SANTA CRUZ BIOTECHNOLOGY, INC.

TS (TS 106): sc-33679

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

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 (TS 106) is a mouse monoclonal antibody raised against recombinant Thymidylate Synthase of human origin.

PRODUCT

Each vial contains 200 µg IgG_1 kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

TS (TS 106) is available conjugated to agarose (sc-33679 AC), 500 µg/0.25 ml agarose in 1 ml, for IP; to HRP (sc-33679 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-33679 PE), fluorescein (sc-33679 FITC), Alexa Fluor® 488 (sc-33679 AF488), Alexa Fluor® 546 (sc-33679 AF546), Alexa Fluor® 594 (sc-33679 AF594) or Alexa Fluor® 647 (sc-33679 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-33679 AF680) or Alexa Fluor® 790 (sc-33679 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

APPLICATIONS

TS (TS 106) 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 10^6 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.

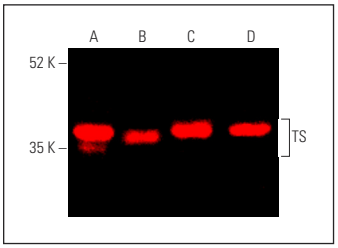
Molecular Weight of TS: 36 kDa.

Positive Controls: U-2 OS cell lysate: sc-2295, HeLa whole cell lysate: sc-2200 or U-698-M whole cell lysate: sc-364799.

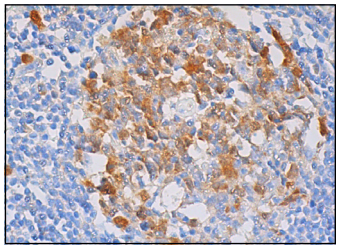
STORAGE

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

DATA



TS (TS 106): sc-33679. Near-Infrared western blot analysis of TS expression in CCRF-CEM (**A**), U-2 OS (**B**), U-698-M (**C**) and HeLa (**D**) whole cell lysates. Blocked with UltraCruz® Blocking Reagent: sc-516214. Detection reagent used: m-IgG_1 BP-CFL 790: sc-533666.



TS (TS 106): sc-33679. Immunoperoxidase staining of formalin fixed, paraffin-embedded human lymph node tissue showing cytoplasmic staining of cells in germinal center.

SELECT PRODUCT CITATIONS

1. Boni, V., et al. 2010. miR-192/miR-215 influence 5-fluorouracil resistance through cell cycle-mediated mechanisms complementary to its post-transcriptional thymidilate synthase regulation. Mol. Cancer Ther. 9: 2265-2275.
2. Martinez Molina, D., et al. 2013. Monitoring drug target engagement in cells and tissues using the cellular thermal shift assay. Science 341: 84-87.
3. Gu, W., et al. 2014. Reversal effect of bufalin on multidrug resistance in human hepatocellular carcinoma BEL-7402/5-FU cells. Oncol. Rep. 31: 216-222.
4. Williams, M., et al. 2015. miR-193a-3p is a potential tumor suppressor in malignant pleural mesothelioma. Oncotarget 6: 23480-23495.
5. Jiang, B., et al. 2016. B7-H3 increases thymidylate synthase expression via the PI3k-Akt pathway. Tumour Biol. 37: 9465-9472.
6. Tung, C.L., et al. 2017. Salinomycin acts through reducing Akt-dependent thymidylate synthase expression to enhance erlotinib-induced cytotoxicity in human lung cancer cells. Exp. Cell Res. 357: 59-66.
7. Mynhardt, C., et al. 2018. Metformin-induced alterations in nucleotide metabolism cause 5-fluorouracil resistance but gemcitabine susceptibility in oesophageal squamous cell carcinoma. J. Cell. Biochem. 119: 1193-1203.
8. Ko, J.C., et al. 2020. Nitroglycerin enhances cisplatin-induced cytotoxicity via Akt inactivation and thymidylate synthase downregulation in human lung cancer cells. Pharmacology 105: 209-224.
9. Rather, G.M., et al. 2021. Anti-tumor effects of a penetratin peptide targeting transcription of E2F-1, 2 and 3a is enhanced when used in combination with pemetrexed or cisplatin. Cancers 13: 972.
9. Spizzichino, S., et al. 2022. Cytosolic localization and *in vitro* assembly of human *de novo* thymidylate synthesis complex. FEBS J. 289: 1625-1649.

RESEARCH USE

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