SANTA CRUZ BIOTECHNOLOGY, INC.

TNAP (F-4): sc-166261

BACKGROUND

Alkaline phosphatases (AP) are glycosyl-phosphatidylinositol (GPI)-anchored, dimeric, Zn^{2+} 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 conjuntion with plasma cell membrane glycoprotein-1, function 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 mineraliation and includes skeletal defects. Human gene encoding TNAP maps to chromosome 1p36.12.

CHROMOSOMAL LOCATION

Genetic locus: ALPL (human) mapping to 1p36.12; Alpl (mouse) mapping to 4 D3.

SOURCE

TNAP (F-4) is a mouse monoclonal antibody raised against amino acids 18-317 mapping near the N-terminus of TNAP 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.

TNAP (F-4) is available conjugated to agarose (sc-166261 AC), 500 µg/0.25 ml agarose in 1 ml, for IP; to HRP (sc-166261 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-166261 PE), fluorescein (sc-166261 FITC), Alexa Fluor® 488 (sc-166261 AF488), Alexa Fluor® 546 (sc-166261 AF546), Alexa Fluor® 594 (sc-166261 AF594) or Alexa Fluor® 647 (sc-166261 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-166261 AF680) or Alexa Fluor® 790 (sc-166261 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

APPLICATIONS

TNAP (F-4) is recommended for detection of TNAP 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).

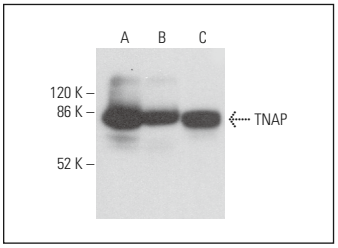
Suitable for use as control antibody for TNAP siRNA (h): sc-38921, TNAP siRNA (m): sc-38922, TNAP shRNA Plasmid (h): sc-38921-SH, TNAP shRNA Plasmid (m): sc-38922-SH, TNAP shRNA (h) Lentiviral Particles: sc-38921-V and TNAP shRNA (m) Lentiviral Particles: sc-38922-V.

Molecular Weight of TNAP/PLAP/GCAP/IAP: 80/70/23/57 kDa.

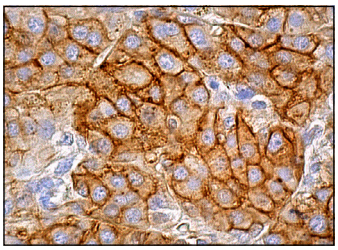
STORAGE

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

DATA



TNAP (F-4): sc-166261. Western blot analysis of TNAP expression in HeLa (**A**), MCF7 (**B**) and Saos-2 (**C**) whole cell lysates. Detection reagent used: m-IgGκ BP-HRP: sc-516102.



TNAP (F-4): sc-166261. Immunoperoxidase staining of formalin fixed, paraffin-embedded human adrenal gland tissue showing membrane and cytoplasmic staining of glandular cells.

SELECT PRODUCT CITATIONS

1. James, A.W., et al. 2014. Lentiviral delivery of PPARγ shRNA alters the balance of osteogenesis and adipogenesis, improving bone microarchitecture. Tissue Eng. Part A 20: 2699-2710.
2. Schira, J., et al. 2015. Human scaphoid non-unions exhibit increased osteoclast activity compared to adjacent cancellous bone. J. Cell. Mol. Med. 19: 2842-2850.
3. Muerza-Cascante, M.L., et al. 2016. Endosteal-like extracellular matrix expression on melt electrospun written scaffolds. Acta Biomater. 52: 145-158.
4. Wallner, C., et al. 2017. Inhibition of GDF8 (myostatin) accelerates bone regeneration in diabetes mellitus type 2. Sci. Rep. 7: 9878.
5. Campsie, P., et al. 2019. Design, construction and characterisation of a novel nanovibrational bioreactor and cultureware for osteogenesis. Sci. Rep. 9: 12944.
6. Suzuki, E., et al. 2020. Detailed analyses of the crucial functions of Zn transporter proteins in alkaline phosphatase activation. J. Biol. Chem. 295: 5669-5684.
7. Bagne, L., et al. 2021. Electrical therapies act on the Ca^{2+}/CaM signaling pathway to enhance bone regeneration with bioactive glass [S53P4] and allogeneic grafts. J. Biomed. Mater. Res. B, Appl. Biomater. 109: 2104-2116.
8. Ueda, S., et al. 2022. Early secretory pathway-resident Zn transporter proteins contribute to cellular sphingolipid metabolism through activation of sphingomyelin phosphodiesterase 1. Am. J. Physiol. Cell Physiol. 322: C948-C959.
9. Nishito, Y., et al. 2024. Zinc and manganese homeostasis closely interact in mammalian cells. FASEB J. 38: e23605.

RESEARCH USE

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