abcam

ab126820

Anti-Alkaline Phosphatase, Tissue Non-Specific antibody [2F4]

KO Validated

Key facts

Isotype	IgG1
Host species	Mouse
Storage buffer	Preservative: 0.05% Sodium azide Constituents: PBS
Form	Liquid
Clonality	Monoclonal
Immunogen	Recombinant Fragment Protein within Human Alkaline phosphatase, tissue-nonspecific isozyme. The exact immunogen used to generate this antibody is proprietary information. Database link P05186
Clone number	2F4
Purification technique	Affinity purification Protein G
Concentration	1 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →
Purification notes	Purified from tissue culture supernatant.

Reactivity data

Flow Cyt

Tested

Species	Human

Dilution info	1/200 - 1/400
Notes	ab170190 - Mouse monoclonal IgG1, is suitable for use as an isotype control with this antibody.

ELISA

Tested

Species	Human
Dilution info	1/10000
Notes	-

WB

Tested

Species	Human
Dilution info	1/500 - 1/2000
Notes	-

IHC-P

Tested

Species	Human
Dilution info	1/200 - 1/1000
Notes	-

ICC/IF

Not recommended

Species	Human
Dilution info	-
Notes	-

Target data

See full target information Alkaline phosphatase, tissue-nonspecific isozyme

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).

Storage

Shipped at conditions	Blue Ice
Appropriate short-term storage conditions	+4°C
Appropriate long-term storage conditions	-20°C

Notes

This product was changed from ascites to supernatant. Lot no's high than GR307490-5 are from Tissue Culture Supernatant

Supplementary info

This supplementary information is collated from multiple sources and compiled automatically.

Activity summary	Alkaline Phosphatase Tissue Non-Specific also referred to as ALPL or alkaline phosphatase protein functions mechanically as a hydrolase enzyme. It catalyzes the dephosphorylation of molecules contributing to phosphate and mineral metabolism. This enzyme with a molecular mass of approximately 57 kDa exhibits expression in various tissues including liver bone and kidneys. Researchers can use techniques like alkaline phosphatase ELISA and immunohistochemistry to study its expression and localization.
Biological function summary	Alkaline phosphatase in tissues plays a pivotal role in bone mineralization and development. It functions to hydrolyze phosphate groups releasing inorganic phosphate necessary for bone and teeth formation. It forms part of a larger enzyme complex that interacts with extracellular substrates ensuring the continuous supply of phosphate ions. This enzyme in particular impacts cellular processes involving calcification and cellular differentiation.
Pathways	Alkaline phosphatase operates within phosphate metabolism and signaling pathways. Within the skeletal system it forms part of the regulatory mechanism for osteoblast activity and bone formation. It relates to proteins like osteopontin and bone sialoprotein which regulate the mineralization process. These pathways ensure the balance between phosphate ions and mineral deposition in bone tissue.
Associated diseases and disorders	Alkaline phosphatase abnormalities correlate with hypophosphatasia and rickets. Hypophosphatasia results from mutations in the ALPL gene causing defective bone mineralization. In cases of rickets improper phosphate metabolism can occur due to dysfunctional enzyme activity. The imbalance in alkaline phosphatase activity also connects to disorders like hyperparathyroidism where calcium and phosphate homeostasis is disrupted involving proteins such as parathyroid hormone.

Product promise

Tested

We have tested this species and application combination and it works. It is covered by our product promise.

Expected

We have not tested this specific species and application combination in-house, but expect it will work. It is covered by our product promise.

Predicted

This species and application combination has not been tested, but we predict it will work based on strong homology. However, this combination is not covered by our product promise.

Not recommended

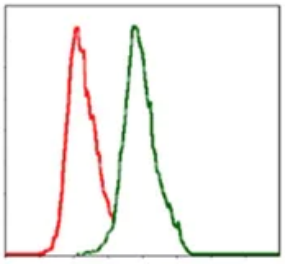
We do not recommend this combination. It is not covered by our product promise.

We are dedicated to supporting your work with high quality reagents and we are here for you every step of the way should you need us.

In the unlikely event of one of our products not working as expected, you are covered by our product promise.

Full details and terms and conditions can be found here:
Terms & Conditions.

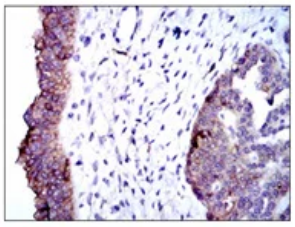
6 product images



Flow Cytometry - Anti-Alkaline Phosphatase, Tissue Non-Specific antibody [2F4] (ab126820)

Alkaline Phosphatase, Tissue Non-Specific Flow Cytometry staining using mouse Anti-Alkaline Phosphatase, Tissue Non-Specific antibody

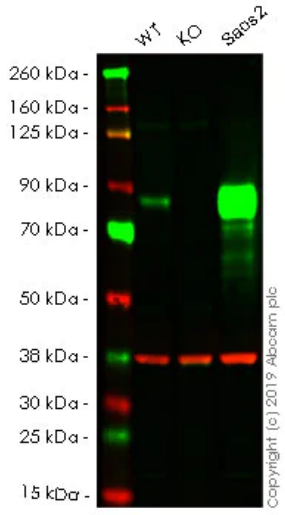
Flow cytometric analysis of MCF-7 cells using ab126820 at 1/200 (green) and negative control (red).



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-Alkaline Phosphatase, Tissue Non-Specific antibody [2F4] (ab126820)

Alkaline Phosphatase, Tissue Non-Specific Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using mouse Anti-Alkaline Phosphatase, Tissue Non-Specific antibody

ab126820, at 1/200, staining Alkaline Phosphatase, Tissue Non-Specific in paraffin embedded Human ovarian cancer tissues by Immunohistochemistry with DAB staining.



Western blot - Anti-Alkaline Phosphatase, Tissue Non-Specific antibody [2F4] (ab126820)

Alkaline Phosphatase, Tissue Non-Specific Western blot staining using mouse Anti-Alkaline Phosphatase, Tissue Non-Specific antibody

Lanes 1 - 3: Merged signal (red and green). Green - ab126820 observed at 80 kDa. Red - loading control, ab181602, observed at 37 kDa.
ab126820 was shown to specifically react with ALPL in wild-type HAP1 cells as signal was lost in ALPL knockout cells. Wild-type and ALPL knockout samples were subjected to SDS-PAGE. The membrane was blocked with 3% Milk. ab126820 and ab181602 (Rabbit anti-GAPDH loading control) were incubated overnight at 4°C at 1/500 dilution and 1/20000 dilution respectively. Blots were developed with Goat anti-Mouse IgG H&L (IRDye® 800CW) preabsorbed ab216772 and Goat anti-Rabbit IgG H&L (IRDye® 680RD) preabsorbed ab216777 secondary antibodies at 1/20000 dilution for 1 hour at room temperature before imaging.

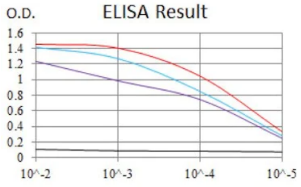
All lanes:
Western blot - Anti-Alkaline Phosphatase, Tissue Non-Specific antibody [2F4] (ab126820) at 1/500 dilution

Lane 1:
Wild-type HAP1 whole cell lysate at 20 µg

Lane 2:
ALPL knockout HAP1 whole cell lysate at 20 µg

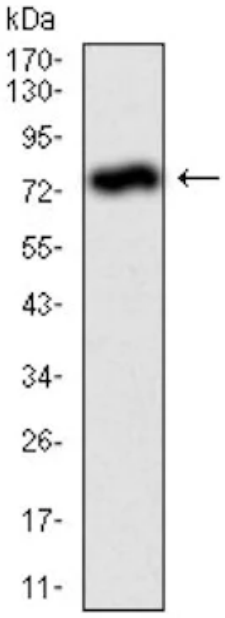
Lane 3:
Saos2 whole cell lysate at 20 µg

Predicted band size: 57 kDa



ELISA - Anti-Alkaline Phosphatase, Tissue Non-Specific antibody [2F4] (ab126820)

Example of standard curves obtained using ab126820. Control antigen 100ng (black), antigen at 10ng (purple), antigen at 50ng (blue), antigen at 100ng (red)

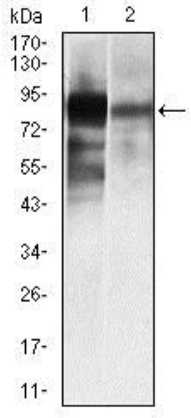


Western blot - Anti-Alkaline Phosphatase, Tissue Non-Specific antibody [2F4] (ab126820)

All lanes:
Western blot - Anti-Alkaline Phosphatase, Tissue Non-Specific antibody [2F4] (ab126820) at 1/500 dilution

All lanes:
Recombinant Human protein ALPL (AA: 18-502)

Predicted band size: 57 kDa



Western blot - Anti-Alkaline Phosphatase, Tissue Non-Specific antibody [2F4] (ab126820)

All lanes:
Western blot - Anti-Alkaline Phosphatase, Tissue Non-Specific antibody [2F4] (ab126820) at 1/500 dilution

Lane 1:
HeLa cell lysate

Lane 2:
NTERA-2 cell lysate

Predicted band size: 57 kDa

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