LCNs bind lipids

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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

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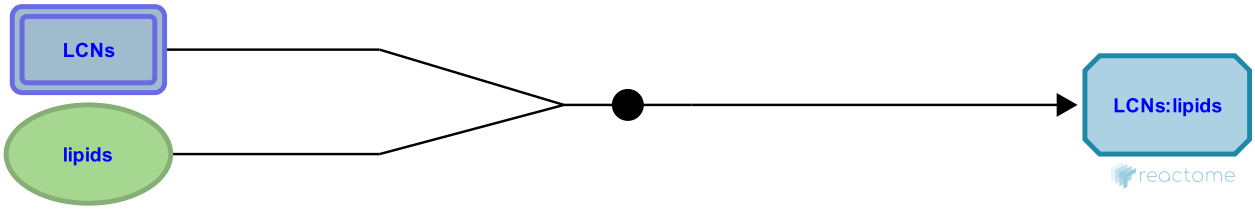
Stable identifier: R-HSA-5229283

Type: binding

Compartments: extracellular region



Lipocalins (LCNs) are a family of extracellular proteins that are implicated in the transport of small hydrophobic molecules such as lipids, retinoids, steroids and bilins (Grzyb et al. 2006). The family members differ in amino acid sequence but they share a highly conserved beta-barrel structure comprised of an eight-stranded anti-parallel beta-sheet. This structure forms a ligand-binding pocket that is responsible for binding and transporting lipids and other small hydrophobic molecules (Flower et al. 1993). LCNs have been associated with many biological processes such as immune response, prostaglandin synthesis, retinoid binding and cancer cell interactions. Lipocalins 1, 9, 12, and 15 (LCN1, 9, 12 and 15) are all able to transport different types of hydrophobic molecules.

Apolipoprotein D (APOD) is a 29-kDa glycoprotein that is primarily associated with high density lipoproteins (HDLs) in human plasma (Drayna et al. 1986, Yang et al. 1994). It is an atypical apolipoprotein and, based on its primary structure, it is predicted to be a member of the lipocalin family. Lipocalins adopt a tertiary beta-barrel structure and transport small hydrophobic ligands. Although APOD can bind cholesterol, progesterone, pregnenolone, bilirubin and arachidonic acid, it is unclear if any, or all of these, represent its physiological ligands (Perdomo et al. 2010). APOD's role in lipid metabolism could have implication in atherosclerosis and ageing (Perdomo & Dong 2009).

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Editions

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