

# TNAP (3H415): sc-73524

## BACKGROUND

Alkaline phosphatases (AP) are glycosyl-phosphatidylinositol (GPI)-anchored, dimeric, Zn<sup>2+</sup> metallated glycoproteins that catalyze the hydrolysis of phospho-monoesters into an inorganic phosphate and an alcohol. There are at least four distinct but related alkaline phosphatases: intestinal (IAP), placental (PLAP), placental-like (ALP-1 or GCAP) and tissue non-specific (TNAP). The first three are located together on chromosome 2 while the tissue non-specific form is located on chromosome 1. TNAP is widely expressed in liver, kidney, bone, stomach and colon, and is therefore referred to as the tissue non-specific form of AP. TNAP, in conjunction with plasma cell membrane glycoprotein-1, functions in bone mineralization; however, mice that lack a functional form of TNAP show normal skeletal development. This enzyme has been linked directly to a disorder known as hypophosphatasia, a rare inborn disorder that is characterized by defective bone mineralization and includes skeletal defects. The gene encoding human TNAP maps to chromosome 1p36.12.

## REFERENCES

- Shao, J.S., Engle, M., Xie, Q., Schmidt, R.E., Narisawa, S., Millan, J.L. and Alpers, D.H. 2000. Effect of tissue non-specific alkaline phosphatase in maintenance of structure of murine colon and stomach. *Microsc. Res. Tech.* 51: 121-128.
- Johnson, K.A., Hessle, L., Vaingankar, S., Wennberg, C., Mauro, S., Narisawa, S., Goding, J.W., Sano, K., Millan, J.L. and Terkeltaub, R. 2000. Osteoblast tissue-nonspecific alkaline phosphatase antagonizes and regulates PC-1. *Am. J. Physiol. Regul. Integr. Comp. Physiol.* 279: 1365-1377.
- Mornet, E., Stura, E., Lia-Baldini, A.S., Stigbrand, T., Menez, A. and Le Du, M.H. 2001. Structural evidence for a functional role of human tissue non-specific alkaline phosphatase in bone mineralization. *J. Biol. Chem.* 276: 31171-31178.
- Le Du, M.H. and Millan, J.L. 2002. Structural evidence of functional divergence in human alkaline phosphatases. *J. Biol. Chem.* 277: 49808-49814.
- Harada, T., Koyama, I., Kasahara, T., Alpers, D.H. and Komoda, T. 2002. Heat shock induces intestinal-type alkaline phosphatase in rat IEC-18 cells. *Am. J. Physiol. Gastrointest. Liver Physiol.* 284: 255-262.
- Hessle, L., Johnson, K.A., Anderson, H.C., Narisawa, S., Sali, A., Goding, J.W., Terkeltaub, R. and Millan, J.L. 2002. Tissue-nonspecific alkaline phosphatase and plasma cell membrane glycoprotein-1 are central antagonistic regulators of bone mineralization. *Proc. Natl. Acad. Sci. USA* 99: 9445-9449.

## CHROMOSOMAL LOCATION

Genetic locus: ALPL (human) mapping to 1p36.12.

## SOURCE

TNAP (3H415) is a mouse monoclonal antibody raised against 2102Ep human embryonal carcinoma cells, recognizes liver/bone/kidney isozyme of alkaline phosphatase.

## RESEARCH USE

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

## 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.

## APPLICATIONS

TNAP (3H415) is recommended for detection of TNAP of 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)] and flow cytometry (1 µg per 1 x 10<sup>6</sup> cells).

Suitable for use as control antibody for TNAP siRNA (h): sc-38921, TNAP shRNA Plasmid (h): sc-38921-SH and TNAP shRNA (h) Lentiviral Particles: sc-38921-V.

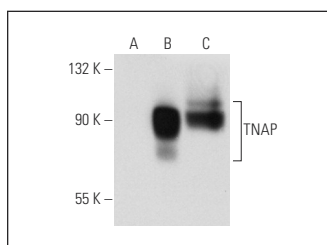
Molecular Weight of TNAP: 80 kDa.

Positive Controls: TNAP (h3): 293T Lysate: sc-112494 or NTERA-2 cl.D1 whole cell lysate: sc-364181.

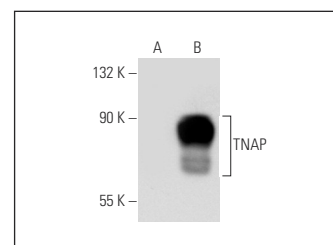
## RECOMMENDED SUPPORT REAGENTS

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, UltraCruz® Blocking Reagent: sc-516214 and Western Blotting Luminol Reagent: sc-2048. 2) Immunoprecipitation: use Protein A/G PLUS-Agarose: sc-2003 (0.5 ml agarose/2.0 ml).

## DATA



TNAP (3H415): sc-73524. Western blot analysis of TNAP expression in non-transfected 293T: sc-117752 (A), human TNAP transfected 293T: sc-112384 (B) and NTERA-2 cl.D1 (C) whole cell lysates.



TNAP (3H415): sc-73524. Western blot analysis of TNAP expression in non-transfected: sc-117752 (A) and human TNAP transfected: sc-112494 (B) 293T whole cell lysates.

## SELECT PRODUCT CITATIONS

- Woods, P.S., et al. 2018. ATP catabolism by tissue nonspecific alkaline phosphatase contributes to development of ARDS in influenza-infected mice. *Am. J. Physiol. Lung Cell. Mol. Physiol.* 314: L83-L92.

## STORAGE

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

## PROTOCOLS

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