SANTA CRUZ BIOTECHNOLOGY, INC.

Dnmt1 (D-9): sc-514784

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

BACKGROUND

Methylation at the 5'-position of cytosine is the only known naturally occurring covalent modification of the mammalian genome. DNA methylation requires the enzymatic activity of DNA 5-cytosine methyltransferase (Dnmt) proteins, which catalyze the transfer of a methyl group from S-adenosyl methionine to the 5'-position of cytosines residing in the dinucleotide CpG motif, and this methylation results in transcriptional repression of the target gene. The Dnmt enzymes are encoded by independent genes. Dnmt1 is the most abundant, and it preferentially methylates hemimethylated DNA and coordinates gene expression during development. Additional mammalian Dnmt proteins include Dnmt2 and Dnmt3. Dnmt2 lacks the large N-terminal regulator domain of Dnmt1, is expressed at substantially lower levels in adult tissues, and is likely involved in methylating newly integrated retroviral DNA. Dnmt3a and Dnmt3b are encoded by two distinct genes, but both are abundantly expressed in embryonic stem cells, where they also methylate CpG motifs on DNA.

REFERENCES

1. Yoder, J.A., et al. 1997. DNA (cytosine-5)-methyltransferases in mouse cells and tissues. Studies with a mechanism-based probe. J. Mol. Biol. 270: 385-395.
2. Okano, M., et al. 1998. Dnmt2 is not required for *de novo* and maintenance methylation of viral DNA in embryonic stem cells. Nucleic Acids Res. 26: 2536-2540.
3. Walsh, C.P. and Bestor, T.H. 1999. Cytosine methylation and mammalian development. Genes Dev. 13: 26-34.
4. Cardoso, M.C. and Leonhardt, H. 1999. DNA methyltransferase is actively retained in the cytoplasm during early development. J. Cell Biol. 147: 25-32.
5. Hsieh, C.L. 1999. *In vivo* activity of murine *de novo* methyltransferases, Dnmt3a and Dnmt3b. Mol. Cell. Biol. 19: 8211-8218.
6. Bigey, P., et al. 2000. Transcriptional regulation of the human DNA Methyltransferase (Dnmt1) gene. Gene 242: 407-418.

CHROMOSOMAL LOCATION

Genetic locus: DNMT1 (human) mapping to 19p13.2; Dnmt1 (mouse) mapping to 9 A3.

SOURCE

Dnmt1 (D-9) is a mouse monoclonal antibody specific for an epitope mapping between amino acids 1551-1572 near the C-terminus of Dnmt1 of human origin.

PRODUCT

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

Blocking peptide available for competition studies, sc-514784 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% stabilizer protein).

APPLICATIONS

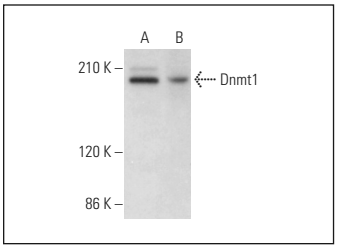
Dnmt1 (D-9) is recommended for detection of Dnmt1 of mouse, rat and human origin by Western Blotting (starting dilution 1:100, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

Suitable for use as control antibody for Dnmt1 siRNA (h): sc-35204, Dnmt1 siRNA (m): sc-35203, Dnmt1 shRNA Plasmid (h): sc-35204-SH, Dnmt1 shRNA Plasmid (m): sc-35203-SH, Dnmt1 shRNA (h) Lentiviral Particles: sc-35204-V and Dnmt1 shRNA (m) Lentiviral Particles: sc-35203-V.

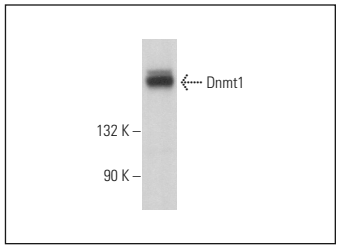
Molecular Weight of Dnmt1: 184 kDa.

Positive Controls: Raji whole cell lysate: sc-364236, F9 cell lysate: sc-2245 or A-10 cell lysate: sc-3806.

DATA



Dnmt1 (D-9): sc-514784. Western blot analysis of Dnmt1 expression in Raji (**A**) and A-10 (**B**) whole cell lysates.



Dnmt1 (D-9): sc-514784. Western blot analysis of Dnmt1 expression in F9 whole cell lysate.

SELECT PRODUCT CITATIONS

1. Zou, Z.K., et al. 2017. Silencing of LSD1 gene modulates histone methylation and acetylation and induces the apoptosis of JeKo-1 and MOLT-4 cells. Int. J. Mol. Med. 40: 319-328.
2. Zhang, T., et al. 2021. Phenethyl isothiocyanate reduces breast cancer stem cell-like properties by epigenetic reactivation of CDH1. Oncol. Rep. 45: 337-348.

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.

CONJUGATES

See **Dnmt1 (H-12): sc-271729** for Dnmt1 antibody conjugates, including AC, HRP, FITC, PE, and Alexa Fluor® 488, 546, 594, 647, 680 and 790.