SANTA CRUZ BIOTECHNOLOGY, INC.

# Dnmt2 (A-7): sc-271513

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.


## CHROMOSOMAL LOCATION

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

## SOURCE

Dnmt2 (A-7) is a mouse monoclonal antibody raised against amino acids 121-391 of Dnmt2 of human origin.

## PRODUCT

Each vial contains 200 µg $IgG_{2b}$ kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

## APPLICATIONS

Dnmt2 (A-7) 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.

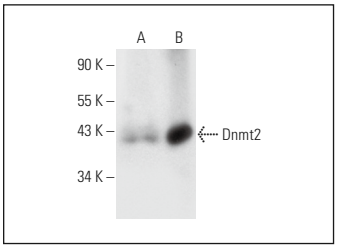
Molecular Weight of Dnmt2: 45 kDa.

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

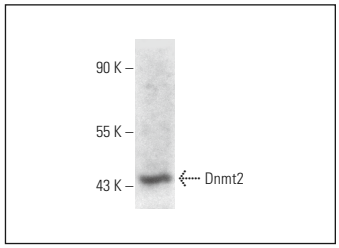
## RECOMMENDED SUPPORT REAGENTS

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgGκ BP-HRP: sc-516102 or m-IgGκ BP-HRP (Cruz Marker): sc-516102-CM (dilution range: 1:1000-1:10000), Cruz Marker™ Molecular Weight Standards: sc-2035, UltraCruz® Blocking Reagent: sc-516214 and Western Blotting Luminol Reagent: sc-2048. 2) Immunoprecipitation: use Protein A/G PLUS-Agarose: sc-2003 (0.5 ml agarose/2.0 ml). 3) Immunofluorescence: use m-IgGκ BP-FITC: sc-516140 or m-IgGκ BP-PE: sc-516141 (dilution range: 1:50-1:200) with UltraCruz® Mounting Medium: sc-24941 or UltraCruz® Hard-set Mounting Medium: sc-359850.

## DATA




Dnmt2 (A-7): sc-271513. Western blot analysis of Dnmt2 expression in non-transfected: sc-117752 (**A**) and human Dnmt2 transfected: sc-116114 (**B**) 293T whole cell lysates.




Dnmt2 (A-7): sc-271513. Western blot analysis of Dnmt2 expression in NCI-H292 whole cell lysate.

## SELECT PRODUCT CITATIONS


1. Lin, Y., et al. 2017. Emodin promotes the arrest of human lymphoma Raji cell proliferation through the UHRF1-Dnmt3a-ΔNp73 pathways. Mol. Med. Rep. 16: 6544-6551.
2. Bloniarz, D., et al. 2021. The lack of functional Dnmt2/TRDMT1 gene modulates cancer cell responses during drug-induced senescence. Aging 13: 15833-15874.
3. Betlej, G., et al. 2022. Deficiency of TRDMT1 impairs exogenous RNA-based response and promotes retrotransposon activity during long-term culture of osteosarcoma cells. Toxicol. In Vitro 80: 105323.
4. 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.
5. Adamczyk-Grochala, J., et al. 2023. DNMT2/TRDMT1 gene knockout compromises doxorubicin-induced unfolded protein response and sensitizes cancer cells to ER stress-induced apoptosis. Apoptosis 28: 166-185.
6. Zabek, T., et al. 2023. Knockout of TRDMT1 methyltransferase affects DNA methylome in glioblastoma cells. J. Neurooncol. 163: 61-69.


## 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.