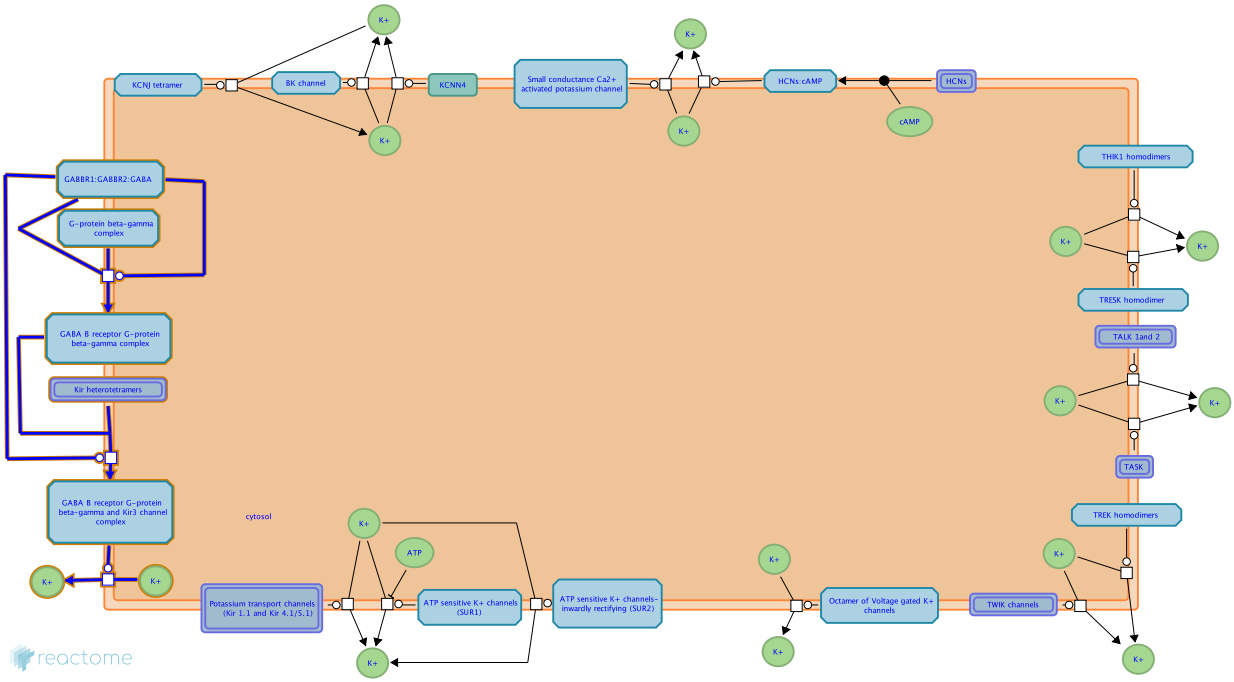
G protein gated Potassium channels



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16/09/2021

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. ↗

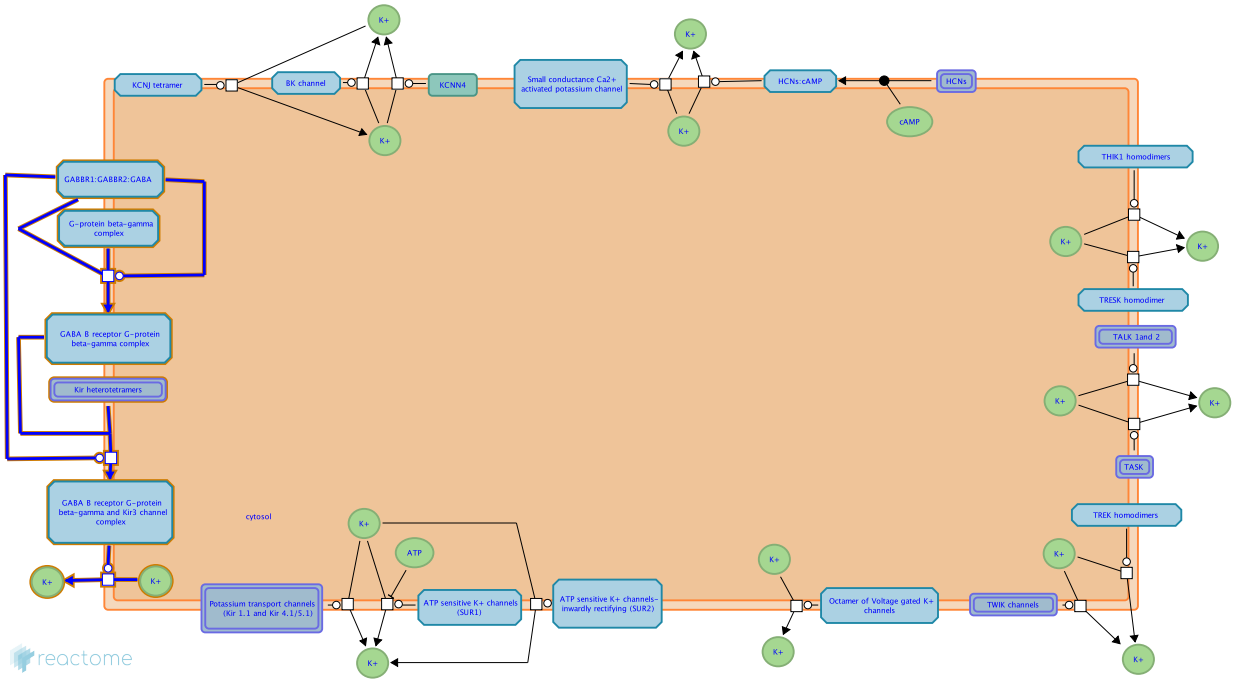
Fabregat, A., Jupe, S., Matthews, L., Sidiropoulos, K., Gillespie, M., Garapati, P. et al. (2018). The Reactome Pathway Knowledgebase. *Nucleic Acids Res, 46*, D649-D655. ↗

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. ↗

G protein gated Potassium channels ↗

Stable identifier: R-HSA-1296059

Compartments: plasma membrane, cytosol, extracellular region



Inwardly rectifying G protein activated K+ channels (GIRK) are tetrameric assemblies of Ki3 3 family subunits (Kir 3.1, 3.2 3.3 and 3.4). The activation of G protein coupled receptor by ligand results in the liberation of G alpha and G beta gamma subunits. Gbeta gamma subunits interact and activate GIRK channels.

Literature references

D'Avanzo, N., Cheng, WW., Doyle, DA., Nichols, CG. (2010). Direct and specific activation of human inward rectifier K+ channels by membrane phosphatidylinositol 4,5-bisphosphate. *J Biol Chem, 285*, 37129-32. ↗

Editions

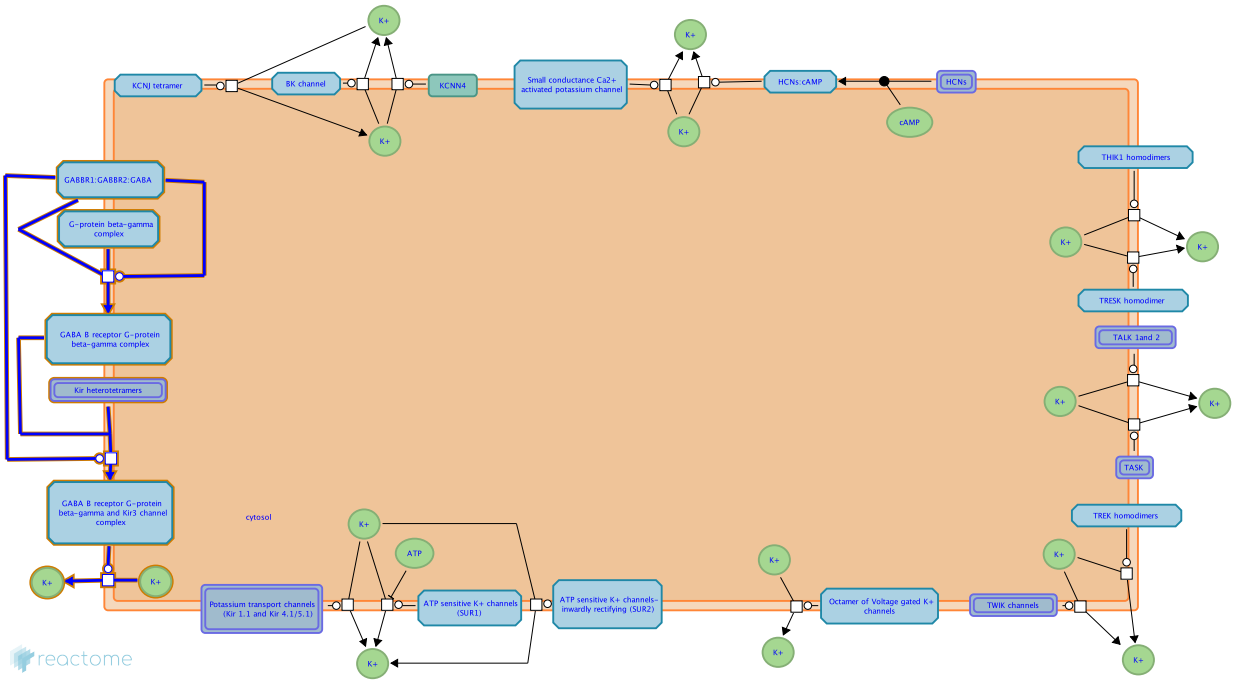
2010-09-23	Reviewed	Jassal, B.
2011-05-19	Authored	Mahajan, SS.
2011-05-23	Edited	Mahajan, SS.

Activation of G protein gated Potassium channels ↗

Location: G protein gated Potassium channels

Stable identifier: R-HSA-1296041

Compartments: plasma membrane, cytosol, extracellular region



Activation of Kir 3 channels occurs after binding of G beta gamma subunits of GPCR. Activation of Kir3/GIRK leads to K+ efflux. The dissociation of GPCR into G alpha and G beta gamma subunits is activated by the activation of GABA B receptor by GABA binding.

Literature references

Cramer, NP., Best, TK., Stoffel, M., Siarey, RJ., Galdzicki, Z. (2010). GABAB-GIRK2-mediated signaling in Down syndrome. *Adv Pharmacol, 58*, 397-426. ↗

Editions

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