

MTHFD2 (A-2): sc-390708

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 methylenetetrahydrofolate 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.

CHROMOSOMAL LOCATION

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

SOURCE

MTHFD2 (A-2) is a mouse monoclonal antibody raised against amino acids 197-350 mapping at the C-terminus of MTHFD2 of human origin.

PRODUCT

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

MTHFD2 (A-2) is available conjugated to agarose (sc-390708 AC), 500 µg/0.25 ml agarose in 1 ml, for IP; to HRP (sc-390708 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-390708 PE), fluorescein (sc-390708 FITC), Alexa Fluor® 488 (sc-390708 AF488), Alexa Fluor® 546 (sc-390708 AF546), Alexa Fluor® 594 (sc-390708 AF594) or Alexa Fluor® 647 (sc-390708 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-390708 AF680) or Alexa Fluor® 790 (sc-390708 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

STORAGE

Store at 4° C, **DO NOT FREEZE**. Stable for one year from the date of shipment. Non-hazardous. No MSDS required.

APPLICATIONS

MTHFD2 (A-2) 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.

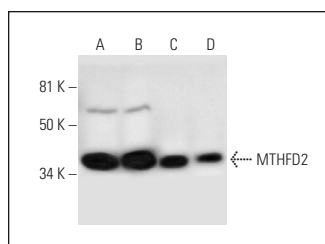
Molecular Weight of MTHFD2: 38 kDa.

Positive Controls: Hep G2 cell lysate: sc-2227, SW480 cell lysate: sc-2219 or U-937 cell lysate: sc-2239.

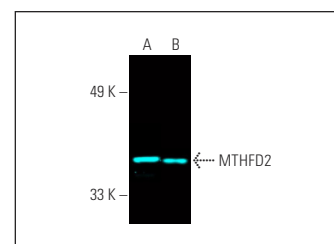
RECOMMENDED SUPPORT REAGENTS

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 (A-2): sc-390708. Western blot analysis of MTHFD2 expression in Hep G2 (A), HeLa (B), SW480 (C) and U-937 (D) whole cell lysates.



MTHFD2 (A-2) Alexa Fluor® 647: sc-390708 AF647. Direct fluorescent western blot analysis of MTHFD2 expression in MOLT-4 (A) and SW480 (B) whole cell lysates. Blocked with UltraCruz® Blocking Reagent: sc-516214.

SELECT PRODUCT CITATIONS

1. Wan, X., et al. 2020. Cisplatin inhibits SIRT3-deacetylation MTHFD2 to disturb cellular redox balance in colorectal cancer cell. *Cell Death Dis.* 11: 649.
2. Li, G., et al. 2021. p53 deficiency induces MTHFD2 transcription to promote cell proliferation and restrain DNA damage. *Proc. Natl. Acad. Sci. USA* 118: e2019822118.
3. Pällmann, N., et al. 2021. Stress-mediated reprogramming of prostate cancer one-carbon cycle drives disease progression. *Cancer Res.* 81: 4066-4078.
4. Zhang, W.C., et al. 2022. MicroRNA-21 guide and passenger strand regulation of adenylosuccinate lyase-mediated purine metabolism promotes transition to an EGFR-TKI-tolerant persister state. *Cancer Gene Ther.* E-published.

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.

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