SANTA CRUZ BIOTECHNOLOGY, INC.

TNP2 (B-2): sc-393843

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

BACKGROUND

During mammalian spermiogenesis, histones are transiently replaced by several low molecular weight proteins called transition proteins (TNPs). Transition proteins facilitate chromatin transformation from the nucleosome structure to the nucleoprotamine structure during spermatid differentiation. Transition protein-2, also known as TNP2, and TP2, maps to human chromosome 16p13.13 and encodes a highly basic nuclear protein. TNP2 is a spermatid-specific product of the haploid genome which replaces histone and is itself replaced in the mature sperm by the protamines. TNP2 is not a critical factor for shaping of the sperm nucleus, histone displacement, initiation of chromatin condensation, binding of protamines to DNA, or fertility. However, TNP2 is necessary for maintaining the normal processing of protamine 2 and, consequently, the completion of chromatin condensation. If TNP1 is missing, TNP2 may partially compensate for TNP1, but this dysregulation of nucleoprotein replacement results in an abnormal pattern of chromatin condensation and in reduced fertility.

REFERENCES

1. Nelson, J. and Krawetz, S. 1993. Linkage of human spermatid-specific basic nuclear protein genes. Definition and evolution of the P1→P2→TP2 locus. J. Biol. Chem. 268: 2932-2936.
2. Online Mendelian Inheritance in Man, OMIM™. 1999. Johns Hopkins University, Baltimore, MD. MIM Number: 190232. World Wide Web URL: http://www.ncbi.nlm.nih.gov/omim/

CHROMOSOMAL LOCATION

Genetic locus: Tnp2 (mouse) mapping to 16 A1.

SOURCE

TNP2 (B-2) is a mouse monoclonal antibody specific for an epitope mapping between amino acids 61-84 within an internal region of TNP2 of rat 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.

TNP2 (B-2) is available conjugated to agarose (sc-393843 AC), 500 µg/0.25 ml agarose in 1 ml, for IP; to HRP (sc-393843 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-393843 PE), fluorescein (sc-393843 FITC), Alexa Fluor® 488 (sc-393843 AF488), Alexa Fluor® 546 (sc-393843 AF546), Alexa Fluor® 594 (sc-393843 AF594) or Alexa Fluor® 647 (sc-393843 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-393843 AF680) or Alexa Fluor® 790 (sc-393843 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

Blocking peptide available for competition studies, sc-393843 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% stabilizer protein).

RESEARCH USE

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

APPLICATIONS

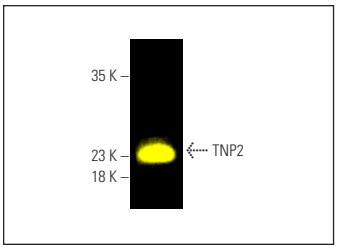
TNP2 (B-2) is recommended for detection of TNP2 of mouse and rat origin by Western Blotting (starting dilution 1:100, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500), 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 TNP2 siRNA (m): sc-41067, TNP2 shRNA Plasmid (m): sc-41067-SH and TNP2 shRNA (m) Lentiviral Particles: sc-41067-V.

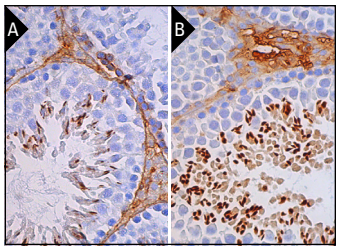
Molecular Weight of TNP2: 13 kDa.

Positive Controls: rat testis extract: sc-2400.

DATA



TNP2 (B-2): sc-393843. Fluorescent western blot analysis of TNP2 expression in rat testis tissue extract. Blocked with UltraCruz® Blocking Reagent: sc-516214. Detection reagent used: m-IgGκ BP-CFL 488: sc-516176.



TNP2 (B-2): sc-393843. Immunoperoxidase staining of formalin fixed, paraffin-embedded mouse testis (**A**) and rat testis (**B**) tissue showing nuclear staining of spermatids.

SELECT PRODUCT CITATIONS

1. Kim, C,R., et al. 2020. PHF7 modulates BRDT stability and histone-to-protamine exchange during spermiogenesis. Cell Rep. 32: 107950.
2. Merges, G.E., et al. 2022. Loss of Prm1 leads to defective chromatin protamination, impaired PRM2 processing, reduced sperm motility and subfertility in male mice. Development 149: dev200330.
3. Xia, K., et al. 2022. AAV-mediated gene therapy produces fertile offspring in the Lhcgr-deficient mouse model of Leydig cell failure. Cell Rep. Med. 3: 100792.
4. Tan, H., et al. 2023. Single-cell RNA-seq uncovers dynamic processes orchestrated by RNA-binding protein DDX43 in chromatin remodeling during spermiogenesis. Nat. Commun. 14: 2499.
5. Zhang, S., et al. 2024. AAV-mediated gene therapy restores natural fertility and improves physical function in the Lhcgr-deficient mouse model of Leydig cell failure. Cell Prolif. 30: e13680.

STORAGE

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