

**ALPL / Alkaline Phosphatase Antibody (clone 2F4)**  
**Mouse Monoclonal Antibody**  
**Catalog # ALS15719**

**Specification**

---

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

Application	IHC
Primary Accession	<a href="#">P05186</a>
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](http://www.uniprot.org/citations/12162492), PubMed: [23688511](http://www.uniprot.org/citations/23688511), PubMed: [25982064](http://www.uniprot.org/citations/25982064)). Has broad substrate specificity and can hydrolyze a considerable variety of compounds: however, only a few substrates, such as diphosphate (inorganic pyrophosphate; P<sub>2</sub>i), pyridoxal 5'-phosphate (PLP) and N-phosphocreatine are natural substrates (PubMed: [12162492](http://www.uniprot.org/citations/12162492), PubMed: [2220817](http://www.uniprot.org/citations/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:<a href="http://www.uniprot.org/citations/23688511" target="\_blank">23688511</a>, PubMed:<a href="http://www.uniprot.org/citations/25982064" target="\_blank">25982064</a>). 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:<a href="http://www.uniprot.org/citations/20049532" target="\_blank">20049532</a>, PubMed:<a href="http://www.uniprot.org/citations/2220817" target="\_blank">2220817</a>). 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:<a href="http://www.uniprot.org/citations/28448526" target="\_blank">28448526</a>). 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

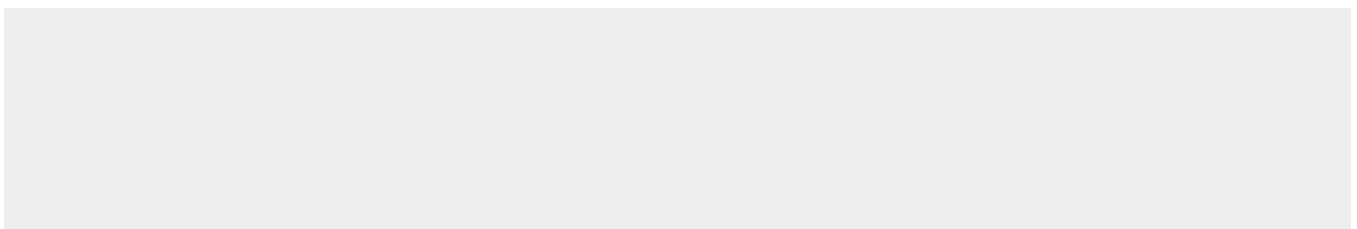
Cell membrane; Lipid-anchor, GPI-anchor Extracellular vesicle membrane {ECO:0000250|UniProtKB:P09242}; Lipid-anchor, GPI-anchor {ECO:0000250|UniProtKB:P09242}. Mitochondrion membrane {ECO:0000250|UniProtKB:P09242}; Lipid-anchor, GPI-anchor {ECO:0000250|UniProtKB:P09242}. Mitochondrion intermembrane space {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}

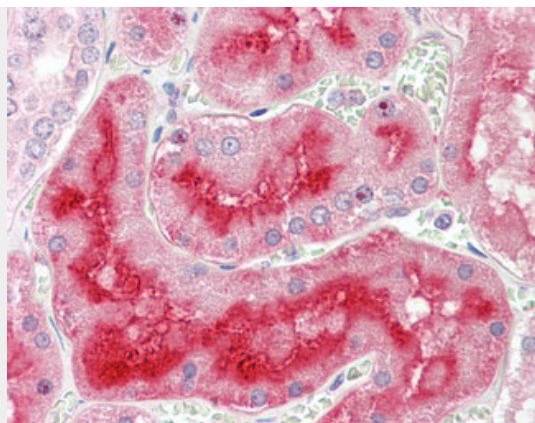
#### ALPL / Alkaline Phosphatase Antibody (clone 2F4) - Protocols

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

- [Western Blot](#)
- [Blocking Peptides](#)
- [Dot Blot](#)
- [Immunohistochemistry](#)
- [Immunofluorescence](#)
- [Immunoprecipitation](#)
- [Flow Cytometry](#)
- [Cell Culture](#)

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





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).