

# Dnmt3a/b (C-15): sc-10234

## 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

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- 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.
- Hsieh, C.L. 1999. *In vivo* activity of murine *de novo* methyltransferases, Dnmt3a and Dnmt3b. *Mol. Cell. Biol.* 19: 8211-8218.
- Walsh, C.P. and Bestor, T.H. 1999. Cytosine methylation and mammalian development. *Genes Dev.* 13: 26-34.
- Cardoso, M.C. and Leonhardt, H. 1999. DNA methyltransferase is actively retained in the cytoplasm during early development. *J. Cell Biol.* 147: 25-32.
- Bigey, P., et al. 2000. Transcriptional regulation of the human DNA methyltransferase (Dnmt1) gene. *Gene* 242: 407-418.
- Fuks, F., et al. 2000. DNA methyltransferase Dnmt1 associates with histone deacetylase activity. *Nat. Genet.* 24: 88-91.

## CHROMOSOMAL LOCATION

Genetic locus: DNMT3A (human) mapping to 2p23.3, DNMT3B (human) mapping to 20q11.21; Dnmt3a (mouse) mapping to 12 A1.1, Dnmt3b (mouse) mapping to 2 H1.

## SOURCE

Dnmt3a/b (C-15) is an affinity purified goat polyclonal antibody raised against a peptide mapping near the C-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-10234 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% BSA).

## APPLICATIONS

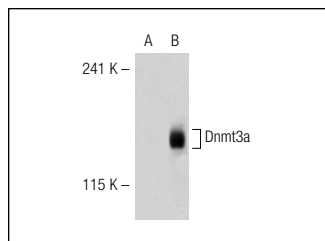
Dnmt3a/b (C-15) is recommended for detection of Dnmt3a and, to a lesser extent, Dnmt3b of mouse, rat and human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500), immunohistochemistry (including paraffin-embedded sections) (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/b (C-15) is also recommended for detection of Dnmt3a and, to a lesser extent, Dnmt3b in additional species, including equine, canine, bovine, porcine and avian.

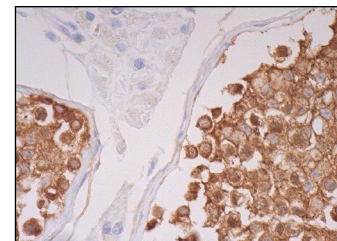
Molecular Weight of Dnmt3a/b: 100-130 kDa.

Positive Controls: Dnmt3a (h): 293T Lysate: sc-115950.

## DATA



Dnmt3a/b (C-15): sc-10234. Western blot analysis of Dnmt3a expression in non-transfected: sc-117752 (A) and human Dnmt3a transfected: sc-115950 (B) 293T whole cell lysates.



Dnmt3a/b (C-15): sc-10234. Immunoperoxidase staining of formalin fixed, paraffin-embedded human testis tissue showing cytoplasmic, membrane and nuclear staining of cells in seminiferous ducts.

## 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.

## PROTOCOLS

See our web site at [www.scbt.com](http://www.scbt.com) or our catalog for detailed protocols and support products.



Try **Dnmt3a (C-12): sc-365769** or **Dnmt3a (A-10): sc-373905**, our highly recommended monoclonal alternatives to Dnmt3a/b (C-15). Also, for AC, HRP, FITC, PE, Alexa Fluor<sup>®</sup> 488 and Alexa Fluor<sup>®</sup> 647 conjugates, see **Dnmt3a (C-12): sc-365769**.