

**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.

**CHROMOSOMAL LOCATION**

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

**SOURCE**

TS (C-5) is a mouse monoclonal antibody raised against amino acids 49-313 mapping at the C-terminus of TS of human 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.

TS (C-5) is available conjugated to agarose (sc-390945 AC), 500 µg/0.25 ml agarose in 1 ml, for IP; to HRP (sc-390945 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-390945 PE), fluorescein (sc-390945 FITC), Alexa Fluor® 488 (sc-390945 AF488), Alexa Fluor® 546 (sc-390945 AF546), Alexa Fluor® 594 (sc-390945 AF594) or Alexa Fluor® 647 (sc-390945 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-390945 AF680) or Alexa Fluor® 790 (sc-390945 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

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**APPLICATIONS**

TS (C-5) is recommended for detection of TS 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), immunohistochemistry (including paraffin-embedded sections) (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

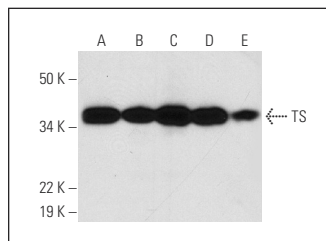
Suitable for use as control antibody for TS siRNA (h): sc-44978, TS siRNA (m): sc-44979, TS shRNA Plasmid (h): sc-44978-SH, TS shRNA Plasmid (m): sc-44979-SH, TS shRNA (h) Lentiviral Particles: sc-44978-V and TS shRNA (m) Lentiviral Particles: sc-44979-V.

Molecular Weight of TS: 36 kDa.

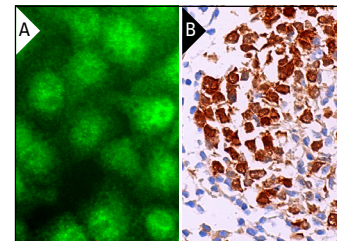
Positive Controls: HeLa whole cell lysate: sc-2200, Jurkat whole cell lysate: sc-2204 or IMR-32 cell lysate: sc-2409.

**STORAGE**

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

**DATA**

TS (C-5): sc-390945. Western blot analysis of TS expression in HeLa (A), HL-60 (B), Jurkat (C), IMR-32 (D) and SH-SY5Y (E) whole cell lysates.



TS (C-5): sc-390945. Immunofluorescence staining of formalin-fixed HeLa cells showing nuclear and cytoplasmic localization (A). Immunoperoxidase staining of formalin fixed, paraffin-embedded human lymph node tissue showing nuclear and cytoplasmic staining of cells in germinal center (B).

**SELECT PRODUCT CITATIONS**

- Chen, L., et al. 2019. NADPH production by the oxidative pentose-phosphate pathway supports folate metabolism. *Nat. Metab.* 1: 404-415.
- Zurlo, G., et al. 2019. Prolyl hydroxylase substrate adenylosuccinate lyase is an oncogenic driver in triple negative breast cancer. *Nat. Commun.* 10: 5177.
- Liu, T., et al. 2019. MYC predetermines the sensitivity of gastrointestinal cancer to antifolate drugs through regulating TYMS transcription. *EBioMedicine* 48: 289-300.
- Regmi, P., et al. 2020. SAHA overcomes 5-FU resistance in IFIT2-depleted oral squamous cell carcinoma cells. *Cancers* 12: 3527.
- Gu, X., et al. 2021. Decitabine- and 5-azacytidine resistance emerges from adaptive responses of the pyrimidine metabolism network. *Leukemia* 35: 1023-1036.
- Winska, P., et al. 2023. Phosphorylation of thymidylate synthase and dihydrofolate reductase in cancer cells and the effect of CK2α silencing. *Int. J. Mol. Sci.* 24: 3023.

**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.