Recruitment of PAK to the membrane by binding active RAC1

Garapati, P V., Niarakis, A., Roncagalli, R.

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

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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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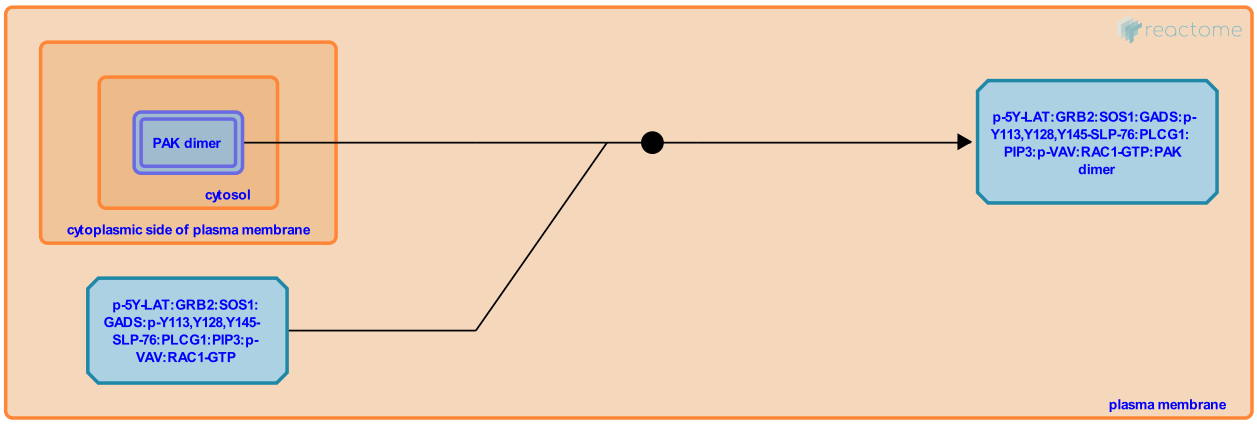
Stable identifier: R-HSA-2730889

Type: binding

Compartments: plasma membrane, cytosol



PAK1 kinase is a member of serine/threonine protein kinase family and is widely believed as mediator between Cdc42 and Rac1 and the JNK signal transduction pathway. PAK1 is involved in regulating FCERI mediated mast cell degranulation via effects on calcium mobilisation and cytoskeletal changes (Allen et al. 2009). The conventional PAK family contains a N-terminal conserved Cdc42/Rac-interacting binding domain (CRIB) that overlaps a kinase inhibitory (KI) domain and a C-terminal catalytic domain. PAK1 molecules form trans-inhibited homodimers in which the N-terminal kinase inhibitory (KI) domain of one PAK1 molecule in the dimer binds and inhibits the C-terminal catalytic domain of the other. Isoprenylated Rac1/Cdc42-GTP localized to the membrane recruits PAK1 by binding to the N-terminal CRIB domain. Binding of activated Cdc42/Rac1, breaks the PAK1-dimer and removes the trans-inhibition and stimulates serine/threonine kinase activity of that allows autophosphorylation (Lu & Mayer 1999, Parrini et all. 2009, Zhao et al. 2005).

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