

# MTHFD2 (D-4): sc-515167

## 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

- Shannon, K.W., et al. 1986. Purification and characterization of a mitochondrial isozyme of C1-tetrahydrofolate synthase from *Saccharomyces cerevisiae*. J. Biol. Chem. 261: 12266-12271.
- Peri, K.G., et al. 1989. Nucleotide sequence of the human NAD-dependent methylene tetrahydrofolate dehydrogenase-cyclohydrolase. Nucleic Acids Res. 17: 8853.
- 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.
- Yang, X.M., et al. 1993. NAD-dependent methylenetetrahydrofolate dehydrogenase-methenyltetrahydrofolate cyclohydrolase is the mammalian homolog of the mitochondrial enzyme encoded by the yeast MIS1 gene. Biochemistry 32: 11118-11123.
- Di Pietro, E., et al. 2002. Mitochondrial NAD-dependent methylenetetrahydrofolate dehydrogenase-methenyltetrahydrofolate cyclohydrolase is essential for embryonic development. Mol. Cell. Biol. 22: 4158-4166.
- Online Mendelian Inheritance in Man, OMIM™. 2002. Johns Hopkins University, Baltimore, MD. MIM Number: 604887. World Wide Web URL: <http://www.ncbi.nlm.nih.gov/omim/>

## CHROMOSOMAL LOCATION

Genetic locus: MTHFD2 (human) mapping to 2p13.1; Mthfd2 (mouse) mapping to 6 C3.

## SOURCE

MTHFD2 (D-4) is a mouse monoclonal antibody specific for an epitope mapping between amino acids 132-156 within an internal region of MTHFD2 of human origin.

## PRODUCT

Each vial contains 200 µg IgG<sub>1</sub> kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

Blocking peptide available for competition studies, sc-515167 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% stabilizer protein).

## APPLICATIONS

MTHFD2 (D-4) is recommended for detection of MTHFD2 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 MTHFD2 siRNA (h): sc-75937, MTHFD2 siRNA (m): sc-75938, MTHFD2 shRNA Plasmid (h): sc-75937-SH, MTHFD2 shRNA Plasmid (m): sc-75938-SH, MTHFD2 shRNA (h) Lentiviral Particles: sc-75937-V and MTHFD2 shRNA (m) Lentiviral Particles: sc-75938-V.

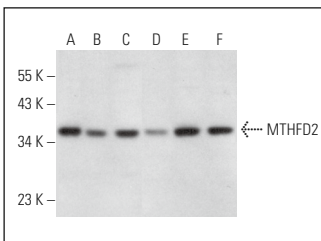
Molecular Weight of MTHFD2: 38 kDa.

Positive Controls: Hep G2 cell lysate: sc-2227, SW480 cell lysate: sc-2219 or MOLT-4 cell lysate: sc-2233.

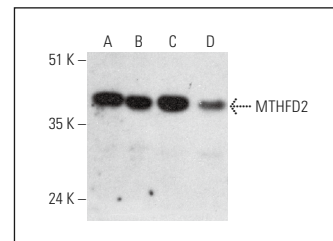
## RECOMMENDED SUPPORT REAGENTS

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



MTHFD2 (D-4): sc-515167. Western blot analysis of MTHFD2 expression in SW480 (A), HeLa (B), Hep G2 (C), U-937 (D), MOLT-4 (E) and A-431 (F) whole cell lysates.



MTHFD2 (D-4): sc-515167. Western blot analysis of MTHFD2 expression in HeLa (A), Hep G2 (B), NCI-H1299 (C) and U-937 (D) whole cell lysates.

## 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) for detailed protocols and support products.