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ACSL1 Antibody

Catalog # ASC11566

Product Information

Application	WB, IF, E
Primary Accession	P33121
Other Accession	NP_001986, 40807491
Reactivity	Human, Mouse, Rat
Host	Rabbit
Clonality	Polyclonal
Isotype	IgG
Calculated MW	77943
Concentration (mg/ml)	1 mg/mL
Conjugate	Unconjugated
Application Notes	ACSL1 antibody can be used for detection of ACSL1 by Western blot at 1 - 2 g/mL. For immunofluorescence start at 20 g/mL.

Additional Information

Gene ID	2180
Other Names	Long-chain-fatty-acid--CoA ligase 1, 6.2.1.3, Acyl-CoA synthetase 1, ACS1, Long-chain acyl-CoA synthetase 1, LACS 1, Long-chain acyl-CoA synthetase 2, LACS 2, Long-chain fatty acid-CoA ligase 2, Palmitoyl-CoA ligase 1, Palmitoyl-CoA ligase 2, ACSL1, FACL1, FACL2, LACS, LACS1, LACS2
Target/Specificity	ACSL1; At least three isoforms of ACSL1 are known to exist; this antibody will detect all three isoforms.
Reconstitution & Storage	ACSL1 antibody can be stored at 4℃ for three months and -20℃, stable for up to one year. As with all antibodies care should be taken to avoid repeated freeze thaw cycles. Antibodies should not be exposed to prolonged high temperatures.
Precautions	ACSL1 Antibody is for research use only and not for use in diagnostic or therapeutic procedures.

Protein Information

Name	ACSL1 (HGNC:3569)
Function	Catalyzes the conversion of long-chain fatty acids to their active form acyl-CoAs for both synthesis of cellular lipids, and degradation via beta-oxidation (PubMed:21242590, PubMed:22633490, PubMed:24269233). Preferentially uses palmitoleate, oleate and linoleate (PubMed:24269233). Preferentially activates arachidonate than epoxyeicosatrienoic acids (EETs) or hydroxyeicosatrienoic acids (HETEs) (By similarity).

Cellular Location	Mitochondrion outer membrane; Single-pass type III membrane protein. Peroxisome membrane; Single-pass type III membrane protein. Microsome membrane; Single-pass type III membrane protein. Endoplasmic reticulum membrane; Single-pass type III membrane protein
Tissue Location	Highly expressed in liver, heart, skeletal muscle, kidney and erythroid cells, and to a lesser extent in brain, lung, placenta and pancreas.

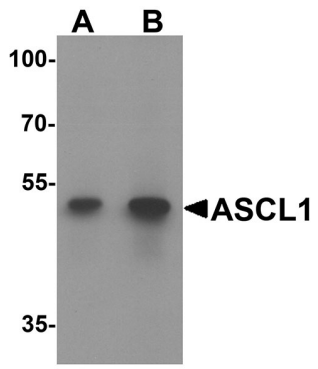
Background

ACSL1 Antibody: Long-chain acyl coenzyme A synthetase 1 (ACSL1) catalyzes the synthesis of acyl-CoA from long-chain fatty acids in an ATP-dependent manner. ACSL1 is a member of a family of long-chain acyl-CoA synthetases which differ in substrate preference, tissue expression, and subcellular localization. In mouse, ASCL1 is the major acyl-CoA enzyme in the heart, providing 60-90% of heart ATP. Loss of ASCL1 either globally or in heart ventricles resulted in impaired fatty acid oxidation, activation of the mammalian target of rapamycin (mTOR), and cardiac hypertrophy.

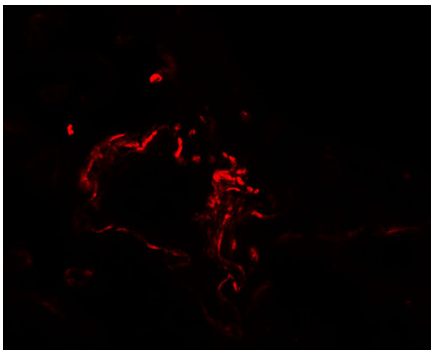
References

Black PN and DiRusso CC. Transmembrane movement of exogenous long-chain fatty acids: proteins, enzymes, and vectorial esterification. Microbiol. Mol. Biol. Rev. 2003; 67:454-72.
Coleman RA, Lewin TM, Van Horn CG, et al. Do acyl-CoA synthetases regulate fatty acid entry into synthetic versus degradative pathways? J. Nutr. 2002; 132:2123-6.
Clark H, Carling D, and Saggerson D. Covalent activation of heart AMP-activated protein kinase in response to physiological concentrations of long-chain fatty acids. Eur. J. Biochem. 2004; 271:2215-24
Ellis JM, Mentock SM, DePetrillo MA, et al. Mouse cardiac acyl Coenzyme A synthetase 1 deficiency impairs fatty acid oxidation and induces cardiac hypertrophy. Mol. Cell. Biol. 2011; 31:1252-62.

Images



Western blot analysis of ACSL1 in human lung tissue lysate with ACSL1 antibody at (A) 1 and (B) 2 µg/mL.



Immunofluorescence of ASCL1 in human lung tissue with ASCL1 antibody at 20 µg/mL.