(Frs2)C3G stimulates nucleotide exchange on Rap1

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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

Fabregat, A., Sidiropoulos, K., Viteri, G., Forner, O., Marin-Garcia, P., Arnau, V. et al. (2017). Reactome pathway analysis: a high-performance in-memory approach. *BMC bioinformatics, 18*, 142. ↗

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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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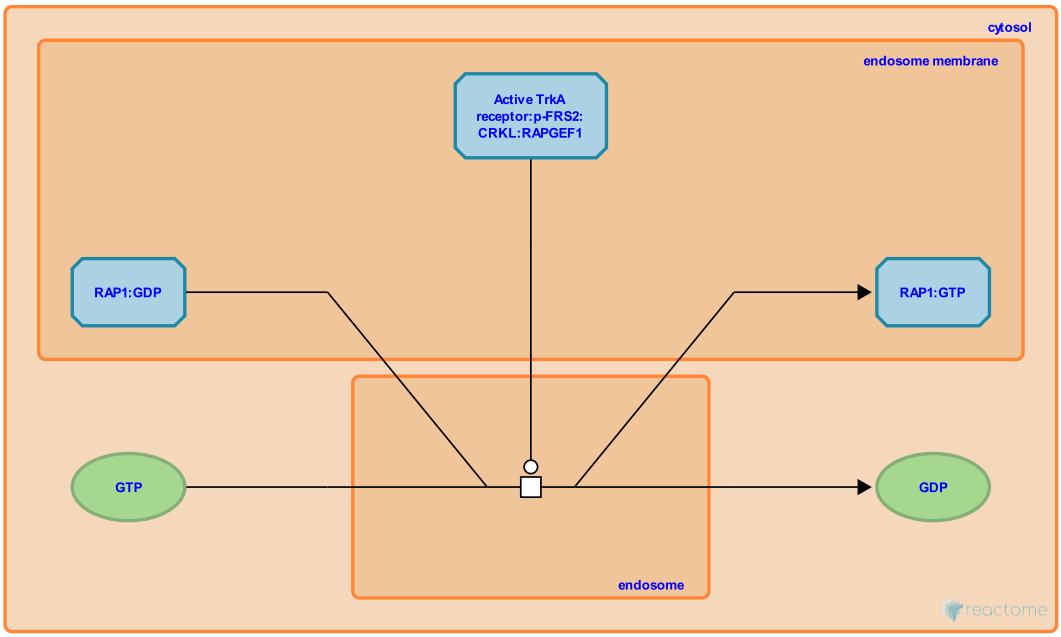
Stable identifier: R-HSA-170979

Type: transition

Compartments: endosome

Inferred from: C3G stimulates nucleotide exchange on Rap1 (Rattus norvegicus)



Rap1 is a small G protein, necessary for prolonged ERK activity in PC12 cells. In such cells, NGF triggers a program of neuronal differentiation through the activation of a Rap1:B-RAF:ERK module Rap1 is activated by NGF, but not by epidermal growth factor (EGF), although both growth factors cause transient activation of RAS. Activation of Rap1 by NGF requires internalization of TRKA to intracellular vesicles, mostly endosomes, containing Rap1, B-RAF, MEK and ERKs. Rap1 does not co-localize with RAS. Therefore, the ability of Rap1 to bind RAF-1 without activating it might sequester RAF-1 from RAS. Activation of GEFs that couple to Rap1 as well as RAS might provide a mechanism to limit signals to RAS.

Literature references

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Editions

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