



MTHFD2 siRNA (m): sc-75938

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

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- 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.
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CHROMOSOMAL LOCATION

Genetic locus: Cnot2 (mouse) mapping to 10 D2.

PRODUCT

MTHFD2 siRNA (m) is a pool of 3 target-specific 19-25 nt siRNAs designed to knock down gene expression. Each vial contains 3.3 nmol of lyophilized siRNA, sufficient for a 10 μ M solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see MTHFD2 shRNA Plasmid (m): sc-75938-SH and MTHFD2 shRNA (m) Lentiviral Particles: sc-75938-V as alternate gene silencing products.

For independent verification of MTHFD2 (m) gene silencing results, we also provide the individual siRNA duplex components. Each is available as 3.3 nmol of lyophilized siRNA. These include: sc-75938A, sc-75938B and sc-75938C.

RESEARCH USE

For research use only, not for use in diagnostic procedures.

STORAGE AND RESUSPENSION

Store lyophilized siRNA duplex at -20° C with desiccant. Stable for at least one year from the date of shipment. Once resuspended, store at -20° C, avoid contact with RNases and repeated freeze thaw cycles.

Resuspend lyophilized siRNA duplex in 330 μ l of the RNase-free water provided. Resuspension of the siRNA duplex in 330 μ l of RNase-free water makes a 10 μ M solution in a 10 μ M Tris-HCl, pH 8.0, 20 mM NaCl, 1 mM EDTA buffered solution.

APPLICATIONS

MTHFD2 siRNA (m) is recommended for the inhibition of MTHFD2 expression in mouse cells.

SUPPORT REAGENTS

For optimal siRNA transfection efficiency, Santa Cruz Biotechnology's siRNA Transfection Reagent: sc-29528 (0.3 ml), siRNA Transfection Medium: sc-36868 (20 ml) and siRNA Dilution Buffer: sc-29527 (1.5 ml) are recommended. Control siRNAs or Fluorescein Conjugated Control siRNAs are available as 10 μ M in 66 μ l. Each contain a scrambled sequence that will not lead to the specific degradation of any known cellular mRNA. Fluorescein Conjugated Control siRNAs include: sc-36869, sc-44239, sc-44240 and sc-44241. Control siRNAs include: sc-37007, sc-44230, sc-44231, sc-44232, sc-44233, sc-44234, sc-44235, sc-44236, sc-44237 and sc-44238.

RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor MTHFD2 gene expression knockdown using RT-PCR Primer: MTHFD2 (m)-PR: sc-75938-PR (20 μ l). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

PROTOCOLS

See our web site at www.scbt.com for detailed protocols and support products.