

FFAR1 binds fatty acids

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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

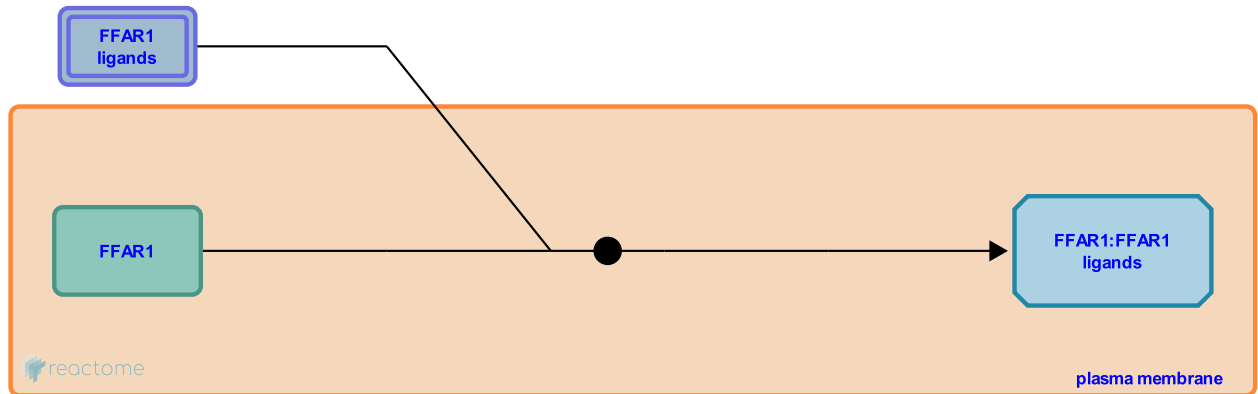
This document contains 1 reaction ([see Table of Contents](#))

FFAR1 binds fatty acids [↗](#)

Stable identifier: R-HSA-400434

Type: binding

Compartments: plasma membrane, extracellular region



Free fatty acid receptor 1 (FFAR1), also known as GPR40, is a G-protein coupled receptor located in the plasma membrane of pancreatic beta cells. FFAR1/GPR40 binds medium and long chain free fatty acids (free fatty acids having more than 12 carbon groups).

Literature references

- Shimada, Y., Masuzaki, H., Nakao, K., Kawamura, J., Tanaka, T., Fujikura, J. et al. (2005). GPR40 gene expression in human pancreas and insulinoma. *Biochem Biophys Res Commun*, 338, 1788-90. [↗](#)
- Minnick, DT., Ignar, DM., Muir, AI., Strum, JC., Goetz, AS., Elshourbagy, NA. et al. (2003). The orphan G protein-coupled receptor GPR40 is activated by medium and long chain fatty acids. *J Biol Chem*, 278, 11303-11. [↗](#)
- Olde, B., Flodgren, E., Owman, C., Kotarsky, K., Nilsson, NE. (2003). A human cell surface receptor activated by free fatty acids and thiazolidinedione drugs. *Biochem Biophys Res Commun*, 301, 406-10. [↗](#)
- Matsumura, F., Shinohara, T., Okubo, S., Tanaka, Y., Komatsu, H., Itoh, Y. et al. (2003). Free fatty acids regulate insulin secretion from pancreatic beta cells through GPR40. *Nature*, 422, 173-6. [↗](#)
- Mosca, F., D'Aleo, V., Filipponi, F., Del Guerra, S., Bugliani, M., Lupi, R. et al. (2009). G-protein-coupled receptor 40 (GPR40) expression and its regulation in human pancreatic islets: The role of type 2 diabetes and fatty acids. *Nutr Metab Cardiovasc Dis*. [↗](#)

Editions

2009-06-08	Authored, Edited	May, B.
2009-09-09	Reviewed	Poitout, V., Kebede, M.
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