SANTA CRUZ BIOTECHNOLOGY, INC.

MBD1 (A-5): sc-55473

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

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; 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

1. Boyes, J. and Bird, A. 1991. DNA methylation inhibits transcription indirectly via a methyl-CpG binding protein. Cell 64: 1123-1134.
2. Nan, X., et al. 1998. Transcriptional repression by the methyl-CpG-binding protein MeCP2 involves a histone deacetylase complex. Nature 393: 386-389.
3. Hendrich, B. and Bird, A. 1998. Identification and characterization of a family of mammalian methyl-CpG binding proteins. Mol. Cell. Biol. 18: 6538-6547.
4. Hendrich, B., et al. 1999. Genomic structure and chromosomal mapping of the murine and human MBD1, MBD2, MBD3, and MBD4 genes. Mamm. Genome 10: 906-912.
5. Ohki, I., et al. 1999. Solution structure of the methyl-CpG-binding domain of the methylation-dependent transcriptional repressor MBD1. EMBO J. 18: 6653-6661.
6. Ng, H.H., et al. 1999. MBD2 is a transcriptional repressor belonging to the MeCP1 histone deacetylase complex. Nat. Genet. 23: 58-61.

CHROMOSOMAL LOCATION

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

SOURCE

MBD1 (A-5) is a mouse monoclonal antibody rasied against amino acids 383-636 mapping near the C-terminus of MBD1 of mouse origin.

PRODUCT

Each vial contains 200 µg IgG_1 kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

APPLICATIONS

MBD1 (A-5) is recommended for detection of MBD1 of mouse, rat and human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), 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.

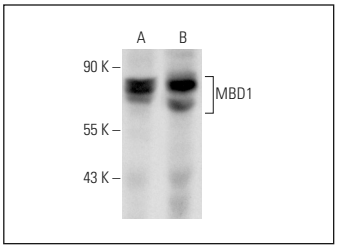
Molecular Weight of MBD1: 80 kDa.

Positive Controls: A-431 nuclear extract: sc-2122, MM-142 nuclear extract: sc-2139 or TK-1 whole cell lysate: sc-364798.

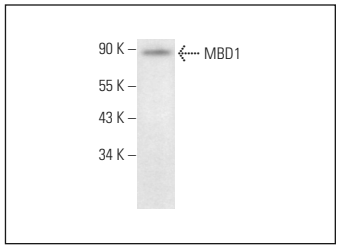
RECOMMENDED SUPPORT REAGENTS

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgGκ BP-HRP: sc-516102 or m-IgGκ BP-HRP (Cruz Marker): sc-516102-CM (dilution range: 1:1000-1:10000), Cruz Marker™ Molecular Weight Standards: sc-2035, UltraCruz® Blocking Reagent: sc-516214 and Western Blotting Luminol Reagent: sc-2048. 2) Immunoprecipitation: use Protein A/G PLUS-Agarose: sc-2003 (0.5 ml agarose/2.0 ml). 3) Immunofluorescence: use m-IgGκ BP-FITC: sc-516140 or m-IgGκ BP-PE: sc-516141 (dilution range: 1:50-1:200) with UltraCruz® Mounting Medium: sc-24941 or UltraCruz® Hard-set Mounting Medium: sc-359850.

DATA



MBD1 (A-5): sc-55473. Western blot analysis of MBD1 expression in A-431 (**A**) and MM-142 (**B**) nuclear extracts.



MBD1 (A-5): sc-55473. Western blot analysis of MBD1 expression in TK-1 whole cell lysate.

SELECT PRODUCT CITATIONS

1. Kim, T.W., et al. 2019. Differential expression of tescalcin by modification of promoter methylation controls cell survival in gastric cancer cells. Oncol. Rep. 41: 3464-3474.

STORAGE

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

RESEARCH USE

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