

MBD1 (B-5): sc-25261

BACKGROUND

Methylation of DNA contributes to the regulation of gene transcription in both mammalian and invertebrate systems. DNA methylation predominates on cytosine residues that are present in dinucleotide motifs consisting of a 5' cytosine followed by guanosine (CpG), and it requires the enzymatic activity of DNA methyltransferase, which results in transcriptional repression of the methylated gene. Several proteins have been identified that associate with the methyl-CpG sites, and they include methyl-CpG binding protein-1 (MBD1), MBD2, MBD3 and MeCP2. Expression of the MBD proteins is highest in somatic tissues. MBD1 binds in a context-specific manner to methyl-CpG rich domains and, in turn, mediates the transcriptional inhibition that is commonly observed with DNA methylation. Similarly, MBD2 inhibits transcription of methylated genes by associating with histone deacetylase (HDAC1) within the MeCP1 repressor complex. In addition, MBD4, which is also designated MED1, associates with the mismatch repair protein MLH1 and preferentially binds to methylated cytosine residues in mismatched base pairs. MeCP2 binds tightly to chromosomes in a methylation-dependent manner and associates with a corepressor complex containing the transcriptional repressor mSin3A and histone deacetylases.

REFERENCES

- Boyes, J., et al. 1991. DNA methylation inhibits transcription indirectly via a methyl-CpG binding protein. *Cell* 64: 1123-1134.
- Nan, X., et al. 1998. Transcriptional repression by the methyl-CpG-binding protein MeCP2 involves a histone deacetylase complex. *Nature* 393: 386-389.

CHROMOSOMAL LOCATION

Genetic locus: MBD1 (human) mapping to 18q21.1; Mbd1 (mouse) mapping to 18 E2.

SOURCE

MBD1 (B-5) is a mouse monoclonal antibody raised against amino acids 383-636 of MBD1 of mouse origin.

PRODUCT

Each vial contains 200 µg IgG₁ kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

MBD1 (B-5) is available conjugated to agarose (sc-25261 AC), 500 µg/0.25 ml agarose in 1 ml, for IP; to HRP (sc-25261 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-25261 PE), fluorescein (sc-25261 FITC), Alexa Fluor® 488 (sc-25261 AF488), Alexa Fluor® 546 (sc-25261 AF546), Alexa Fluor® 594 (sc-25261 AF594) or Alexa Fluor® 647 (sc-25261 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-25261 AF680) or Alexa Fluor® 790 (sc-25261 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

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RESEARCH USE

For research use only, not for use in diagnostic procedures.

APPLICATIONS

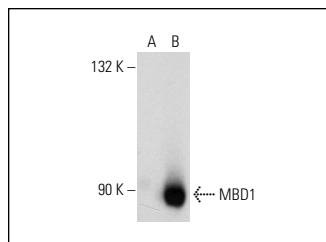
MBD1 (B-5) is recommended for detection of MBD1 of mouse, rat and human origin by Western Blotting (starting dilution 1:100, dilution range 1:100-1:500), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

Suitable for use as control antibody for MBD1 siRNA (h): sc-35863, MBD1 siRNA (m): sc-35864, MBD1 shRNA Plasmid (h): sc-35863-SH, MBD1 shRNA Plasmid (m): sc-35864-SH, MBD1 shRNA (h) Lentiviral Particles: sc-35863-V and MBD1 shRNA (m) Lentiviral Particles: sc-35864-V.

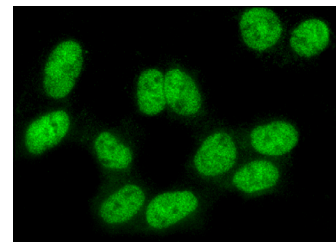
Molecular Weight of MBD1: 80 kDa.

Positive Controls: MBD1 (m): 293T Lysate: sc-121538, Jurkat whole cell lysate: sc-2204 or MM-142 nuclear extract: sc-2139.

DATA



MBD1 (B-5): sc-25261. Western blot analysis of MBD1 expression in non-transfected: sc-117752 (A) and mouse MBD1 transfected: sc-121538 (B) 293T whole cell lysates.



MBD1 (B-5): sc-25261. Immunofluorescence staining of formalin-fixed Hep G2 cells showing nuclear localization.

SELECT PRODUCT CITATIONS

- Zhang, P., et al. 2017. Methyl-CpG binding domain protein 1 regulates localization and activity of Tet1 in a CXXC3 domain-dependent manner. *Nucleic Acids Res.* 45: 7118-7136.
- Sobolewski, M., et al. 2018. Developmental lead exposure and prenatal stress result in sex-specific reprogramming of adult stress physiology and epigenetic profiles in brain. *Toxicol. Sci.* 163: 478-489.
- Ishiyama, M., et al. 2019. Early postnatal treatment with valproate induces Gad1 promoter remodeling in the brain and reduces apnea episodes in Mecp2-null mice. *Int. J. Mol. Sci.* 20: 5177.
- Zhao, X.B., et al. 2021. Extracellular matrix stiffness regulates DNA methylation by PKCα-dependent nuclear transport of DNMT3L. *Adv. Healthc. Mater.* 10: e2100821.
- Xu, W.Q., et al. 2023. Dynamic mapping of proteome trafficking within and between living cells by TransitID. *bioRxiv*. E-published.

STORAGE

Store at 4° C, **DO NOT FREEZE**. Stable for one year from the date of shipment. Non-hazardous. No MSDS required.