Autophosphorylation of PDGFRA extracellular domain dimers

Ip, CKM., Rothfels, K.

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

06/05/2024

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.

The development of Reactome is supported by grants from the US National Institutes of Health (P41 HG003751), University of Toronto (CFREF Medicine by Design), European Union (EU STRP, EMI-CD), and the European Molecular Biology Laboratory (EBI Industry program).

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. ↗

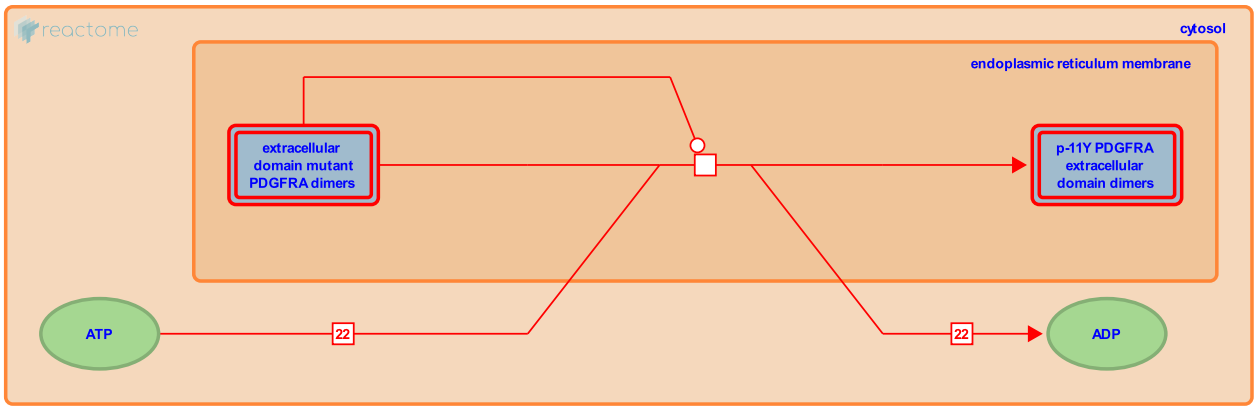
Autophosphorylation of PDGFRA extracellular domain dimers ↗

Stable identifier: R-HSA-9672173

Type: transition

Compartments: cytosol, endoplasmic reticulum membrane

Diseases: cancer



Constitutively active extracellular domain mutants of PDGFRA are trans-autophosphorylated at internal compartments in the absence of stimulation by ligand (Clarke and Dirks, 2003; Ozawa et al, 2010; Paugh et al 2013; Ip et al, 2018).

Literature references

Vellano, CP., Scott, KL., Ju, Z., Jeong, KJ., Shao, SH., Leonard, PG. et al. (2018). Neomorphic PDGFRA extracellular domain driver mutations are resistant to PDGFRA targeted therapies. *Nat Commun, 9*, 4583. ↗

Clarke, ID., Dirks, PB. (2003). A human brain tumor-derived PDGFR-alpha deletion mutant is transforming. *Oncogene , 22*, 722-33. ↗

Ladanyi, M., Fomchenko, EI., Fujii, K., Brennan, CW., Tandon, A., Oka, H. et al. (2010). PDGFRA gene rearrangements are frequent genetic events in PDGFRA-amplified glioblastomas. *Genes Dev., 24*, 2205-18. ↗

Diaz, AK., Zhang, J., Broniscer, A., Zhang, J., Zhu, X., Baker, SJ. et al. (2013). Novel oncogenic PDGFRA mutations in pediatric high-grade gliomas. *Cancer Res., 73*, 6219-29. ↗

Editions

2020-02-06	Reviewed	Ip, CKM.
2020-02-25	Authored, Edited	Rothfels, K.