

# THTR1 (R-5): sc-100649

## BACKGROUND

Humans lack biosynthesis pathways for the micronutrients thiamine and folate; however, regulation of these vitamins is necessary for normal cellular function. The SLC19A gene family products mediate membrane transport of these molecules across the membrane to meet cellular requirements; in particular, two transporter proteins differentially import and export thiamine. In the liver as well as other tissues, THTR1 is responsible for the cellular accumulation, that is the import, of thiamine. Uptake depends on many factors, including sodium levels, pH, saturation of thiamine, presence of structural analogues such as oxythiamin and amprolium, as well as membrane transport inhibitors like amiloride. The gene encoding THTR1, SLC19A2, is regulated by GKLf, NF-1 and SP-1. Mutations of the SLC19A2 gene cause thiamine deficiency disorders such as thiamine-responsive megaloblastic anemia (TRMA) by interfering with either the functionality or intracellular targeting of THTR1.

## REFERENCES

1. Boulware, M.J., et al. 2003. Polarized expression of members of the solute carrier SLC192 gene family of water-soluble multivitamin transporters: implications for physiological function. *Biochem. J.* 376: 43-48.
2. Subramanian, V.S., et al. 2003. Cell biology of the human thiamine transporter-1 (hTHTR1). Intracellular trafficking and membrane targeting mechanisms. *J. Biol. Chem.* 278: 3976-3984.
3. Said, H.M., et al. 2003. Cellular and molecular aspects of thiamin uptake by human liver cells: studies with cultured Hep G2 cells. *Biochim. Biophys. Acta* 1567: 106-112.
4. Reidling, J.C., et al. 2003. *In vitro* and *in vivo* characterization of the minimal promoter region of human thiamine transporter SLC19A2. *Am. J. Physiol. Cell Physiol.* 285: 633-641.
5. Baron, D., et al. 2003. Disruption of transport activity in a D93H mutant thiamine transporter 1, from a Rogers syndrome family. *Eur. J. Biochem.* 270: 4469-4477.
6. Oyewumi, M.O., et al. 2003. Specific association of thiamine-coated gadolinium nanoparticles with human breast cancer cells expressing thiamine transporters. *Bioconjug. Chem.* 14: 404-411.
7. Liu, X.Y., et al. 2003. Restoration of high-level transport activity by human reduced folate carrier/THTR1 thiamine transporter chimaeras: role of the transmembrane domain 6/7 linker region in reduced folate carrier function. *Biochem. J.* 369: 31-37.

## CHROMOSOMAL LOCATION

Genetic locus: SLC19A2 (human) mapping to 1q24.2.

## SOURCE

THTR1 (R-5) is a mouse monoclonal antibody raised against recombinant THTR1 of human origin.

## RESEARCH USE

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

## PRODUCT

Each vial contains 100 µg IgG<sub>2a</sub> kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

## APPLICATIONS

THTR1 (R-5) is recommended for detection of THTR1 of human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)] and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

Suitable for use as control antibody for THTR1 siRNA (h): sc-106612, THTR1 shRNA Plasmid (h): sc-106612-SH and THTR1 shRNA (h) Lentiviral Particles: sc-106612-V.

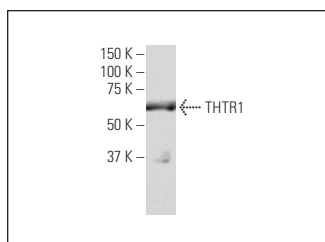
Molecular Weight of THTR1: 56 kDa.

Positive Controls: Hep G2 cell lysate: sc-2227, HL-60 whole cell lysate: sc-2209 or A-431 whole cell lysate: sc-2201.

## 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).

## DATA



THTR1 (R-5): sc-100649. Western blot analysis of THTR1 expression in A-431 whole cell lysate.

## SELECT PRODUCT CITATIONS

1. de Moraes, R.C.M., et al. 2020. Oral benfotiamine reverts cognitive deficit and increase thiamine diphosphate levels in the brain of a rat model of neurodegeneration. *Exp. Gerontol.* 141: 111097.

## STORAGE

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

## PROTOCOLS

See our web site at [www.scbt.com](http://www.scbt.com) for detailed protocols and support products.