PIP3 recruits AKT to the membrane

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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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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. ↗

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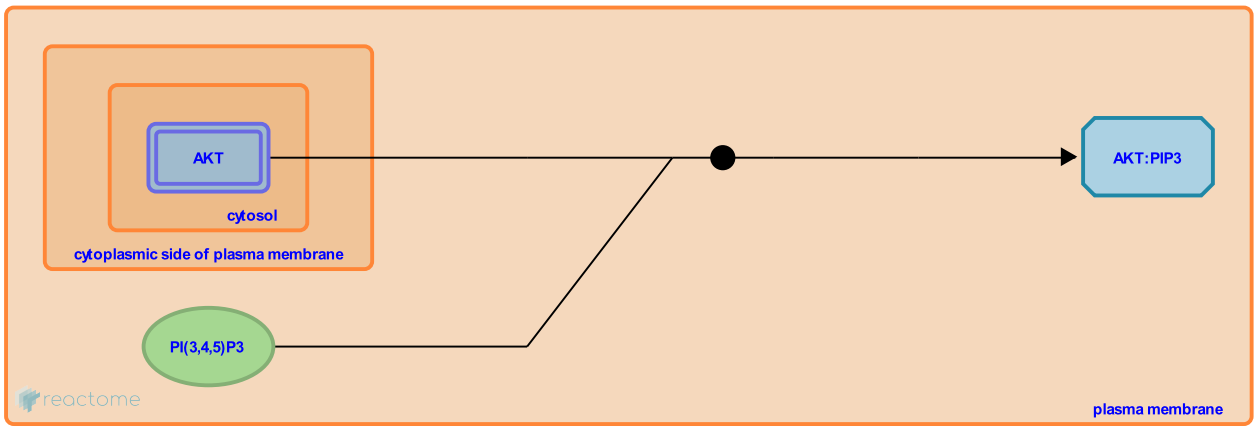
Stable identifier: R-HSA-2317332

Type: binding

Compartments: cytosol, plasma membrane



PIP3 generated by PI3K recruits AKT (also known as protein kinase B) to the membrane, through its PH (pleckstrin-homology) domains. The binding of PIP3 to the PH domain of AKT is the rate-limiting step in AKT activation (Scheid et al. 2002). In mammals there are three AKT isoforms (AKT1-3) encoded by three separate genes. The three isoforms share a high degree of amino acid identity and have indistinguishable substrate specificity in vitro. However, isoform-preferred substrates in vivo cannot be ruled out. The relative expression of the three isoforms differs in different mammalian tissues: AKT1 is the predominant isoform in the majority of tissues, AKT2 is the predominant isoform in insulin-responsive tissues, and AKT3 is the predominant isoform in brain and testes. All 3 isoforms are expressed in human and mouse platelets (Yin et al. 2008; O'Brien et al. 2008). Note: all data in the pathway refer to AKT1, which is the most studied.

Literature references

Woodgett, JR., Scheid, MP., Marignani, PA. (2002). Multiple phosphoinositide 3-kinase-dependent steps in activation of protein kinase B. *Mol Cell Biol, 22*, 6247-60. ↗

Editions

2006-10-10	Authored	Annibali, D., Nasi, S.
2007-11-08	Reviewed	Greene, LA.
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