

PDK1 phosphorylates PKC

Ballmer-Hofer, K., Berger, P., Garapati, P V., Welsh, M.

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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Reactome database release: 88

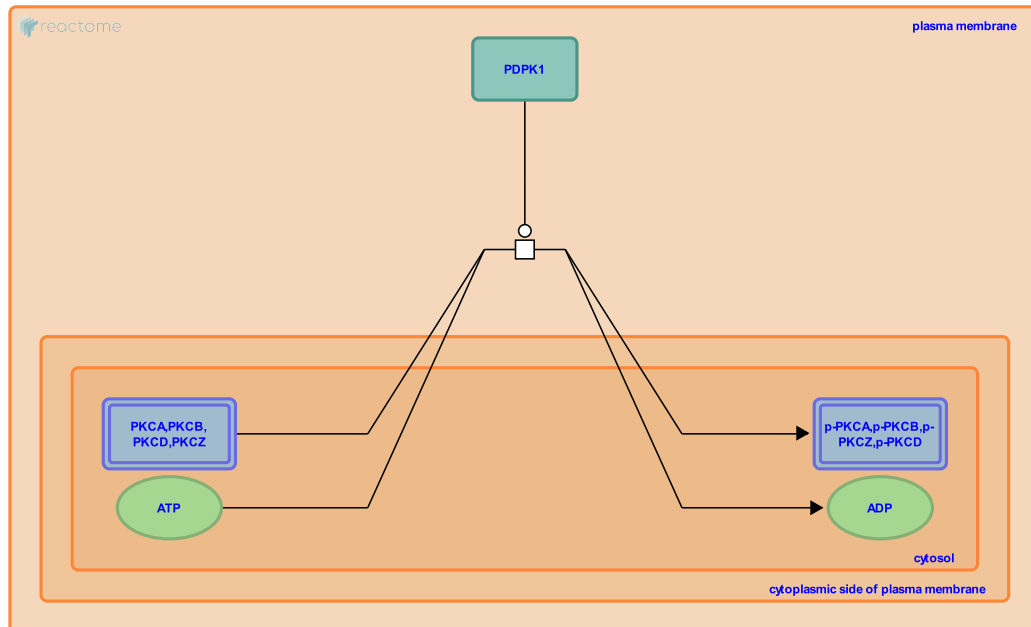
This document contains 1 reaction ([see Table of Contents](#))

PDK1 phosphorylates PKC [↗](#)

Stable identifier: R-HSA-5218821

Type: transition

Compartments: plasma membrane, cytosol



Protein kinase C (PKC) activation enhances angiogenesis by participating in the intracellular signaling of vascular endothelial growth factor (VEGF) in endothelial cells. VEGF can activate several PKC isoforms including alpha, beta, delta and zeta isoforms. Their activation is preceded by the activation of PLC gamma (Suzuma et al. 2002, Xia et al. 1996, Takahashi et al. 1999, Wellner et al. 1999). Before Protein kinase C (PKC) is competent to respond to second messengers it must first be phosphorylated at three conserved positions: the activation loop and two positions at the carboxyl terminus of the protein (Dutil et al. 1998). The phosphorylation of the activation loop appears to occur first and is mediated by phosphoinositide dependent protein kinases (PDKs). PDK1 phosphorylates PKCs at a critical Thr (T) residue in the activation loop, a requirement for PKC to gain catalytic competency (Toker 2003).

Literature references

Toker, A. (2003). PDK-1 and protein kinase C phosphorylation. *Methods Mol. Biol.*, 233, 171-89. [↗](#)

Dutil, EM., Newton, AC., Toker, A. (1998). Regulation of conventional protein kinase C isozymes by phosphoinositide-dependent kinase 1 (PDK-1). *Curr. Biol.*, 8, 1366-75. [↗](#)

Editions

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Garapati, P V.

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Welsh, M., Ballmer-Hofer, K., Berger, P.