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# Lipin 1 Polyclonal Antibody

Purified Rabbit Polyclonal Antibody (Pab)
Catalog # AP58673

## Product Information

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| **Application** | IHC-P, IHC-F, IF, E |
| **Primary Accession** | Q14693 |
| **Reactivity** | Rat, Pig, Dog, Chimpanzee, Bovine |
| **Host** | Rabbit |
| **Clonality** | Polyclonal |
| **Calculated MW** | 98664 |
| **Physical State** | Liquid |
| **Immunogen** | KLH conjugated synthetic peptide derived from human Lipin 1 |
| **Epitope Specificity** | 501-600/890 |
| **Isotype** | IgG |
| **Purity** | affinity purified by Protein A |
| **Buffer** | 0.01M TBS (pH7.4) with 1% BSA, 0.02% Proclin300 and 50% Glycerol. |
| **SUBCELLULAR LOCATION** | soform 1: Mitochondrion outer membrane. Cytoplasm. Nucleus membrane. Note=Recruited at the mitochondrion outer membrane following phosphatidic acid formation mediated by PLD6. In neuronals cells, isoform 1 is exclusively cytoplasmic. In 3T3-L1 pre-adipocytes, it primarily located in the cytoplasm. Isoform 2: Nucleus. Cytoplasm. Endoplasmic reticulum membrane. Note=Nuclear localization requires both CNEP1R1 and CTDNEP1. In neuronals cells, localized in both the cytoplasm and the nucleus. In 3T3-L1 pre-adipocytes, it is predominantly nuclear. |
| **SIMILARITY** | Belongs to the lipin family. |
| **SUBUNIT** | Interacts (via LXXIL motif) with PPARA. Interacts with PPARGC1A. Interaction with PPARA and PPARGC1A leads to the formation of a complex that modulates gene transcription. Interacts with MEF2C. |
| **Post-translational modifications** | Phosphorylated at multiple sites in response to insulin. Phosphorylation is controlled by the mTOR signaling pathway. Phosphorylation is decreased by epinephrine. Phosphorylation may not directly affect the catalytic activity but may regulate the localization. Dephosphorylated by the CTDNEP1-CNEP1R1 complex. Sumoylation is important in brain and is marginal in other tissues. Sumoylation facilitates nuclear localization of isoform 2 in neuronals cells and its transcriptional coactivator activity. |
| **DISEASE** | Note=Defects in Lpin1 are the cause of the fatty liver dystrophy phenotype (fld). Fld mutant mices are characterized by neonatal fatty liver and hypertriglyceridemia that resolve at weaning, and neuropathy affecting peripheral nerve in adulthood. Adipose tissue deficiency, glucose intolerance and increased susceptibility to atherosclerosis are associated with this mutation too. Two independent mutant alleles are characterized in this phenotype, fld and fld2j. |
| **Important Note** | This product as supplied is intended for research use only, not for use in human, therapeutic or diagnostic applications. |
| **Background Descriptions** | Lipin 1 is a member of the Lipin family of nuclear proteins. This family contains three members: Lipin 1, Lipin 2 and Lipin 3, all of which contain a nuclear signal sequence, a highly conserved amino-terminal (NLIP) domain |

and a carboxy-terminal (CLIP) domain. LPIN1 (Lipin 1) is crucial for normal adipose tissue development and metabolism. LPIN1 selectively activates a subset of PGC1 alpha target pathways, including fatty acid oxidation and mitochondrial oxidative phosphorylation by inducing expression of the nuclear receptor PPARalpha. LPIN1 also inactivates the lipogenic program and suppresses circulating lipid levels. An abundance of LPIN1 promotes fat accumulation and insulin sensitivity, whereas a deficiency in LPIN1 may deter normal adipose tissue development, resulting in insulin resistance and lipodystrophy, a heterogeneous group of disorders characterized by loss of body fat, fatty liver, hypertriglyceridemia and insulin resistance.

## Additional Information

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| **Gene ID** | 23175 |
| **Other Names** | Phosphatidate phosphatase LPIN1, 3.1.3.4, Lipin-1, LPIN1 (HGNC:13345), KIAA0188 |
| **Target/Specificity** | Specifically expressed in skeletal muscle. Also expressed prominently in adipose tissue, and testis. Lower expression also detected in kidney, lung, brain and liver. Isoform 1 is the predominant isoform in the liver. Isoform 2 is the major form in the brain. |
| **Dilution** | IHC-P=1:100-500,IHC-F=1:100-500,IF=1:100-500,ELISA=1:5000-10000 |
| **Format** | 0.01M TBS(pH7.4) with 1% BSA, 0.09% (W/V) sodium azide and 50% Glyce |
| **Storage** | Store at -20 °C for one year. Avoid repeated freeze/thaw cycles. When reconstituted in sterile pH 7.4 0.01M PBS or diluent of antibody the antibody is stable for at least two weeks at 2-4 °C. |

## Protein Information

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| **Name** | LPIN1 ( HGNC:13345) |
| **Synonyms** | KIAA0188 |
| **Function** | Acts as a magnesium-dependent phosphatidate phosphatase enzyme which catalyzes the conversion of phosphatidic acid to diacylglycerol during triglyceride, phosphatidylcholine and phosphatidylethanolamine biosynthesis and therefore controls the metabolism of fatty acids at different levels (PubMed:20231281, PubMed:23426360, PubMed:29765047, PubMed:31695197). Is involved in adipocyte differentiation (By similarity). Recruited at the mitochondrion outer membrane and is involved in mitochondrial fission by converting phosphatidic acid to diacylglycerol (By similarity). Acts also as nuclear transcriptional coactivator for PPARGC1A/PPARA regulatory pathway to modulate lipid metabolism gene expression (By similarity). |
| **Cellular Location** | Cytoplasm, cytosol. Endoplasmic reticulum membrane. Nucleus membrane {ECO:0000250\|UniProtKB:Q91ZP3}. Note=Translocates from the cytosol to the endoplasmic reticulum following acetylation by KAT5 |
| **Tissue Location** | Specifically expressed in skeletal muscle. Also abundant in adipose tissue. Lower levels in some portions of the digestive tract. |

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