SANTA CRUZ BIOTECHNOLOGY, INC.

MTHFD2 (243.1): sc-100750

BACKGROUND

MTHFD2 (Methylenetetrahydrofolate dehydrogenase 2), also known as NMDMC, is a 350 amino acid bifunctional protein that is responsible for the consecutive interconversion of tetrahydrofolate derivatives which drive the synthesis of purine, methionine and thymidylate. MTHFD2 is bifunctional in that it has methylenetetrahydrofolate dehydrogenase and methenyltetrahydrofolate cyclohydrolase activity. MTHFD2 requires either NADP or NAD as a cofactor for interconversion. Activity of these cofactors is affected by intracellular magnesium and phosphate concentrations. MTHFD2 functions as a homodimer and is localized to the mitochondria where it is expressed during the development of normal tissue.

REFERENCES

1. Shannon, K.W. and Rabinowitz, J.C. 1986. Purification and characterization of a mitochondrial isozyme of C1-tetrahydrofolate synthase from *Saccharomyces cerevisiae*. J. Biol. Chem. 261: 12266-12271.
2. Peri, K.G., et al. 1989. Nucleotide sequence of the human NAD-dependent methylene tetrahydrofolate dehydrogenase-cyclohydrolase. Nucleic Acids Res. 17: 8853.
3. Schild, D., et al. 1990. Cloning of three human multifunctional *de novo* purine biosynthetic genes by functional complementation of yeast mutations. Proc. Natl. Acad. Sci. USA 87: 2916-2920.

CHROMOSOMAL LOCATION

Genetic locus: MTHFD2 (human) mapping to 2p13.1.

SOURCE

MTHFD2 (243.1) is a mouse monoclonal antibody raised against recombinant MTHFD2 of human origin.

PRODUCT

Each vial contains 100 µg IgG_{2a} kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

APPLICATIONS

MTHFD2 (243.1) is recommended for detection of MTHFD2 of 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).

Suitable for use as control antibody for MTHFD2 siRNA (h): sc-75937, MTHFD2 shRNA Plasmid (h): sc-75937-SH and MTHFD2 shRNA (h) Lentiviral Particles: sc-75937-V.

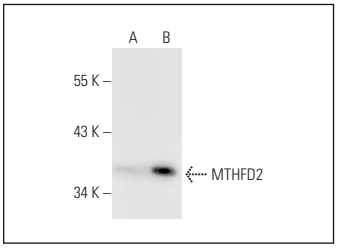
Molecular Weight of MTHFD2: 38 kDa.

Positive Controls: Hep G2 cell lysate: sc-2227 or MTHFD2 (h): 293T Lysate: sc-112798.

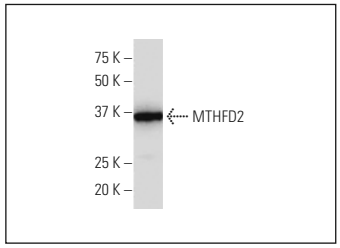
RECOMMENDED SUPPORT REAGENTS

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. 4) Immunohistochemistry: use m-IgGκ BP-HRP: sc-516102 with DAB, 50X: sc-24982 and Immunohistomount: sc-45086, or Organo/Limonene Mount: sc-45087.

DATA



MTHFD2 (243.1): sc-100750. Western blot analysis of MTHFD2 expression in non-transfected: sc-117752 (**A**) and human MTHFD2 transfected: sc-112798 (**B**) 293T whole cell lysates.



MTHFD2 (243.1): sc-100750. Western blot analysis of MTHFD2 expression in Hep G2 whole cell lysate.

SELECT PRODUCT CITATIONS

1. Lehtinen, L., et al. 2013. High-throughput RNAi screening for novel modulators of vimentin expression identifies MTHFD2 as a regulator of breast cancer cell migration and invasion. Oncotarget 4: 48-63.
2. Zhu, D., et al. 2015. *Chlamydophila psittaci*-negative ocular adnexal marginal zone lymphomas express self polyreactive B-cell receptors. Leukemia 29: 1587-1599.
3. Mo, J., et al. 2022. Targeting mitochondrial one-carbon enzyme MTHFD2 together with pemetrexed confers therapeutic advantages in lung adenocarcinoma. Cell Death Discov. 8: 307.

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 for detailed protocols and support products.