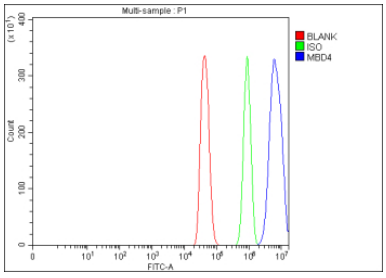
Mbd4 Antibody / Methyl-CpG-binding domain protein 4 (FY12485)

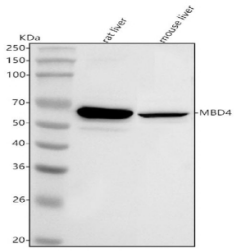
Catalog No.	Formulation	Size
FY12485	Adding 0.2 ml of distilled water will yield a concentration of 500 ug/ml	100 ug

Bulk quote request

Availability	1-2 days
Species Reactivity	Mouse, Rat
Format	Lyophilized
Host	Rabbit
Clonality	Polyclonal (rabbit origin)
Isotype	Rabbit IgG
Purity	Immunogen affinity purified
Buffer	Each vial contains 4 mg Trehalose, 0.9 mg NaCl, 0.2 mg Na2HPO4.
UniProt	Q9Z2D7
Applications	Western Blot: 0.25-0.5ug/ml Flow cytometry: 1-3ug/million cells ELISA: 0.1-0.5ug/ml
Limitations	This Mbd4 antibody is available for research use only.



Flow Cytometry analysis of C2C12 cells using anti-Mbd4 antibody. Overlay histogram showing C2C12 cells stained with (Blue line). To facilitate intracellular staining, cells were fixed with 4% paraformaldehyde and permeabilized with permeabilization buffer. The cells were blocked with 10% normal goat serum. And then incubated with rabbit anti-Mbd4 antibody (1 ug/million cells) for 30 min at 20oC. DyLight 488 conjugated goat anti-rabbit IgG (5-10 ug/million cells) was used as secondary antibody for 30 minutes at 20oC. Isotype control antibody (Green line) was rabbit IgG (1 ug/million cells) used under the same conditions. Unlabelled sample (Red line) was also used as a control.



Western blot analysis of Mbd4 using anti-Mbd4 antibody. Lane 1: rat liver tissue lysates, Lane 2: mouse liver tissue lysates. After electrophoresis, proteins were transferred to a nitrocellulose membrane at 150 mA for 50-90 minutes. Blocked the membrane with 5% non-fat milk/TBS for 1.5 hour at RT. The membrane was incubated with rabbit anti-Mbd4 antibody at 0.5 ug/ml overnight at 4oC, then washed with TBS-0.1%Tween 3 times with 5 minutes each and probed with a goat anti-rabbit IgG-HRP secondary antibody at a dilution of 1:5000 for 1.5 hour at RT. The signal was developed using enhanced chemiluminescent. The expected molecular weight of Mbd4 is ~63 kDa.

Description

Mbd4 antibody detects Methyl-CpG-binding domain protein 4, a nuclear enzyme that couples DNA repair with epigenetic regulation by recognizing methylated DNA and mediating the excision of mismatched bases. Mbd4 functions as a bifunctional DNA glycosylase that specifically removes thymine or uracil mispaired with guanine within methylated CpG sites, thereby maintaining genomic stability and preventing mutation accumulation. The Mbd4 antibody is widely used in studies of DNA repair, epigenetics, and cancer biology to explore the connection between cytosine methylation and genome maintenance.

Mbd4 is encoded by the MBD4 gene located on human chromosome 3q21.3. The protein contains two main functional domains: an N-terminal methyl-CpG-binding domain (MBD) that targets methylated DNA, and a C-terminal glycosylase domain that catalyzes base excision. Through these domains, Mbd4 directly interacts with DNA methyltransferases and participates in active DNA demethylation pathways. It also forms complexes with MLH1, a mismatch repair factor, integrating base excision repair with the mismatch repair system.

The Mbd4 antibody typically detects a 63 kilodalton protein on western blot. Mbd4 is highly expressed in proliferative tissues and cells undergoing DNA replication. Functionally, loss of Mbd4 leads to increased mutation frequency at CpG sites, predisposing cells to carcinogenesis. Experimental models show that Mbd4-deficient mice accumulate G:T mismatches and are more susceptible to DNA damage induced by oxidative stress or alkylating agents.

Beyond repair, Mbd4 plays an important role in apoptosis and gene silencing. It interacts with the tumor suppressor p53 and participates in transcriptional repression of methylated gene promoters. Dysregulation of Mbd4 expression or mutations in its glycosylase domain have been linked to colorectal cancer, glioma, and leukemia, where defective base excision repair contributes to genomic instability. NSJ Bioreagents provides a validated Mbd4 antibody optimized for western blot, immunohistochemistry, and chromatin studies, supporting research on DNA methylation maintenance, repair mechanisms, and epigenetic disease progression.

Application Notes

Optimal dilution of the Mbd4 antibody should be determined by the researcher.

Immunogen

E.coli-derived mouse Mbd4 recombinant protein (Position: R238-D534) was used as the immunogen for the Mbd4 antibody.

Storage

After reconstitution, the Mbd4 antibody can be stored for up to one month at 4oC. For long-term, aliquot and store at -20oC. Avoid repeated freezing and thawing.

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