Assembly of active LPL and LIPC lipase complexes

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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


Reactome database release: 72

This document contains 1 pathway and 12 reactions (see Table of Contents)
Assembly of active LPL and LIPC lipase complexes

Stable identifier: R-HSA-8963889

Lipoprotein lipase (LPL) and hepatic triacylglycerol lipase (LIPC) enzymes on the luminal surfaces of capillary endothelia mediate the hydrolysis of triglyceride molecules in circulating lipoprotein particles.

LPL is widely expressed in the body and is especially abundant in adipocytes and skeletal and cardiac myocytes. Activation of the protein requires glycosylation, dimerization, and glycosylphosphatidylinositol-anchored high density lipoprotein-binding protein 1 (GPIHBP1), which delivers it to heparan sulfate proteoglycan (HSPG) associated with the plasma membrane. It is inactivated by proteolytic cleavage (Berryman & Bensadoun 1995; Sukonina et al. 2006; Young et al. 2011).

Expression of the LPL gene is transcriptionally regulated by Cyclic AMP-responsive element-binding protein 3-like protein 3 (CREB3L3), which also regulates the expression of APOA4, APOA5, APOC2, CIDEC and FGF21 (Lee et al. 2011).

Maturation of LIPC enzyme requires association with LMF1 protein (or possibly, inferred from sequence similarity, LMF2). Heparin binding stabilizes LIPC in its active dimeric form (Babilonia-Rosa & Neher 2014; Ben-Zeev et al. 2011).

Literature references


## Editions

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HSPG binds LPL dimer

**Location:** Assembly of active LPL and LIPC lipase complexes

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