Activation of Rac1 by FARP2

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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. ↗

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. ↗

Fabregat, A., Korninger, F., Viteri, G., Sidiropoulos, K., Marin-Garcia, P., Ping, P. et al. (2018). Reactome graph database: Efficient access to complex pathway data. *PLoS computational biology, 14*, e1005968. ↗

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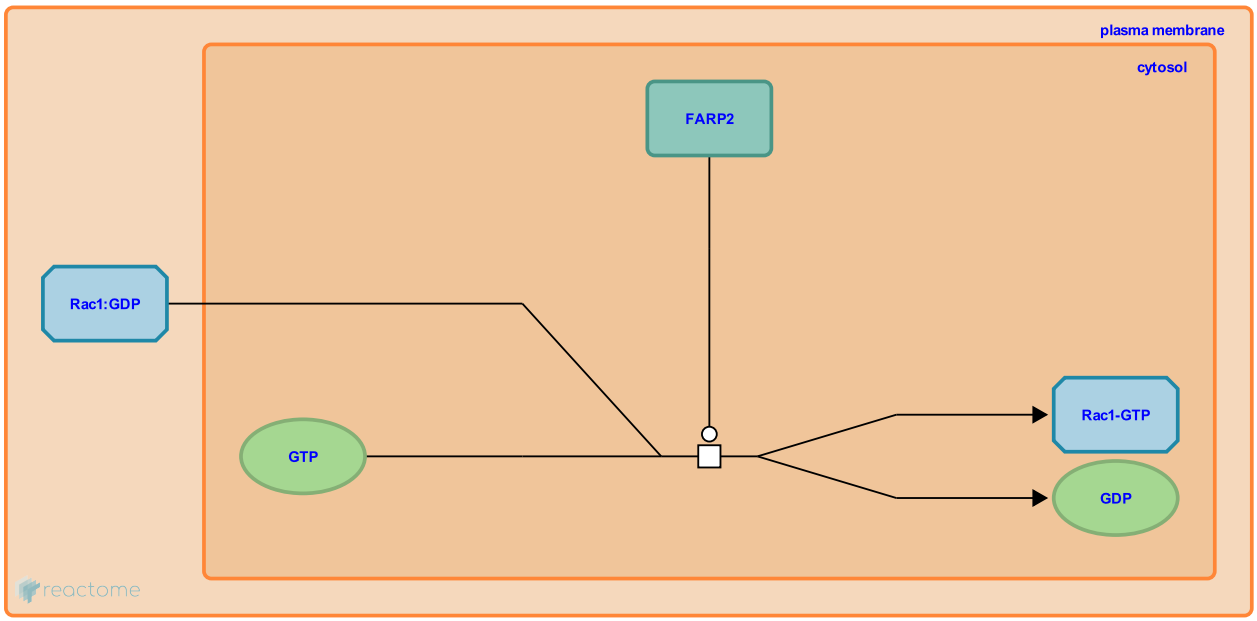
Stable identifier: R-MMU-421147

Type: transition

Compartments: cytosol



Sema3A-mediated dissociation of FARP2 from Plexin-A is followed by activation of Rac1 by the GEF activity of released FARP2.

FARP2 is critical for Sema3A-mediated axonal repulsion through two independent downstream signaling pathways. Sema3A mediated disassociation of FARP2 from Plexin-A is followed by activation of Rac by GEF activity of released FARP2, binding of Rnd1 to plexin-A and down regulation of R-Ras by GAP activity of plexin-A.

Literature references

Toyofuku, T., Yoshida, J., Sugimoto, T., Zhang, H., Kumanogoh, A., Hori, M. et al. (2005). FARP2 triggers signals for Sema3A-mediated axonal repulsion. *Nat Neurosci, 8*, 1712-9. ↗

Schmidt, EF., Strittmatter, SM. (2007). The CRMP family of proteins and their role in Sema3A signaling. *Adv Exp Med Biol, 600*, 1-11. ↗

Editions

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