10320 Camino Santa Fe, Suite G
San Diego, CA 92121
Tel: 858.875.1900 Fax: 858.875.1999

KD-Validated Anti-ALPL Mouse Monoclonal Antibody

Mouse monoclonal antibody
Catalog # AGI1924

Product Information

Application	WB, FC
Primary Accession	P05186
Reactivity	Human
Clonality	Monoclonal
Isotype	Mouse IgG1
Clone Names	24GB5855
Calculated MW	57305
Gene Name	ALPL
Aliases	Alkaline Phosphatase, Biomineralization Associated; TNSALP; TNALP; TNAP; Alkaline Phosphatase, Tissue-Nonspecific Isozyme; Alkaline Phosphatase Liver/Bone/Kidney Isozyme; Tissue Non-Specific Alkaline Phosphatase; Alkaline Phosphatase, Liver/Bone/Kidney; Phosphocreatine Phosphatase; Phosphoamidase; EC 3.1.3.1; AP-TNAP; TNS-ALP; HOPS; Liver/Bone/Kidney-Type Alkaline Phosphatase; Tissue-Nonspecific ALP; EC 3.9.1.1; APTNAP; HPPA; HPPC; HPPI; HPPO
Immunogen	Recombinant protein of human ALPL

Additional Information

Gene ID	249
Other Names	Alkaline phosphatase, tissue-nonspecific isozyme, AP-TNAP, TNS-ALP, TNSALP, 3.1.3.1, Alkaline phosphatase liver/bone/kidney isozyme, Phosphoamidase, Phosphocreatine phosphatase, ALPL {ECO:0000303|PubMed:8406453, ECO:0000312|HGNC:HGNC:438}

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}

Please note: All products are 'FOR RESEARCH USE ONLY. NOT FOR USE IN DIAGNOSTIC OR THERAPEUTIC PROCEDURES'.