SANTA CRUZ BIOTECHNOLOGY, INC.

MBD4 (H-300): sc-10753

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, MBD4 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. MeCP2 binds tightly to chromosomes in a methylation-dependent manner and associates with a corepressor complex containing the transcriptional repressor mSin3A and histone deacetylases.

CHROMOSOMAL LOCATION

Genetic locus: MBD4 (human) mapping to 3q21.3; Mbd4 (mouse) mapping to 6 E3.

SOURCE

MBD4 (H-300) is a rabbit polyclonal antibody raised against amino acids 281-580 mapping near the C-terminus of MBD4 of human origin.

PRODUCT

Each vial contains 200 µg IgG in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

APPLICATIONS

MBD4 (H-300) is recommended for detection of MBD4 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 MBD4 siRNA (h): sc-37763, MBD4 siRNA (m): sc-37764, MBD4 shRNA Plasmid (h): sc-37763-SH, MBD4 shRNA Plasmid (m): sc-37764-SH, MBD4 shRNA (h) Lentiviral Particles: sc-37763-V and MBD4 shRNA (m) Lentiviral Particles: sc-37764-V.

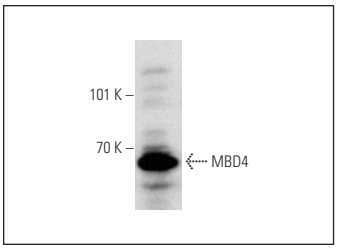
Molecular Weight of MBD4: 66 kDa.

Positive Controls: NIH/3T3 whole cell lysate: sc-2210, NIH/3T3 nuclear extract: sc-2138 or HeLa nuclear extract: sc-2120.

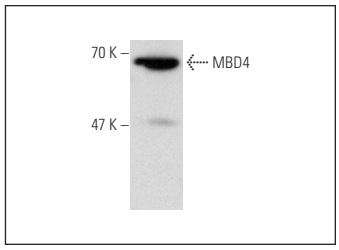
STORAGE

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

DATA



MBD4 (H-300): sc-10753. Western blot analysis of MBD4 expression in HeLa nuclear extract.



MBD4 (H-300): sc-10753. Western blot analysis of MBD4 expression in NIH/3T3 nuclear extract.

SELECT PRODUCT CITATIONS

1. Unoki, M., et al. 2003. Methylation at CpG islands in intron 1 of Egr-2 confers enhancer-like activity. FEBS Lett. 554: 67-72.
2. Kondo, E., et al. 2005. The thymine DNA glycosylase MBD4 represses transcription and is associated with methylated $p16^{INK4a}$ and hMLH1 genes. Mol. Cell. Biol. 25: 4388-4396.
3. Galetzka, D., et al. 2006. Expression of Dnmt3a transcripts and nucleolar localization of Dnmt3a protein in human testicular and fibroblast cells suggest a role for *de novo* DNA methylation in nucleolar inactivation. J. Cell. Biochem. 98: 885-894.
4. Bader, S.A., et al. 2007. A human cancer-associated truncation of MBD4 causes dominant negative impairment of DNA repair in colon cancer cells. Br. J. Cancer 96: 660-666.
5. Fu, J., et al. 2009. Promoter regulation of the visinin-like subfamily of neuronal calcium sensor proteins by nuclear respiratory factor-1. J. Biol. Chem. 284: 27577-27586.
6. Treas, J.N., et al. 2012. Effects of chronic exposure to arsenic and estrogen on epigenetic regulatory genes expression and epigenetic code in human prostate epithelial cells. PLoS ONE 7: e43880.
7. Sousa, M.M., et al. 2013. An inverse switch in DNA base excision and strand break repair contributes to melphalan resistance in multiple myeloma cells. PLoS ONE 8: e55493.

RESEARCH USE

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