

PRODUCT INFORMATION



ACSL3 (human, recombinant; aa 45-720)

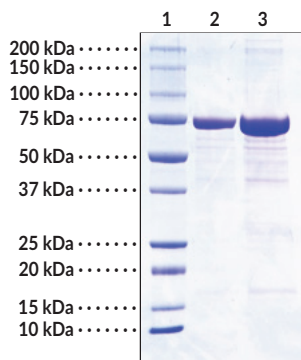
Item No. 39990

Overview and Properties

Synonyms:	ACSL3, Fatty Acid CoA Ligase 3, LACS 3, Long-chain Acyl-CoA Synthetase 3, Long-chain Fatty Acid-CoA Ligase 3
Source:	Active recombinant human N-Terminal His-tagged ACSL3 expressed in <i>E. coli</i>
Amino Acids:	45-720
Uniprot No.:	P33121
Molecular Weight:	77.19 kDa
Storage:	-80°C (as supplied)
Stability:	≥1 year
Purity:	≥80% estimated by SDS-PAGE
Supplied in:	50 mM Tris pH 8.0, with 150 mM sodium chloride and 10% glycerol
Protein Concentration:	<i>batch specific</i> mg/ml
Activity:	<i>batch specific</i> U/ml
Specific Activity:	<i>batch specific</i> U/mg
Unit Definition:	One unit is the amount of enzyme required to convert 1 nmol of free fatty acid to fatty acyl CoA per minute at 37°C as measured in Cayman's Free Fatty Acid Fluorometric Assay Kit.

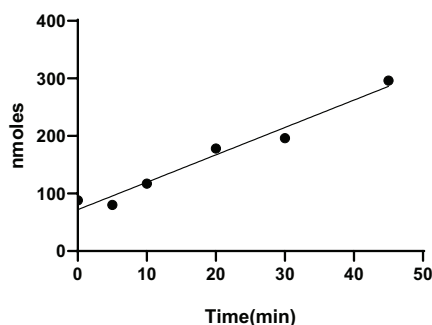
Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

Images



Lane 1: MW Markers
Lane 2: ACSL3 (2 µg)
Lane 3: ACSL3 (4 µg)

SDS-Page Analysis of ACSL3. This protein has a calculated molecular weight of 77.19 kDa.



ACSL3 enzyme activity was determined using Cayman's Free Fatty Acid Fluorometric Assay Kit (Item No. 700310) with 100 µM oleic acid as the substrate.

WARNING
THIS PRODUCT IS FOR RESEARCH ONLY - NOT FOR HUMAN OR VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.

SAFETY DATA
This material should be considered hazardous until further information becomes available. Do not ingest, inhale, get in eyes, on skin, or on clothing. Wash thoroughly after handling. Before use, the user must review the complete Safety Data Sheet, which has been sent via email to your institution.

WARRANTY AND LIMITATION OF REMEDY
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Description

Long-chain acyl-CoA synthetase 3 (ACSL3) is an enzyme involved in lipid biosynthesis and fatty acid degradation.¹ It is composed of short N- and C-terminal domains surrounding an AMP-binding domain.² It is expressed in the brain and prostate and localizes to the endoplasmic reticulum, mitochondria, and lipid droplets.¹ ACSL3 is activated by a variety of factors, including peroxisome proliferator-activated receptor δ (PPAR δ), octamer-binding transcription factor 1 (Oct1), and the liver X receptor (LXR), among others. ACSL3 converts free monounsaturated long-chain fatty acids into fatty acyl-CoA esters, which are used as substrates for phospholipid and glycerolipid biosynthesis or transported into the mitochondria to be degraded via fatty acid β -oxidation for use as an energy source.^{1,3,4} ACSL3-dependent conversion of exogenous MUFAs into fatty acyl-CoA esters can induce resistance to ferroptotic cell death by displacing PUFAs and preventing the accumulation of lipid reactive oxygen species (ROS) in the plasma membrane.^{3,5} ACSL3 is required for tumor cell survival in non-small cell lung cancer (NSCLC) mouse xenograft models, including those expressing K-Ras containing the glycine-to-aspartate activating mutation at position 12 (K-Ras^{G12D}).⁶ It is also highly expressed in tumor tissues isolated from patients with early-stage NSCLC. In contrast, homozygous deletion of ACSL3 is associated with an increased risk of metastasis or recurrence in patients with triple-negative breast cancer (TNBC) receiving adjuvant chemotherapy.⁷ Cayman's ACSL3 (human, recombinant; aa 45-720) protein can be used for ELISA, enzyme activity assay, and Western blot applications.

References

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5. Magtanong, L., Ko, P.-J., To, M., *et al.* Exogenous monounsaturated fatty acids promote a ferroptosis-resistant cell state. *Cell Chem. Biol.* **26**(3), 420-432 (2019).
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