SANTA CRUZ BIOTECHNOLOGY, INC.

Dnmt2 (D-9): sc-365001

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: TRDMT1 (human) mapping to 10p13; Trdmt1 (mouse) mapping to 2 A1.

SOURCE

Dnmt2 (D-9) is a mouse monoclonal antibody raised against amino acids 121-391 of Dnmt2 of human origin.

PRODUCT

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

Dnmt2 (D-9) is available conjugated to agarose (sc-365001 AC), 500 µg/ 0.25 ml agarose in 1 ml, for IP; to HRP (sc-365001 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-365001 PE), fluorescein (sc-365001 FITC), Alexa Fluor® 488 (sc-365001 AF488), Alexa Fluor® 546 (sc-365001 AF546), Alexa Fluor® 594 (sc-365001 AF594) or Alexa Fluor® 647 (sc-365001 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-365001 AF680) or Alexa Fluor® 790 (sc-365001 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

APPLICATIONS

Dnmt2 (D-9) is recommended for detection of Dnmt2 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 Dnmt2 siRNA (h): sc-35205, Dnmt2 siRNA (m): sc-35206, Dnmt2 shRNA Plasmid (h): sc-35205-SH, Dnmt2 shRNA Plasmid (m): sc-35206-SH, Dnmt2 shRNA (h) Lentiviral Particles: sc-35205-V and Dnmt2 shRNA (m) Lentiviral Particles: sc-35206-V.

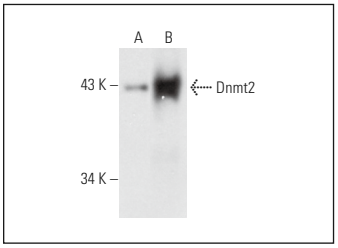
Molecular Weight of Dnmt2: 45 kDa.

Positive Controls: Dnmt2 (h): 293T Lysate: sc-116114, MOLT-4 cell lysate: sc-2233 or NCI-H292 whole cell lysate: sc-364179.

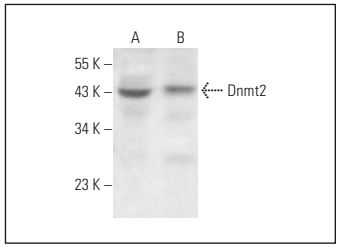
STORAGE

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

DATA



Dnmt2 (D-9): sc-365001. Western blot analysis of Dnmt2 expression in non-transfected: sc-117752 (**A**) and human Dnmt2 transfected: sc-116114 (**B**) 293T whole cell lysates.



Dnmt2 (D-9): sc-365001. Western blot analysis of Dnmt2 expression in NCI-H292 (**A**) and MOLT-4 (**B**) whole cell lysates.

SELECT PRODUCT CITATIONS

1. Rangel-Salazar, R., et al. 2011. Human native lipoprotein-induced *de novo* DNA methylation is associated with repression of inflammatory genes in THP-1 macrophages. BMC Genomics 12: 582.
2. Dev, R.R., et al. 2017. Cytosine methylation by DNMT2 facilitates stability and survival of HIV-1 RNA in the host cell during infection. Biochem. J. 474: 2009-2026.
3. Lewinska, A., et al. 2018. Reduced levels of methyltransferase Dnmt2 sensitize human fibroblasts to oxidative stress and DNA damage that is accompanied by changes in proliferation-related miRNA expression. Redox Biol. 14: 20-34.
4. Chen, H., et al. 2020. m^5C modification of mRNA serves a DNA damage code to promote homologous recombination. Nat. Commun. 11: 2834.
5. Huang, Z.X., et al. 2021. Position 34 of tRNA is a discriminative element for m^5C38 modification by human Dnmt2. Nucleic Acids Res. 49: 13045-13061.
6. Filip, K., et al. 2022. 5-azacytidine inhibits the activation of senescence program and promotes cytotoxic autophagy during Trdmt1-mediated oxidative stress response in insulinoma β-TC-6 cells. Cells 11: 1213.
7. Betlej, G., et al. 2022. RNA 5-methylcytosine status is associated with Dnmt2/TRDMT1 nuclear localization in osteosarcoma cell lines. J. Bone Oncol. 36: 100448.
8. Singh, M., et al. 2022. Hydrogen sulfide mitigates skeletal muscle mitophagy-led tissue remodeling via epigenetic regulation of the gene writer and eraser function. Physiol. Rep. 10: e15422.
9. Li, H., et al. 2023. Restricted tRNA methylation by intermolecular disulfide bonds in DNMT2/TRDMT1. Int. J. Biol. Macromol. 251: 126310.

RESEARCH USE

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