

# MTHFD1L (D-7): sc-515706

## BACKGROUND

Methylenetetrahydrofolate dehydrogenase 1 (MTHFD1) is a 935-amino acid, folate-dependent protein that is responsible for the consecutive interconversion of tetrahydrofolate derivatives which drive the synthesis of purine, methionine and thymidylate. MTHFD1 functions as a homodimer consisting of two major domains; an N-terminal domain containing the dehydrogenase and cyclohydrolase activities and a larger synthetase domain in the C-terminus. Mutations in the MTHFD1 gene in pregnant women are associated with an increased risk of giving birth to a child with a neural tube defect, along with a possible risk of decreased embryo survival. MTHFD1L (methylenetetrahydrofolate dehydrogenase 1-like) is a 978 amino acid mitochondrial protein that is expressed in a variety of tissues and, like MTHFD1, functions in folate metabolism via the tetrahydrofolate pathway. MTHFD1L exists as two isoforms and may be associated with colorectal carcinogenesis, possibly conferring a growth advantage to cancer-transformed cells.

## REFERENCES

1. Online Mendelian Inheritance in Man, OMIM™. 2002. Johns Hopkins University, Baltimore, MD. MIM Number: 611427. World Wide Web URL: <http://www.ncbi.nlm.nih.gov/omim/>
2. Prasannan, P., et al. 2003. Human mitochondrial C1-tetrahydrofolate synthase: gene structure, tissue distribution of the mRNA, and immunolocalization in Chinese hamster ovary calls. *J. Biol. Chem.* 278: 43178-43187.
3. Sugiura, T., et al. 2004. A novel mitochondrial C1-tetrahydrofolate synthetase is upregulated in human colon adenocarcinoma. *Biochem. Biophys. Res. Commun.* 315: 204-211.
4. Krajcinovic, M., et al. 2004. Role of polymorphisms in MTHFR and MTHFD1 genes in the outcome of childhood acute lymphoblastic leukemia. *Pharmacogenomics J.* 4: 66-72.
5. Walkup, A.S. and Appling, D.R. 2005. Enzymatic characterization of human mitochondrial C1-tetrahydrofolate synthase. *Arch. Biochem. Biophys.* 442: 196-205.
6. Christensen, K.E., et al. 2005. Disruption of the *methfd1* gene reveals a monofunctional 10-formyltetrahydrofolate synthetase in mammalian mitochondria. *J. Biol. Chem.* 280: 7597-7602.
7. Anthony, T.E. and Heintz, N. 2007. The folate metabolic enzyme ALDH1L1 is restricted to the midline of the early CNS, suggesting a role in human neural tube defects. *J. Comp. Neurol.* 500: 368-383.

## CHROMOSOMAL LOCATION

Genetic locus: MTHFD1L (human) mapping to 6q25.1.

## SOURCE

MTHFD1L (D-7) is a mouse monoclonal antibody raised against amino acids 73-178 mapping near the N-terminus of MTHFD1L 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.

## APPLICATIONS

MTHFD1L (D-7) is recommended for detection of MTHFD1L of 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 MTHFD1L siRNA (h): sc-106259, MTHFD1L shRNA Plasmid (h): sc-106259-SH and MTHFD1L shRNA (h) Lentiviral Particles: sc-106259-V.

Molecular Weight of MTHFD1L: 110 kDa.

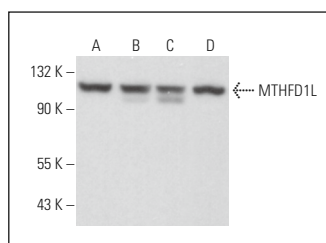
Positive Controls: HeLa whole cell lysate: sc-2200, Hep G2 cell lysate: sc-2227 or Jurkat whole cell lysate: sc-2204.

## RECOMMENDED SUPPORT REAGENTS

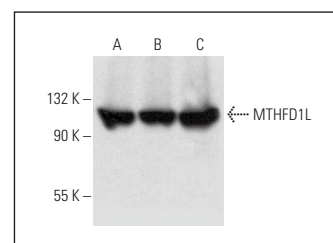
To ensure optimal results, the following support reagents are recommended:

- 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



MTHFD1L (D-7): sc-515706. Western blot analysis of MTHFD1L expression in Hep G2 (A), SUP-T1 (B), ALL-SIL (C) and JAR (D) whole cell lysates.



MTHFD1L (D-7): sc-515706. Western blot analysis of MTHFD1L expression in HeLa (A), Hep G2 (B) and Jurkat (C) whole cell lysates.

## SELECT PRODUCT CITATIONS

1. Fischl, H., et al. 2019. hnRNPC regulates cancer-specific alternative cleavage and polyadenylation profiles. *Nucleic Acids Res.* 47: 7580-7591.

## 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.