SANTA CRUZ BIOTECHNOLOGY, INC.

Dnmt3a (64B814): sc-56656

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., Soman, N.S., Verdine, G.L. and Bestor, T.H. 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., Xie, S. and Li, E. 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. Hsieh, C.L. 1999. *In vivo* activity of murine *de novo* methyltransferases, Dnmt3a and Dnmt3b. Mol. Cell. Biol. 19: 8211-8218.
4. Walsh, C.P. and Bestor, T.H. 1999. Cytosine methylation and mammalian development. Genes Dev. 13: 26-34.
5. Cardoso, M.C. and Leonhardt, H. 1999. DNA methyltransferase is actively retained in the cytoplasm during early development. J. Cell Biol. 147: 25-32.
6. Bigey, P., Ramchandani, S., Theberge, J., Araujo, F.D. and Szyf, M. 2000. Transcriptional regulation of the human DNA Methyltransferase (Dnmt1) gene. Gene 242: 407-418.

CHROMOSOMAL LOCATION

Genetic locus: DNMT3A (human) mapping to 2p23.3; Dnmt3a (mouse) mapping to 12 A1.1.

SOURCE

Dnmt3a (64B814) is a mouse monoclonal antibody raised against recombinant Dnmt3a of mouse origin.

PRODUCT

Each vial contains 100 µg IgG_1 in 1.0 ml PBS with < 0.1% sodium azide, 0.1% gelatin and 0.01% stabilizer protein.

STORAGE

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

APPLICATIONS

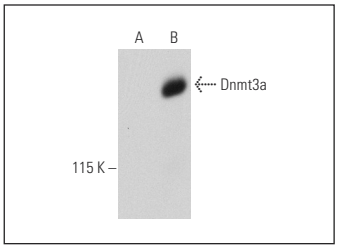
Dnmt3a (64B814) is recommended for detection of Dnmt3a of mouse, rat and, to a lesser extent, human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)] and immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500).

Suitable for use as control antibody for Dnmt3a siRNA (h): sc-37757, Dnmt3a siRNA (m): sc-37758, Dnmt3a shRNA Plasmid (h): sc-37757-SH, Dnmt3a shRNA Plasmid (m): sc-37758-SH, Dnmt3a shRNA (h) Lentiviral Particles: sc-37757-V and Dnmt3a shRNA (m) Lentiviral Particles: sc-37758-V.

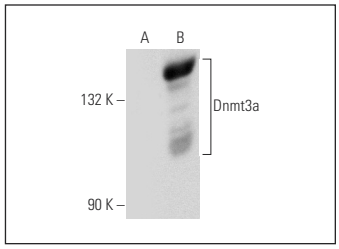
Molecular Weight of Dnmt3a: 100-130 kDa.

Positive Controls: Dnmt3a (m): 293T Lysate: sc-119814.

DATA



Dnmt3a (64B814): sc-56656. Western blot analysis of Dnmt3a expression in non-transfected: sc-117752 (**A**) and human Dnmt3a transfected: sc-115950 (**B**) 293T whole cell lysates.



Dnmt3a (64B814): sc-56656. Western blot analysis of Dnmt3a expression in non-transfected: sc-117752 (**A**) and mouse Dnmt3a transfected: sc-119814 (**B**) 293T whole cell lysates.

RESEARCH USE

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

PROTOCOLS

See our web site at www.scbt.com for detailed protocols and support products.

CONJUGATES

See **Dnmt3a (C-12): sc-365769** for Dnmt3a antibody conjugates, including AC, HRP, FITC, PE, Alexa Fluor® 488 and Alexa Fluor® 647.