

# PRODUCT INFORMATION



## Fatty Acid Desaturase 2 (human recombinant)

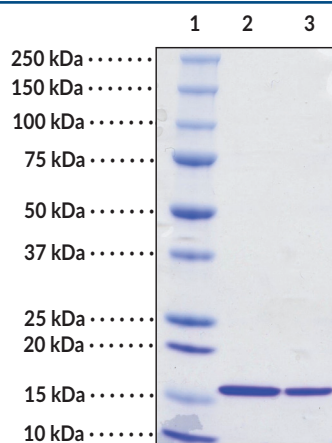
Item No. 25828

### Overview and Properties

<b>Synonyms:</b>	Acyl-CoA 6-Desaturase, D6D, DES6, EC 1.14.19.3, FADS2, FADSD6, $\Delta^6$ Fatty Acid Desaturase, Linoleoyl-CoA Desaturase ( $\Delta^6$ -Desaturase)-Like 2, LLCDL2, SLL0262, TU13
<b>Source:</b>	Recombinant N-terminal histidine-tagged FADS2 N-terminal domain purified from <i>E. coli</i>
<b>Amino Acids:</b>	2-131
<b>Uniprot No.:</b>	O95864
<b>Molecular Weight:</b>	16.99 kDa
<b>Storage:</b>	-80°C (as supplied)
<b>Stability:</b>	≥1 year
<b>Purity:</b>	<i>batch specific</i> (≥95% estimated by SDS-PAGE)
<b>Supplied in:</b>	50 mM HEPES, pH 8.0, with 150 mM sodium chloride and 10% glycerol
<b>Protein Concentration:</b>	<i>batch specific</i> mg/ml

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

### Image



Lane 1: MW Markers  
Lane 2: FADS2 (4 µg)  
Lane 3: FADS2 (2 µg)

Representative gel image shown; actual purity may vary between each batch.

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

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Fatty acid desaturase 2 (FADS2), also known as  $\Delta^6$ -desaturase, is a 444-amino acid transmembrane protein encoded by *FADS2*.<sup>1</sup> This product is the N-terminal cytoplasmic domain of FADS2, corresponding to residues 2-131 of the full-length sequence. It catalyzes the rate-limiting step in the conversion of the  $\omega$ -6 and  $\omega$ -3 precursors linoleic acid (Item Nos. 90150 | 21909) and  $\alpha$ -linolenic acid (Item No. 90210) to their respective long-chain polyunsaturated fatty acids (LC-PUFAs), inserting a *cis* double bond at position 6 of the fatty acid chain to convert linoleic acid to  $\gamma$ -linolenic acid (Item No. 90220) and  $\alpha$ -linolenic acid to stearidonic acid (Item No. 90320), respectively. Following secondary desaturation by FADS1 (Item No. 25827) and chain elongation, FADS2 catalyzes desaturation of 24-carbon LC-PUFA intermediates. FADS2 also catalyzes the desaturation of palmitic acid (Item No. 10006627) to sapienic acid in human sebaceous glands and in various cancer cell lines that express FADS2.<sup>2,3</sup> Hepatic FADS2 protein levels and mRNA expression are increased in mice with high-fat diet-induced obesity and non-alcoholic steatohepatitis (NASH).<sup>4</sup> FADS2 knockout (*fads2*<sup>-/-</sup>) mice are infertile, resistant to obesity, and have altered subcellular membrane diacylglycerol composition which leads to dysregulated post-translational processing of SREBP1c, a key transcription factor in the regulation of lipid metabolism.<sup>5</sup>

## References

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1. Lattka, E., Illig, T., Heinrich, J., *et al.* FADS gene cluster polymorphisms: Important modulators of fatty acid levels and their impact on atopic diseases. *J. Nutrigenet. Nutrigenomics* **2(3)**, 119-128 (2009).
2. Ge, L., Gordon, J.S., Hsuan, C., *et al.* Identification of the  $\Delta$ -6 desaturase of human sebaceous glands: Expression and enzyme activity. *J. Invest. Dermatol.* **120(5)**, 707-714 (2003).
3. Vriens, K., Christen, S., Parik, S., *et al.* Evidence for an alternative fatty acid desaturation pathway increasing cancer plasticity. *Nature* **566(7744)**, 403-406 (2019).
4. López-Vicario, C., González-Pérez, A., Rius, B., *et al.* Molecular interplay between  $\Delta$ 5/ $\Delta$ 6 desaturases and long-chain fatty acids in the pathogenesis of non-alcoholic steatohepatitis. *Gut* **63(2)**, 344-355 (2014).
5. Stoffel, W., Hammels, I., Jenke, B., *et al.* Obesity resistance and deregulation of lipogenesis in  $\Delta$ 6-fatty acid desaturase (FADS2) deficiency. *EMBO Rep.* **15(1)**, 110-120 (2014).

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