AKT1S1 (PRAS40) binds mTORC1

Jupe, S., Zwartkruis, FJ.

European Bioinformatics Institute, New York University Langone Medical Center, Ontario Institute for Cancer Research, Oregon Health and Science University.

22/10/2024

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.

The development of Reactome is supported by grants from the US National Institutes of Health (P41 HG003751), University of Toronto (CFREF Medicine by Design), European Union (EU STRP, EMI-CD), and the European Molecular Biology Laboratory (EBI Industry program).

Literature references

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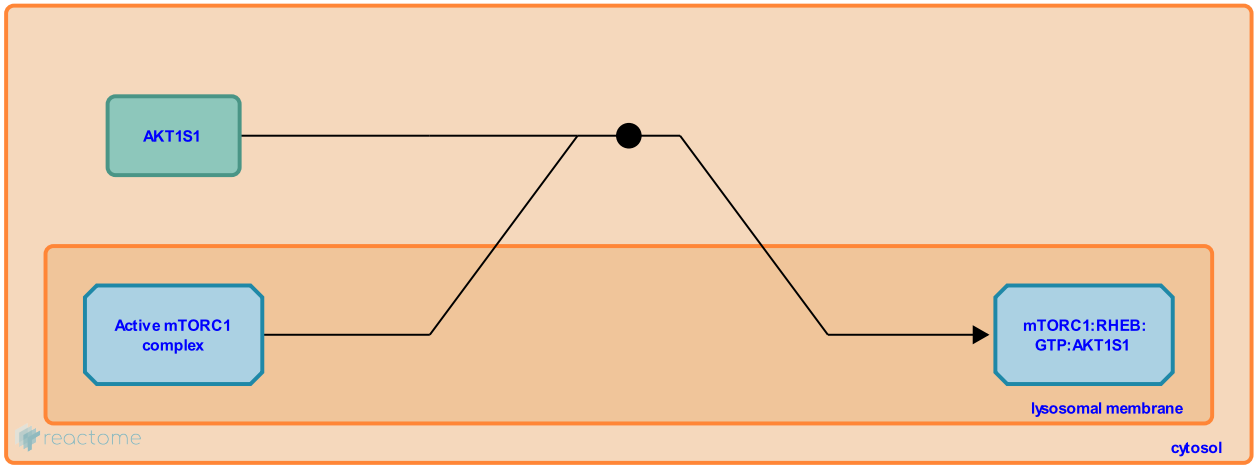
Stable identifier: R-HSA-5672843

Type: binding

Compartments: lysosomal membrane, cytosol



AKT1S1 (PRAS40, proline-rich Akt/PKB substrate 40 kDa) is an mTORC1 accessory protein that binds the mTOR kinase domain. The interaction with mTOR is induced under conditions that inhibit mTOR signalling, such as nutrient or serum deprivation or mitochondrial metabolic inhibition. AKT1S1 binding suppresses mTORC1 phosphorylation of S6K1 and 4E-BP1 (Sancak et al. 2007, Vander Haar et al. 2008, Oshiro et al. 2007) and suppresses constitutive activation of mTOR in cells lacking TSC2. AKT1S1 silencing inactivates insulin-receptor substrate-1 (IRS-1) and Akt, and uncouples the response of mTOR to Akt signals. Furthermore, AKT1S1 phosphorylation by Akt and association with 14-3-3, a cytosolic anchor protein, are crucial for insulin to stimulate mTOR (Sancak et al. 2007, Vander Haar et al. 2008). PRAS40 is also a substrate of the mTOR complex (Kovacina et al. 2003, Oshiro et al. 2007).

Literature references

Kim, DH., Bandhakavi, S., Griffin, TJ., Lee, SI., Vander Haar, E. (2007). Insulin signalling to mTOR mediated by the Akt/PKB substrate PRAS40. *Nat Cell Biol, 9*, 316-23. ↗

Editions

2015-02-02	Authored	Jupe, S.
2015-04-08	Revised	Jupe, S.
2015-05-13	Edited	Jupe, S.
2015-05-14	Reviewed	Zwartkruis, FJ.