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ALPL / Alkaline Phosphatase Antibody (clone 2F4)

Mouse Monoclonal Antibody
Catalog # ALS15719

Specification

ALPL / Alkaline Phosphatase Antibody (clone 2F4) - Product Information

Application	**IHC**
Primary Accession	P05186
Reactivity	**Human**
Host	**Mouse**
Clonality	**Monoclonal**
Calculated MW	**57kDa KDa**

ALPL / Alkaline Phosphatase Antibody (clone 2F4) - Additional Information

Gene ID 249

Other Names
Alkaline phosphatase, tissue-nonspecific isozyme, AP-TNAP, TNSALP, 3.1.3.1, Alkaline phosphatase liver/bone/kidney isozyme, ALPL

Target/Specificity
Human TNAP / ALPL

Reconstitution & Storage
Long term: -20°C; Short term: +4°C; Avoid freeze-thaw cycles.

Precautions
ALPL / Alkaline Phosphatase Antibody (clone 2F4) is for research use only and not for use in diagnostic or therapeutic procedures.

ALPL / Alkaline Phosphatase Antibody (clone 2F4) - Protein Information

Name ALPL {ECO:0000303|PubMed:8406453, ECO:0000312|HGNC:HGNC:438}

Function
Alkaline phosphatase that metabolizes various phosphate compounds and plays a key role in skeletal mineralization and adaptive thermogenesis (PubMed:12162492, PubMed:23688511, PubMed:25982064). Has broad substrate specificity and can hydrolyze a considerable variety of compounds: however, only a few substrates, such as diphosphate (inorganic pyrophosphate; PPi), pyridoxal 5'-phosphate (PLP) and N- phosphocreatine are natural substrates (PubMed:12162492, PubMed:2220817). Plays an essential role in skeletal and dental mineralization via its ability to hydrolyze extracellular diphosphate, a potent mineralization inhibitor, to phosphate: it thereby promotes hydroxyapatite

crystal formation and increases inorganic phosphate concentration (PubMed:23688511, PubMed:25982064). Acts in a non- redundant manner with PHOSPHO1 in skeletal mineralization: while PHOSPHO1 mediates the initiation of hydroxyapatite crystallization in the matrix vesicles (MVs), ALPL/TNAP catalyzes the spread of hydroxyapatite crystallization in the extracellular matrix (By similarity). Also promotes dephosphorylation of osteopontin (SSP1), an inhibitor of hydroxyapatite crystallization in its phosphorylated state; it is however unclear whether ALPL/TNAP mediates SSP1 dephosphorylation via a direct or indirect manner (By similarity). Catalyzes dephosphorylation of PLP to pyridoxal (PL), the transportable form of vitamin B6, in order to provide a sufficient amount of PLP in the brain, an essential cofactor for enzymes catalyzing the synthesis of diverse neurotransmitters (PubMed:20049532, PubMed:2220817). Additionally, also able to mediate ATP degradation in a stepwise manner to adenosine, thereby regulating the availability of ligands for purinergic receptors (By similarity). Also capable of dephosphorylating microbial products, such as lipopolysaccharides (LPS) as well as other phosphorylated small-molecules, such as poly-inosine:cytosine (poly I:C) (PubMed:28448526). Acts as a key regulator of adaptive thermogenesis as part of the futile creatine cycle: localizes to the mitochondria of thermogenic fat cells and acts by mediating hydrolysis of N-phosphocreatine to initiate a futile cycle of creatine dephosphorylation and phosphorylation (By similarity). During the futile creatine cycle, creatine and N-phosphocreatine are in a futile cycle, which dissipates the high energy charge of N-phosphocreatine as heat without performing any mechanical or chemical work (By similarity).

Cellular Location
Cell membrane; Lipid-anchor, GPI-anchor Extracellular vesicle membrane {ECO:0000250|UniProtKB:P09242}; Lipid- anchor, GPI-anchor {ECO:0000250|UniProtKB:P09242}. Mitochondrion membrane {ECO:0000250|UniProtKB:P09242}; Lipid-anchor, GPI-anchor {ECO:0000250|UniProtKB:P09242}. Mitochondrion intermembrane space {ECO:0000250|UniProtKB:P09242}. Note=Localizes to special class of extracellular vesicles, named matrix vesicles (MVs), which are released by osteogenic cells. Localizes to the mitochondria of thermogenic fat cells: tethered to mitochondrial membranes via a GPI-anchor and probably resides in the mitochondrion intermembrane space {ECO:0000250|UniProtKB:P09242}

ALPL / Alkaline Phosphatase Antibody (clone 2F4) - Protocols

Provided below are standard protocols that you may find useful for product applications.

- Western Blot
- Blocking Peptides
- Dot Blot
- Immunohistochemistry
- Immunofluorescence
- Immunoprecipitation
- Flow Cytomety
- Cell Culture

ALPL / Alkaline Phosphatase Antibody (clone 2F4) - Images

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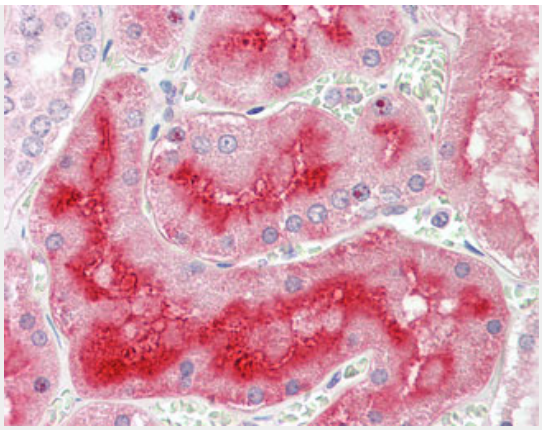

Anti-ALPL / Alkaline Phosphatase antibody IHC staining of human kidney.

ALPL / Alkaline Phosphatase Antibody (clone 2F4) - Background

This isozyme may play a role in skeletal mineralization.

ALPL / Alkaline Phosphatase Antibody (clone 2F4) - References

Weiss M.J.,et al.Proc. Natl. Acad. Sci. U.S.A. 83:7182-7186(1986).
Weiss M.J.,et al.J. Biol. Chem. 263:12002-12010(1988).
Kishi F.,et al.Nucleic Acids Res. 17:2129-2129(1989).
Sugimoto N.,et al.J. Hum. Genet. 43:160-164(1998).
Ota T.,et al.Nat. Genet. 36:40-45(2004).