

Ghrelin O-acyltransferase octanoylates

Proghrelin

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Introduction

Reactome is open-source, open access, manually curated and peer-reviewed pathway database. Pathway annotations are authored by expert biologists, in collaboration with Reactome editorial staff and cross-referenced to many bioinformatics databases. A system of evidence tracking ensures that all assertions are backed up by the primary literature. Reactome is used by clinicians, geneticists, genomics researchers, and molecular biologists to interpret the results of high-throughput experimental studies, by bioinformaticians seeking to develop novel algorithms for mining knowledge from genomic studies, and by systems biologists building predictive models of normal and disease variant pathways.

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Literature references

- Fabregat, A., Sidiropoulos, K., Viteri, G., Forner, O., Marin-Garcia, P., Arnau, V. et al. (2017). Reactome pathway analysis: a high-performance in-memory approach. *BMC bioinformatics*, 18, 142. [↗](#)
- Sidiropoulos, K., Viteri, G., Sevilla, C., Jupe, S., Webber, M., Orlic-Milacic, M. et al. (2017). Reactome enhanced pathway visualization. *Bioinformatics*, 33, 3461-3467. [↗](#)
- Fabregat, A., Jupe, S., Matthews, L., Sidiropoulos, K., Gillespie, M., Garapati, P. et al. (2018). The Reactome Pathway Knowledgebase. *Nucleic Acids Res*, 46, D649-D655. [↗](#)
- Fabregat, A., Korninger, F., Viteri, G., Sidiropoulos, K., Marin-Garcia, P., Ping, P. et al. (2018). Reactome graph database: Efficient access to complex pathway data. *PLoS computational biology*, 14, e1005968. [↗](#)

Reactome database release: 88

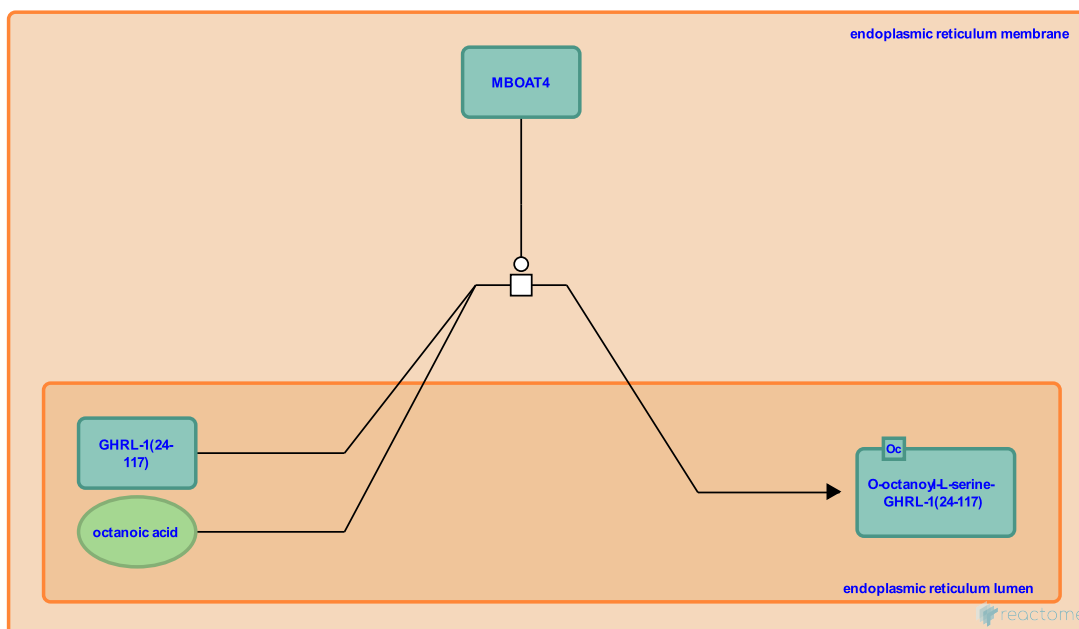
This document contains 1 reaction ([see Table of Contents](#))

Ghrelin O-acyltransferase octanoylates Proghrelin [↗](#)

Stable identifier: R-HSA-422104

Type: transition

Compartments: endoplasmic reticulum lumen, endoplasmic reticulum membrane



Proghrelin is octanoylated by ghrelin O-acyltransferase (GOAT/MBOAT4), an enzyme present in the endoplasmic reticulum membrane which both transports the octanoic acid substrate and condenses it on the hydroxyl group of serine-3 of the mature protein. The most common acylated form of ghrelin is octanoyl ghrelin but decanoyl ghrelin is also detected. Ghrelin is the only protein known to undergo such a modification.

Literature references

- Yin, X., Li, Y., Zhang, W., An, W., Xu, G. (2009). Ghrelin fluctuation, what determines its production?. *Acta Biochim Biophys Sin (Shanghai)*, 41, 188-97. [↗](#)
- Soares, JB., Leite-Moreira, AF. (2008). Ghrelin, des-acyl ghrelin and obestatin: three pieces of the same puzzle. *Peptides*, 29, 1255-70. [↗](#)
- Kangawa, K., Hosoda, H., Mizushima, T., Shimizu, S., Kojima, M. (2003). Structural divergence of human ghrelin. Identification of multiple ghrelin-derived molecules produced by post-translational processing. *J Biol Chem*, 278, 64-70. [↗](#)
- Nakamura, Y., Ida, T., Tsuji, A., Sato, T., Takahashi, T., Nakashima, Y. et al. (2009). Production of n-octanoyl-modified ghrelin in cultured cells requires prohormone processing protease and ghrelin O-acyltransferase, as well as n-octanoic acid. *J Biochem.* [↗](#)
- Knierman, MD., Luo, S., Hale, JE., Jin, Z., Onyia, JE., Witcher, DR. et al. (2008). Ghrelin octanoylation mediated by an orphan lipid transferase. *Proc Natl Acad Sci U S A*, 105, 6320-5. [↗](#)

Editions

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