Revision 1

Store at -20C

#8639

JMJD2B (D7E6) Rabbit mAb

Cell Signaling TECHNOLOGY®

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For Research Use Only. Not for Use in Diagnostic Procedures.

Applications:	Reactivity:	Sensitivity:	MW (kDa):	Source/Isotype:	UniProt ID:	Entrez-Gene Id:
W, IP, IF-IC	H Mk	Endogenous	150	Rabbit IgG	#O94953	23030

Product Usage Information

Application	Dilution
Western Blotting	1:1000
Immunoprecipitation	1:50
Immunofluorescence (Immunocytochemistry)	1:800

Storage

Supplied in 10 mM sodium HEPES (pH 7.5), 150 mM NaCl, 100 µg/ml BSA, 50% glycerol and less than 0.02% sodium azide. Store at –20°C. Do not aliquot the antibody.

Specificity/Sensitivity

JMJD2B (D7E6) Rabbit mAb recognizes endogenous levels of total JMJD2B protein. This antibody does not cross-react with other Jumonji C proteins, including JMJD2A, JMJD2C, and JMJD2D.

Source / Purification

Monoclonal antibody is produced by immunizing animals with a synthetic peptide corresponding to residues near the carboxy terminus of human JMJD2B protein.

Background

The methylation state of lysine residues in histone proteins is a major determinant of the formation of active and inactive regions of the genome and is crucial for proper programming of the genome during development (1,2). Jumonji C (JmjC) domain-containing proteins represent the largest class of potential histone demethylase proteins (3). The JmjC domain can catalyze the demethylation of mono-, di-, and tri-methyl lysine residues via an oxidative reaction that requires iron and α-ketoglutarate (3). Based on homology, both humans and mice contain at least 30 such proteins, which can be divided into 7 separate families (3). The jumonji domain-containing protein 2 (JMJD2) family, also known as the JmjC domain-containing histone demethylation protein 3 (JHDM3) family, contains four members: JMJD2A/JHDM3A, JMJD2B/JHDM3B, JMJD2C/JHDM3C, and JMJD2D/JHDM3D. In addition to the JmjC domain, these proteins also contain JmjN, PHD, and tudor domains, the latter of which has been shown to bind to methylated histone H3 at Lys4 and Lys9, and methylated histone H4 at Lys20 (4,5). JMJD2 proteins have been shown to demethylate di- and tri-methyl histone H3 at Lys9 and Lys36 and function as both activators and repressors of transcription (6-11). JMJD2A, JMJD2C, and JMJD2D function as coactivators of the androgen receptor in prostate tumor cells (7). In contrast, JMJD2A also associates with Rb and NCoR corepressor complexes and is necessary for transcriptional repression of target genes (8,9). JMJD2B antagonizes histone H3 Lys9 tri-methylation at pericentric heterochromatin (10). JMJD2C, also known as GASC1, is amplified in squamous cell carcinomas and metastatic lung carcinoma and inhibition of JMJD2C expression decreases cell proliferation (11,12). JMJD2C has also been identified as a downstream target of Oct-4 and is critical for the regulation of self-renewal in embryonic stem cells (13).

Recent studies have demonstrated that JMJD2B is physically associated with and an integral component of the mixed-lineage leukemia (MLL) 2 H3K4 methyltransferase complex. JMJD2B also interacts with estrogen receptor α (ERα) and members of a chromatin remodeling complex, SWI/SNF-B. It is likely that JMJD2B removes repressive histone marks at ERα binding sites, which may also generate docking sites for enzymes and transcription factors that remodel chromatin in order to facilitate ERα-mediated transcription. Of note, JMJD2B is expressed in a high percentage of human breast tumors and its expression positively correlates with ERα expression. Researchers have shown that *JMJD2B* is a transcriptional target of ERα and may participate in a feed-forward regulatory loop involved in driving estrogen responsive breast tumor formation (14,15).

Background References

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Species Reactivity

Species reactivity is determined by testing in at least one approved application (e.g., western blot).

Western Blot Buffer

IMPORTANT: For western blots, incubate membrane with diluted primary antibody in 5% w/v nonfat dry milk, 1X TBS, 0.1% Tween® 20 at 4°C with gentle shaking, overnight.

Applications Key

W: Western Blotting **IP:** Immunoprecipitation **IF-IC:** Immunofluorescence (Immunocytochemistry)

Cross-Reactivity Key

H: Human **Mk:** Monkey

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Limited Uses