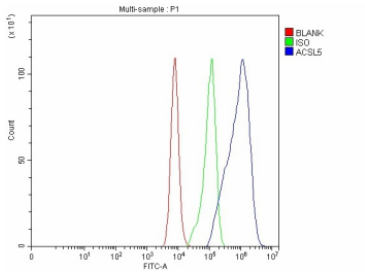
ACSL5 Antibody / Long chain fatty acid CoA ligase 5 Antibody (FY12873)

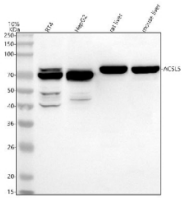
Catalog No.	Formulation	Size
FY12873	Adding 0.2 ml of distilled water will yield a concentration of 500 ug/ml	100 ug

Bulk quote request

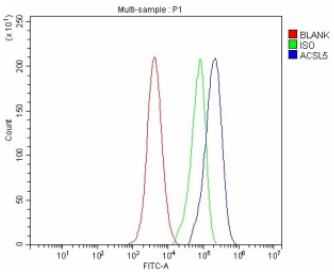
Availability	1-2 days
Species Reactivity	Human, Mouse, Rat
Format	Lyophilized
Host	Rabbit
Clonality	Polyclonal (rabbit origin)
Isotype	Rabbit IgG
Purity	Immunogen affinity purified
Buffer	Each vial contains 4 mg Trehalose, 0.9 mg NaCl, 0.2 mg Na2HPO4.
UniProt	Q9ULC5
Applications	Western Blot: 0.25-0.5ug/ml Flow cytometry: 1-3ug/million cells ELISA: 0.1-0.5ug/ml
Limitations	This ACSL5 Antibody / Long chain fatty acid CoA ligase 5 Antibody is available for research use only.



ACSL5 Antibody FACS. Flow Cytometry analysis of Caco-2 cells using anti-ACSL5 antibody. Overlay histogram showing Caco-2 cells stained with (Blue line). The cells were fixed with 4% paraformaldehyde and blocked with 10% normal goat serum. And then incubated with rabbit anti-ACSL5 antibody (1 ug/million cells) for 30 min at 20oC. DyLight 488 conjugated goat anti-rabbit IgG (5-10 ug/million cells) was used as secondary antibody for 30 minutes at 20oC. Isotype control antibody (Green line) was rabbit IgG (1 ug/million cells) used under the same conditions. Unlabelled sample without incubation with primary antibody and secondary antibody (Red line) was used as a blank control.



ACSL5 Antibody WB. Western blot analysis of Long chain fatty acid CoA ligase 5 using anti-ACSL5 antibody. Lane 1: human RT4 whole cell lysates, Lane 2: human HepG2 whole cell lysates, Lane 3: rat liver tissue lysates, Lane 4: mouse liver tissue lysates. After electrophoresis, proteins were transferred to a nitrocellulose membrane at 150 mA for 50-90 minutes. Blocked the membrane with 5% non-fat milk/TBS for 1.5 hour at RT. The membrane was incubated with rabbit anti-ACSL5 antibody at 0.5 ug/ml overnight at 4oC, then washed with TBS-0.1%Tween 3 times with 5 minutes each and probed with a goat anti-rabbit IgG-HRP secondary antibody at a dilution of 1:5000 for 1.5 hour at RT. The signal was developed using enhanced chemiluminescent. ACSL5 western blot shows a predominant band at ~70 kDa in human cell lines and a stronger ~76 kDa band in rodent liver. The two closely spaced species are consistent with full-length ACSL5 and an N-terminally processed isoform, a known feature of this mitochondrial acyl-CoA synthetase.



Flow Cytometry analysis of Hela cells using anti-ACSL5 antibody. Overlay histogram showing Hela cells stained with (Blue line). The cells were fixed with 4% paraformaldehyde and blocked with 10% normal goat serum. And then incubated with rabbit anti-ACSL5 antibody (1 ug/million cells) for 30 min at 20oC. DyLight 488 conjugated goat anti-rabbit IgG (5-10 ug/million cells) was used as secondary antibody for 30 minutes at 20oC. Isotype control antibody (Green line) was rabbit IgG (1 ug/million cells) used under the same conditions. Unlabelled sample without incubation with primary antibody and secondary antibody (Red line) was used as a blank control.

Description

ACSL5 antibody detects Long chain fatty acid CoA ligase 5, an enzyme that activates long chain fatty acids for lipid metabolism, beta oxidation, and membrane synthesis. Encoded by the ACSL5 gene on chromosome 10q25.2, this enzyme belongs to the acyl CoA synthetase family, which catalyzes the conversion of free fatty acids to fatty acyl CoA thioesters using ATP and Coenzyme A. ACSL5 functions as a metabolic gatekeeper, determining whether lipids are directed toward energy production or anabolic pathways such as triglyceride and phospholipid synthesis.

Structurally, ACSL5 is an approximately 76 kilodalton enzyme localized to the outer mitochondrial membrane and the endoplasmic reticulum. It contains conserved AMP binding and acyl adenylate forming motifs required for catalysis of long chain fatty acids, typically those containing 12 to 20 carbon atoms. ACSL5 expression is highest in metabolically active tissues such as the small intestine, liver, and brown adipose tissue, where rapid fatty acid activation supports energy production during fasting, thermogenesis, and lipid absorption.

The ACSL5 antibody is widely used in metabolism, mitochondrial biology, and lipid biochemistry research to study fatty acid activation, transport, and oxidation. Western blot analysis detects a 76 kilodalton band corresponding to ACSL5, while immunofluorescence reveals perinuclear and mitochondrial membrane localization. This antibody provides a dependable tool for assessing lipid metabolic flux, energy homeostasis, and fatty acid utilization under physiological and pathological conditions.

Functionally, ACSL5 determines the metabolic fate of long chain fatty acids by channeling activated fatty acyl CoA into either mitochondrial beta oxidation for ATP production or endoplasmic reticulum based lipid synthesis. It interacts with key metabolic regulators such as carnitine palmitoyltransferase 1 (CPT1) and peroxisome proliferator activated receptor alpha (PPAR alpha), coordinating lipid oxidation and storage. Dysregulation of ACSL5 expression has been linked to obesity, insulin resistance, and nonalcoholic fatty liver disease, where altered fatty acid channeling contributes to lipid accumulation and oxidative stress. In intestinal epithelial cells, ACSL5 also plays a role in apoptosis regulation, reflecting its broader function in energy balance and cell survival.

Beyond energy metabolism, ACSL5 participates in mitochondrial dynamics and lipid signaling by influencing the composition of phospholipids that form mitochondrial membranes. Its activity affects membrane curvature and

permeability, which can impact mitochondrial fission and fusion processes. Increased ACSL5 expression under stress conditions may enhance beta oxidation and reactive oxygen species production, whereas reduced expression limits fatty acid utilization and leads to metabolic inflexibility. The ACSL5 antibody allows detailed exploration of these adaptive responses and facilitates research into metabolic disorders, energy regulation, and mitochondrial health.

NSJ Bioreagents provides a validated ACSL5 antibody optimized for western blotting and flow cytometry. This antibody enables sensitive and specific detection of Long chain fatty acid CoA ligase 5 across multiple tissues and experimental systems, supporting studies in lipid metabolism, energy signaling, and mitochondrial physiology.

Researchers investigating lipid metabolism and cellular energy homeostasis may also be interested in our Metabolism Research Antibodies page, featuring antibodies against enzymes and regulatory proteins involved in fatty acid metabolism, mitochondrial function and metabolic signaling.

Application Notes

Optimal dilution of the ACSL5 Antibody / Long chain fatty acid CoA ligase 5 Antibody should be determined by the researcher.

Immunogen

E.coli-derived human ACSL5 recombinant protein (Position: Y108-D683) was used as the immunogen for the ACSL5 antibody.

Storage

After reconstitution, the ACSL5 antibody can be stored for up to one month at 4oC. For long-term, aliquot and store at -20oC. Avoid repeated freezing and thawing.

Alternate Names

ACSL5 antibody, Acyl-CoA Synthetase Long Chain Family Member 5 antibody, Long Chain Fatty Acid CoA Ligase 5 antibody, Fatty Acid CoA Ligase 5 antibody

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