SANTA CRUZ BIOTECHNOLOGY, INC.

Dnmt3a (P-16): sc-10231

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.

CHROMOSOMAL LOCATION

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

SOURCE

Dnmt3a (P-16) is an affinity purified goat polyclonal antibody raised against a peptide mapping near the N-terminus of Dnmt3a 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.

Blocking peptide available for competition studies, sc-10231 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% BSA).

APPLICATIONS

Dnmt3a (P-16) is recommended for detection of Dnmt3a 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).

Dnmt3a (P-16) is also recommended for detection of Dnmt3a in additional species, including equine, canine, bovine and porcine.

Suitable for use as control antibody for Dnmt3a siRNA (h): sc-37757, Dnmt3a siRNA (m): sc-37758, Dnmt3a siRNA (r): sc-270087, Dnmt3a shRNA Plasmid (h): sc-37757-SH, Dnmt3a shRNA Plasmid (m): sc-37758-SH, Dnmt3a shRNA Plasmid (r): sc-270087-SH, Dnmt3a shRNA (h) Lentiviral Particles: sc-37757-V, Dnmt3a shRNA (m) Lentiviral Particles: sc-37758-V and Dnmt3a shRNA (r) Lentiviral Particles: sc-270087-V.

Molecular Weight or Dnmt3a: 100-130 kDa.

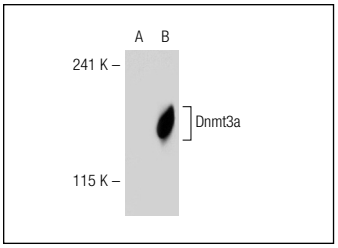
STORAGE

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

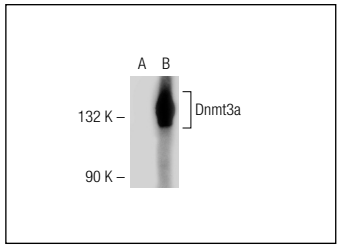
RESEARCH USE

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

DATA



Dnmt3a (P-16): sc-10231. Western blot analysis of Dnmt3a expression in non-transfected: sc-117752 (**A**) and human Dnmt3a transfected: sc-115950 (**B**) 293T whole cell lysates.



Dnmt3a (P-16): sc-10231. Western blot analysis of Dnmt3a expression in non-transfected: sc-117752 (**A**) and mouse Dnmt3a transfected: sc-119814 (**B**) 293T whole cell lysates.

SELECT PRODUCT CITATIONS

1. Chadwick, B.P., et al. 2002. Cell cycle-dependent localization of macroH2A in chromatin of the inactive X chromosome. J. Cell Biol. 157: 1113-1123.
2. Tao, Q., et al. 2002. Defective *de novo* methylation of viral and cellular DNA sequences in ICF syndrome cells. Hum. Mol. Genet. 11: 2091-2102.
3. Loriot, A. and De Plaen, E. 2006. Transient down-regulation of DNMT1 methyltransferase leads to activation and stable hypomethylation of MAGE-A1 in melanoma cells. J. Biol. Chem. 281: 10118-10126.
4. Zheng, Q.H., et al. 2006. $p21^{Waf1/Cip1}$ plays a critical role in modulating senescence through changes of DNA methylation. J. Cell. Biochem. 98: 1230-1248.
5. Palii, S.S., et al. 2008. DNA methylation inhibitor 5-aza-2-deoxycytidine induces reversible genome-wide DNA damage that is distinctly influenced by DNA methyltransferases 1 and 3B. Mol. Cell. Biol. 28: 752-771.
6. Chai, G., et al. 2008. HDAC inhibitors act with 5-aza-2-deoxycytidine to inhibit cell proliferation by suppressing removal of incorporated abases in lung cancer cells. PLoS ONE 3: e2445.
7. Leonard, S., et al. 2011. Epigenetic and transcriptional changes which follow Epstein-Barr virus infection of germinal center B cells and their relevance to the pathogenesis of Hodgkin's lymphoma. J. Virol. 85: 9568-9577.
8. Fang, J., et al. 2012. Epigenetic changes mediated by microRNA miR29 activate cyclooxygenase 2 and lambda-1 interferon production during viral infection. J. Virol. 86: 1010-1020.