry (IHC-P - paraformaldehyde-fixed, paraffin-embedded sections). Tissue was fixed with formaldehyde and blocked with 3% BSA for 0. 5 hour at room temperature; antigen retrieval was by heat mediation with a citrate buffer (pH6). Samples were incubated with primary antibody (1/25) for 1 hours at 37°C. A undiluted biotinylated goat polyvalent antibody was used as the secondary antibody.



Western blot analysis of lysates from K562, mouse F9 cell line (from left to right), using Dnmt1 Antibody (Center)(Cat. #AP21131a). AP21131a was diluted at 1:1000 at each lane. A goat anti-rabbit IgG H&L(HRP) at 1:10000 dilution was used as the secondary antibody. Lysates at 20ug per lane.



Western blot analysis of lysate from K562 cell line, using Dnmt1 Antibody (Center)(Cat. #AP21131a). AP21131a was diluted at 1:1000. A goat anti-rabbit IgG H&L(HRP) at 1:10000 dilution was used as the secondary antibody. Lysate at 20ug.

Citations

- UV irradiation-induced DNA hypomethylation around WNT1 gene: implications for solar lentigines.

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