

# TS (SPM453): sc-56492

## BACKGROUND

Thymidylate synthase (TS), also designated TYMS, TMS, TSase and HsT422, uses 5,10-methylenetetrahydrofolate (methylene-THF) as a cofactor in the synthesis of 2'-deoxythymidine-5'-monophosphate (dTMP), an essential precursor for DNA biosynthesis. TS is an RNA-binding protein that can interact with its own mRNA. The TS/mRNA ribonucleoprotein complex can also associate with a number of other cellular mRNAs, including those corresponding to the p53 tumor suppressor gene and the Myc family of transcription factors. Inhibition of DNA replication and cell death resulting from thymidine depletion occurs when TS enzyme activity is inhibited with substrate or cofactor analogs, making the TS enzyme an important target for chemotherapy. Cancer cells are sensitive to thymidine depletion, as they multiply rapidly.

## REFERENCES

- Hardy, L.W., et al. 1987. Atomic structure of thymidylate synthase: target for rational drug design. *Science* 235: 448-455.
- Ross, P., et al. 1990. Cloning and characterization of the thymidylate synthase gene from *Lactococcus lactis subsp. lactis*. *Appl. Environ. Microbiol.* 56: 2156-2163.
- Kaneda, S., et al. 1990. Structural and functional analysis of the human thymidylate synthase gene. *J. Biol. Chem.* 265: 20277-20284.
- Horikoshi, T., et al. 1992. Quantitation of thymidylate synthase, dihydrofolate reductase and DT-diaphorase gene expression in human tumors using the polymerase chain reaction. *Cancer Res.* 52: 108-116.
- Johnston, P.G., et al. 1995. Thymidylate synthase gene and protein expression correlate and are associated with response to 5-fluorouracil in human colorectal and gastric tumors. *Cancer Res.* 55: 1407-1412.
- Johnston, P.G., et al. 1995. The role of thymidylate synthase expression in prognosis and outcome of adjuvant chemotherapy in patients with rectal cancer. *J. Clin. Oncol.* 12: 2640-2647.

## CHROMOSOMAL LOCATION

Genetic locus: TYMS (human) mapping to 18p11.32; Tmys (mouse) mapping to 5 B1.

## SOURCE

TS (SPM453) is a mouse monoclonal antibody raised against recombinant TS enzyme 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.

## 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.

## APPLICATIONS

TS (SPM453) is recommended for detection of TS of mouse, rat and 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)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500), immunohistochemistry (including paraffin-embedded sections) (starting dilution 1:50, dilution range 1:50-1:500) and flow cytometry (1 µg per 1 x 10<sup>6</sup> cells).

Suitable for use as control antibody for TS siRNA (h): sc-44978, TS siRNA (m): sc-44979, TS shRNA Plasmid (h): sc-44978-SH, TS shRNA Plasmid (m): sc-44979-SH, TS shRNA (h) Lentiviral Particles: sc-44978-V and TS shRNA (m) Lentiviral Particles: sc-44979-V.

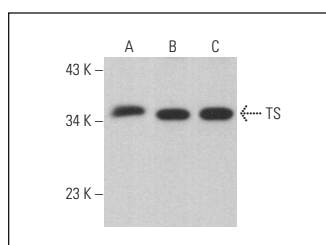
Molecular Weight of TS: 36 kDa.

Positive Controls: TS (h): 293T Lysate: sc-170183, HeLa whole cell lysate: sc-2200 or NIH/3T3 whole cell lysate: sc-2210.

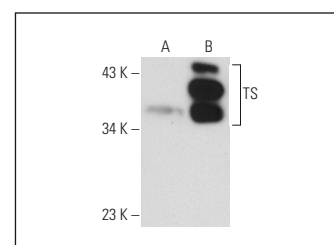
## RECOMMENDED SUPPORT REAGENTS

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, TBS Blotto A Blocking Reagent: sc-2333 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



TS (SPM453): sc-56492. Western blot analysis of TS expression in HeLa (A), NIH/3T3 (B) and 3T3-L1 (C) whole cell lysates.



TS (SPM453): sc-56492. Western blot analysis of TS expression in non-transfected: sc-117752 (A) and human TS transfected: sc-170183 (B) 293T whole cell lysates.

## PROTOCOLS

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