GOT2 dimer transfers amino group from L-Cys to 2OG to form 3MPYR and Glu

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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

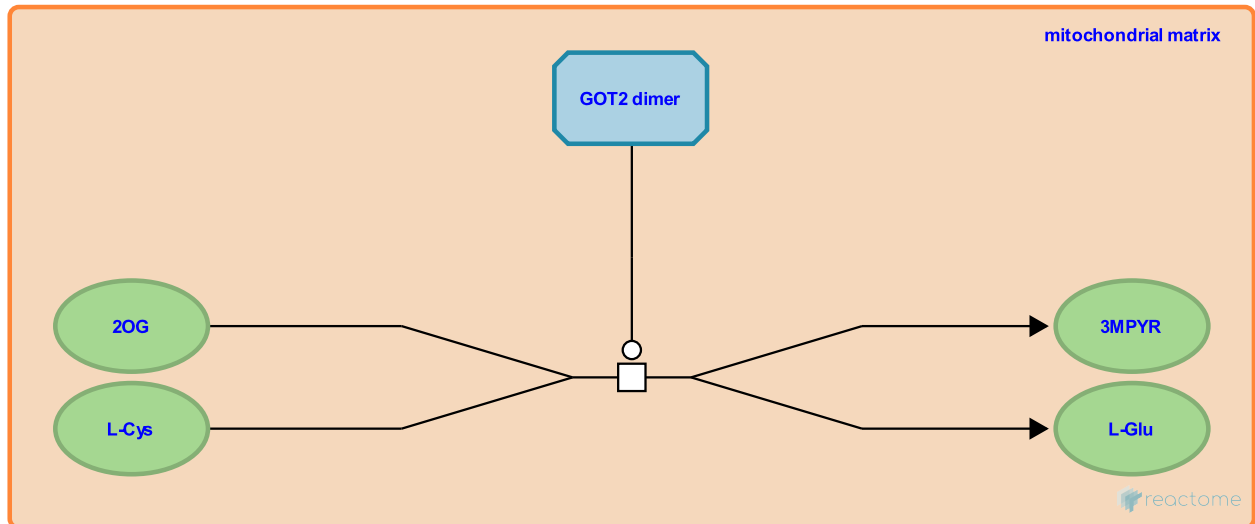This document contains 1 reaction (see Table of Contents)

GOT2 dimer transfers amino group from L-Cys to 2OG to form 3MPYR and Glu ↗

Stable identifier: R-HSA-9012597

Type: transition

Compartments: mitochondrial matrix

Inferred from: Got2:PLXP dimer transfers amino group from L-Cys to 2OG to form 3MPYR and Glu (Rattus norvegicus)

Hydrogen sulfide (H2S) produced endogenously has been established as the third gaseous signaling molecule, a smooth muscle relaxant and a neuroprotectant (Kimura 2011a, 2011b). Three human enzyme systems produce H2S in the brain, retina and vascular endothelial cells. 3-mercaptopyruvate sulphurtransferase (MPST, aka 3MST) in conjunction with cysteine (aspartate) aminotransferase (CAT, aka GOT2) is decribed here. The first step is the reversible transamination between L-cysteine (L-Cys) and 2-oxoglutarate (2OG, aka alpha-ketoglutarate) to form 3-methylpyruvate (3MPYR) and glutamate (Glu) catalysed by GOT2. Two forms of human aspartate aminotransferase (GOT) enzymes exist; cytosolic (GOT1) and mitochondrial (GOT2). Both are dimeric proteins requiring pyridoxal phosphate for activity. Human GOT2 (Zhou et al. 1998) possesses the same catalytic activity as its rat counterpart (Ubuka et al. 1978).

Literature references

Gordon, RE., Berk, PD., Bradbury, M., Stump, D., Zhou, SL., Kiang, CL. (1998). Ethanol up-regulates fatty acid uptake and plasma membrane expression and export of mitochondrial aspartate aminotransferase in HepG2 cells. *Hepatology, 27*, 1064-74. ↗

Editions

2017-07-17	Authored, Edited	Jassal, B.
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