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MBD1 Antibody (C-term)

Purified Rabbit Polyclonal Antibody (Pab)
Catalog # AP1036B

Product Information

Application	WB, E
Primary Accession	Q9UIS9
Reactivity	Human
Host	Rabbit
Clonality	Polyclonal
Isotype	Rabbit IgG
Calculated MW	66607
Antigen Region	376-405

Additional Information

Gene ID	4152
Other Names	Methyl-CpG-binding domain protein 1, CXXC-type zinc finger protein 3, Methyl-CpG-binding protein MBD1, Protein containing methyl-CpG-binding domain 1, MBD1, CXXC3, PCM1
Target/Specificity	This MBD1 antibody is generated from rabbits immunized with a KLH conjugated synthetic peptide between 376-405 amino acids from the C-terminal region of human MBD1.
Dilution	WB~~1:1000 E~~Use at an assay dependent concentration.
Format	Purified polyclonal antibody supplied in PBS with 0.09% (W/V) sodium azide. This antibody is prepared by Saturated Ammonium Sulfate (SAS) precipitation followed by dialysis against PBS.
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	MBD1 Antibody (C-term) is for research use only and not for use in diagnostic or therapeutic procedures.

Protein Information

Name	MBD1 (HGNC:6916)
Synonyms	CXXC3, PCM1
Function	Transcriptional repressor that binds CpG islands in promoters where the DNA is methylated at position 5 of cytosine within CpG dinucleotides. Binding

	is abolished by the presence of 7-mG that is produced by DNA damage by methylmethanesulfonate (MMS). Acts as transcriptional repressor and plays a role in gene silencing by recruiting ATF7IP, which in turn recruits factors such as the histone methyltransferase SETDB1. Probably forms a complex with SETDB1 and ATF7IP that represses transcription and couples DNA methylation and histone 'Lys-9' trimethylation. Isoform 1 and isoform 2 can also repress transcription from unmethylated promoters.
Cellular Location	Nucleus. Nucleus matrix. Nucleus speckle Chromosome Note=Nuclear, in a punctate pattern (PubMed:12711603). Associated with euchromatic regions of the chromosomes, with pericentromeric regions on chromosome 1 and with telomeric regions from several chromosomes (PubMed:10454587, PubMed:10648624).
Tissue Location	Widely expressed..

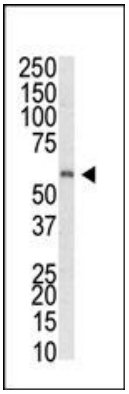
Background

DNA methylation, or the addition of methyl groups to cytosine bases in the dinucleotide CpG, is imperative to proper development and regulates gene expression. The methylation pattern involves the enzymatic processes of methylation and demethylation. The demethylation enzyme was recently found to be a mammalian protein, which exhibits demethylase activity associated to a methyl-CpG-binding domain (MBD) (1). The enzyme is able to revert methylated cytosine bases to cytosines within the particular dinucleotide sequence mdCpdG by catalyzing the cleaving of the methyl group as methanol. MeCP2 and MBD1 (PCM1) are first found to repress transcription by binding specifically to methylated DNA (2). MBD2 and MBD4 (also known as MED1) were later found to colocalize with foci of heavily methylated satellite DNA and believed to mediate the biological functions of the methylation signal. Surprisingly, MBD3 does not bind methylated DNA both in vivo and in vitro. MBD1, MBD2, MBD3, and MBD4 are found to be expressed in somatic tissues, but the expression of MBD1 and MBD2 is reduced or absent in embryonic stem cells, which are known to be deficient in MeCP1 activity. MBD4 have homology to bacterial base excision repair DNA N-glycosylases/lyases (3). In some microsatellite unstable tumors MBD4 is mutated at an exonic polynucleotide tract (4).

References

Bhattacharya SK, Ramchandani S, Cervoni N, Szyf. M. Nature, 397 (6720):579-583 1999.
Hendrich B and Bird A. Mol Cell Biol, 18: 6538-6547(1998).
Petronzelli F, Riccio A, Markham GD, Seeholzer SH, Stoerker J, Genuardi M, Yeung AT, Matsumoto Y, Bellacosa A. J Biol Chem 275 (42): 32422-32429 (2000).
Bader S, Walker M, Harrison D. Br J Cancer 83(12): 1646-1649 (2000).

Images



Western blot analysis of anti-MBD1 Pab (Cat. #AP1036b) in HeLa cell lysate. MBD1 (Arrow) was detected using purified Pab. Secondary HRP-anti-rabbit was used for signal visualization with chemiluminescence.

Citations

- Specific binding of the methyl binding domain protein 2 at the BRCA1-NBR2 locus.
- The intracellular domain of teneurin-1 interacts with MBD1 and CAP/ponsin resulting in subcellular codistribution and translocation to the nuclear matrix.