

# MTH1 (E-2): sc-374011

## BACKGROUND

MTH1, also known as NUDT1 (nudix (nucleoside diphosphate linked moiety X)-type motif 1), is a 179 amino acid cytoplasmic protein that is a member of the nudix hydrolase family. Highly expressed in testis, thymus and proliferating blood lymphocytes, MTH1 functions as an antimutagenic that hydrolyzes oxidized purine nucleoside triphosphates to their corresponding monophosphates. Through its ability to enzymatically hydrolyze ATP and GTP to AMP and GMP, respectively, MTH1 prevents misincorporation of GTP into DNA, thus preventing A:T to C:G transversions. The cytoplasmic location of MTH1, along with its antimutagenic capabilities, suggests that it may also be involved in the sanitization of nucleotide pools for both mitochondrial and nuclear genomes. Four isoforms of MTH1 exist—three of which are formed due to alternative splicing events and one of which is formed via a single-nucleotide polymorphism. Overexpression of MTH1 is implicated in prostate and cell lung carcinomas.

## REFERENCES

1. Furuichi, M., et al. 1994. Genomic structure and chromosome location of the human mutT homologue gene MTH1 encoding 8-oxo-dGTPase for prevention of A:T to C:G transversion. *Genomics* 24: 485-490.
2. Takama, F., et al. 2000. Mutation analysis of the hMTH1 gene in sporadic human ovarian cancer. *Int. J. Oncol.* 17: 467-471.
3. Kennedy, C.H., et al. 2003. Expression of human MutT homologue (hMTH1) protein in primary non-small-cell lung carcinomas and histologically normal surrounding tissue. *Free Radic. Biol. Med.* 34: 1447-1457.
4. Kajitani, K., et al. 2006. MTH1, an oxidized purine nucleoside triphosphatase, suppresses the accumulation of oxidative damage of nucleic acids in the hippocampal microglia during kainate-induced excitotoxicity. *J. Neurosci.* 26: 1688-1698.
5. Sakai, Y., et al. 2006. The GT to GC single nucleotide polymorphism at the beginning of an alternative exon 2C of human MTH1 gene confers an amino terminal extension that functions as a mitochondrial targeting signal. *J. Mol. Med.* 84: 660-670.

## CHROMOSOMAL LOCATION

Genetic locus: Nudt1 (mouse) mapping to 5 G2.

## SOURCE

MTH1 (E-2) is a mouse monoclonal antibody specific for an epitope mapping between amino acids 87-117 within an internal region of MTH1 of mouse origin.

## PRODUCT

Each vial contains 200 µg IgG<sub>2a</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-374011 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% stabilizer protein).

## APPLICATIONS

MTH1 (E-2) is recommended for detection of MTH1 of mouse and rat 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 MTH1 siRNA (m): sc-62648, MTH1 shRNA Plasmid (m): sc-62648-SH and MTH1 shRNA (m) Lentiviral Particles: sc-62648-V.

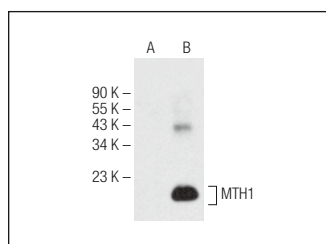
Molecular Weight of MTH1: 18 kDa.

Positive Controls: MTH1 (m): 293T Lysate: sc-121835.

## 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



MTH1 (E-2): sc-374011. Western blot analysis of MTH1 expression in non-transfected: sc-117752 (A) and mouse MTH1 transfected: sc-121835 (B) 293T 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.