SANTA CRUZ BIOTECHNOLOGY, INC.

TRMT1 (G-3): sc-373687

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

BACKGROUND

Transfer RNA (tRNA) modifications help regulate the efficiency of mRNA translation by maintaining the correct reading frames. N^2,N^2-dimethylguanosine tRNA methyltransferase, also known as TRMT1 or tRNA(guanine-26,N^2-N^2) methyltransferase, is a 659 amino acid enzyme that is responsible for tRNA modifications in eukaryotes. Using S-adenosyl-L-methionine as a methyl donor, TRMT1 dimethylates a single guanine residue at position 26 of tRNA. TRMT1, which was initially identified in yeast and *C. elegans*, has a 26% and 31% sequence identity to its yeast and *C. elegans* homologs, respectively. There are two isoforms of TRMT1 produced by alternative splicing events. The TRMT1 gene maps to chromosome 19p13.2 and mutations in this gene lead to abrogated enzyme activity and a decrease in protein levels.

REFERENCES

1. Edqvist, J., et al. 1995. Enzymatic formation of N^2,N^2-dimethylguanosine in eukaryotic tRNA: importance of the tRNA architecture. Biochimie 77: 54-61.
2. Constantinesco, F., et al. 1998. The tRNA(guanine-26,N^2-N^2) methyltransferase (Trm1) from the hyperthermophilic archaeon *Pyrococcus furiosus:* cloning, sequencing of the gene and its expression in *Escherichia coli.* Nucleic Acids Res. 26: 3753-3761.
3. Liu, J., et al. 1998. Point and deletion mutations eliminate one or both methyl group transfers catalysed by the yeast TRM1 encoded tRNA (m22G26)dimethyltransferase. Nucleic Acids Res. 26: 5102-5108.

CHROMOSOMAL LOCATION

Genetic locus: TRMT1 (human) mapping to 19p13.2; Trmt1 (mouse) mapping to 8 C3.

SOURCE

TRMT1 (G-3) is a mouse monoclonal antibody specific for an epitope mapping between amino acids 201-229 within an internal region of TRMT1 of human origin.

PRODUCT

Each vial contains 200 µg IgG_{2a} kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

TRMT1 (G-3) is available conjugated to agarose (sc-373687 AC), 500 µg/ 0.25 ml agarose in 1 ml, for IP; to HRP (sc-373687 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-373687 PE), fluorescein (sc-373687 FITC), Alexa Fluor® 488 (sc-373687 AF488), Alexa Fluor® 546 (sc-373687 AF546), Alexa Fluor® 594 (sc-373687 AF594) or Alexa Fluor® 647 (sc-373687 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-373687 AF680) or Alexa Fluor® 790 (sc-373687 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

Blocking peptide available for competition studies, sc-373687 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% stabilizer protein).

APPLICATIONS

TRMT1 (G-3) is recommended for detection of TRMT1 isoforms 1 and 2 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).

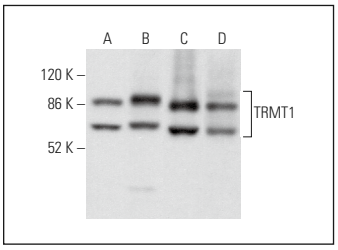
TRMT1 (G-3) is also recommended for detection of TRMT1 isoforms 1 and 2 in additional species, including bovine and porcine.

Suitable for use as control antibody for TRMT1 siRNA (h): sc-97846, TRMT1 siRNA (m): sc-154683, TRMT1 shRNA Plasmid (h): sc-97846-SH, TRMT1 shRNA Plasmid (m): sc-154683-SH, TRMT1 shRNA (h) Lentiviral Particles: sc-97846-V and TRMT1 shRNA (m) Lentiviral Particles: sc-154683-V.

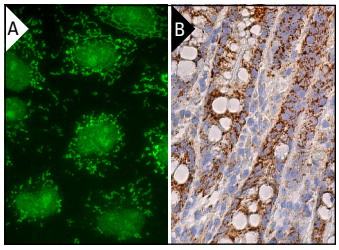
Molecular Weight of TRMT1: 72 kDa.

Positive Controls: PC-3 cell lysate: sc-2220, JAR cell lysate: sc-2276 or MM-142 cell lysate: sc-2246.

DATA



TRMT1 (G-3): sc-373687. Western blot analysis of TRMT1 expression in JAR (**A**), PC-3 (**B**) and MM-142 (**C**) whole cell lysates and rat thymus tissue extract (**D**).



TRMT1 (G-3): sc-373687. Immunofluorescence staining of methanol-fixed HeLa cells showing mitrochondrial and nuclear localization (**A**). Immunoperoxidase staining of formalin fixed, paraffin-embedded human small intestine tissue showing cytoplasmic staining of glandular cells (**B**).

SELECT PRODUCT CITATIONS

1. Dewe, J.M., et al. 2017. TRMT1-catalyzed tRNA modifications are required for redox homeostasis to ensure proper cellular proliferation and oxidative stress survival. Mol. Cell. Biol. 37: e00214-17.
2. Perez, M., et al. 2022. Conditional covalent lethality driven by oncometabolite accumulation. ACS Chem. Biol. 17: 2789-2800.
3. Zhang, K., et al. 2024. Proteolytic cleavage and inactivation of the TRMT1 tRNA modification enzyme by SARS-CoV-2 main protease. Elife 12: RP90316.

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.