

PRODUCT INFORMATION



ACSL4 (42-711) (human, recombinant)

Item No. 40327

Overview and Properties

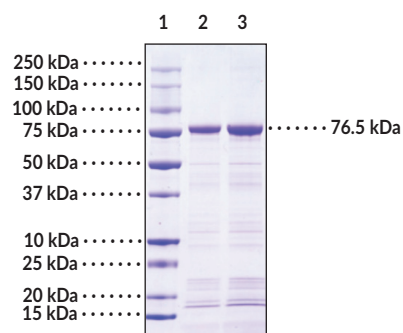
Synonyms: ACS3, FAACL4, Fatty-Acid-Coenzyme A Ligase 4, Long-chain Acyl-CoA Synthetase 4, Long-chain Fatty Acid-CoA Ligase 4
Source: Active recombinant human N-terminal His-tagged ACSL4 expressed in *E. coli*
Amino Acids: 42-711
Uniprot No.: O60488
Molecular Weight: 76.5 kDa
Storage: -80°C (as supplied)
Stability: ≥1 year
Purity: *batch specific* (≥70% estimated by SDS-PAGE)
Supplied in: 50 mM Tris, pH 8.0, with 150 mM sodium chloride, 10% glycerol, and 5 mM magnesium chloride

Protein

Concentration: *batch specific* mg/ml
Activity: *batch specific* U/ml
Specific Activity: *batch specific* U/mg
Unit Definition: One unit is the amount of enzyme required to convert 1 nmol of free fatty acid to free fatty acid acyl-CoA per minute at 37°C as measured in Cayman's Free Fatty Acid Fluorometric Assay Kit (Item No. 700310).

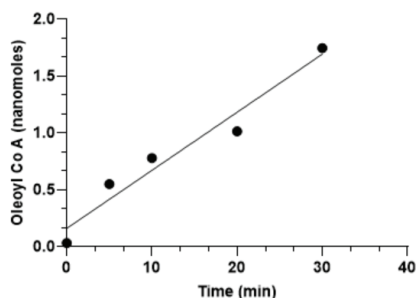
Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

Images



Lane 1: MW Markers
Lane 2: ACSL4 (2 µg)
Lane 3: ACSL4 (4 µg)

SDS-PAGE Analysis of ACSL4 (42-711)
(human, recombinant).



Human ACSL4 CoA ligase 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
Buyer agrees to purchase the material subject to Cayman's Terms and Conditions. Complete Terms and Conditions including Warranty and Limitation of Liability information can be found on our website.

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Description

Long-chain acyl-CoA synthetase 4 (ACSL4) is a CoA ligase and member of the ACSL family.^{1,2} It is composed of an N-terminal membrane-binding domain, a transmembrane domain, an adenosine adaptor region, and a C-terminal catalytic domain.² ACSL4 is primarily found in the mitochondria, peroxisomes, endoplasmic reticulum (ER), and plasma membrane.^{1,3} It is generally involved in fatty acid degradation via β -oxidation and lipid synthesis.² Specifically, ACSL4 ligates 20-chain PUFAs, such as eicosapentaenoic acid (Item Nos. 90110 | 90110.1 | 21908) or arachidonic acid (Item Nos. 90010 | 90010.1 | 10006607), to CoA to form fatty acyl-CoA esters, which are then used for lipid synthesis, plasma membrane repair, and as a carbon source in the citric acid cycle, among other processes.^{2,4} However, this process can be dysregulated by increased intracellular levels of ferrous iron (Fe^{2+}) and reactive oxygen species (ROS) that further oxidize these PUFA fatty acyl-CoA esters into lipid peroxides that contribute to the development of ferroptosis.^{3,5,6} Increased expression of ACSL4 is associated with higher cancer staging in patients with prostate cancer.⁷ Cayman's ACSL4 (42-711) (human, recombinant) protein can be used for enzyme activity, ELISA, and Western blot (WB) applications.

References

1. Quan, J., Bode, A.M., and Luo, X. ACSL family: The regulatory mechanisms and therapeutic implications in cancer. *Eur. J. Pharmacol.* **909**, 174397 (2021).
2. Chen, F., Kang, R., Liu, J., et al. The ACSL4 network regulates cell death and autophagy in diseases. *Biology (Basel)* **12(6)**, 864 (2023).
3. Yang, Y., Zhu, T., Wang, X., et al. ACSL3 and ACSL4, distinct roles in ferroptosis and cancers. *Cancers (Basel)* **14(23)**, 5896 (2022).
4. Trub, A.G. and Hirschey, M.D. Reactive acyl-CoA species modify proteins and induce carbon stress. *Trends Biochem. Sci.* **43(5)**, 369-379 (2018).
5. Liao, P., Wang, W., Wang, W., et al. CD8⁺ T cells and fatty acids orchestrate tumor ferroptosis and immunity via ACSL4. *Cancer Cell* **40(4)**, 365-378 (2022).
6. Zhang, H.-L., Hu, B.-X., Li, Z.-L., et al. PKC β III phosphorylates ACSL4 to amplify lipid peroxidation to induce ferroptosis. *Nat. Cell Biol.* **24(1)**, 88-98 (2022).
7. Wu, X., Deng, F., Li, Y., et al. ACSL4 promotes prostate cancer growth, invasion and hormonal resistance. *Oncotarget* **6(42)**, 44849-44863 (2015).

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