Energy dependent regulation of mTOR by LKB1-AMPK


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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: 79

This document contains 1 pathway and 7 reactions (see Table of Contents)
Energy dependent regulation of mTOR by LKB1-AMPK

Stable identifier: R-HSA-380972

Upon formation of a trimeric LKB1:STRAD:MO25 complex, LKB1 phosphorylates and activates AMPK. This phosphorylation is immediately removed in basal conditions by PP2C, but if the cellular AMP:ATP ratio rises, this activation is maintained, as AMP binding by AMPK inhibits the dephosphorylation. AMPK then activates the TSC complex by phosphorylating TSC2. Active TSC activates the intrinsic GTPase activity of Rheb, resulting in GDP-loaded Rheb and inhibition of mTOR pathway.

Literature references


Editions

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<tr>
<th>Date</th>
<th>By</th>
<th>Jassal, B.</th>
<th>Wu, J., Katajisto, P., Makela, T.</th>
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LKB1 forms a trimeric complex with STRAD and MO25

Location: Energy dependent regulation of mTOR by LKB1-AMPK

Stable identifier: R-HSA-380942