EGFR non-clathrin mediated endocytosis

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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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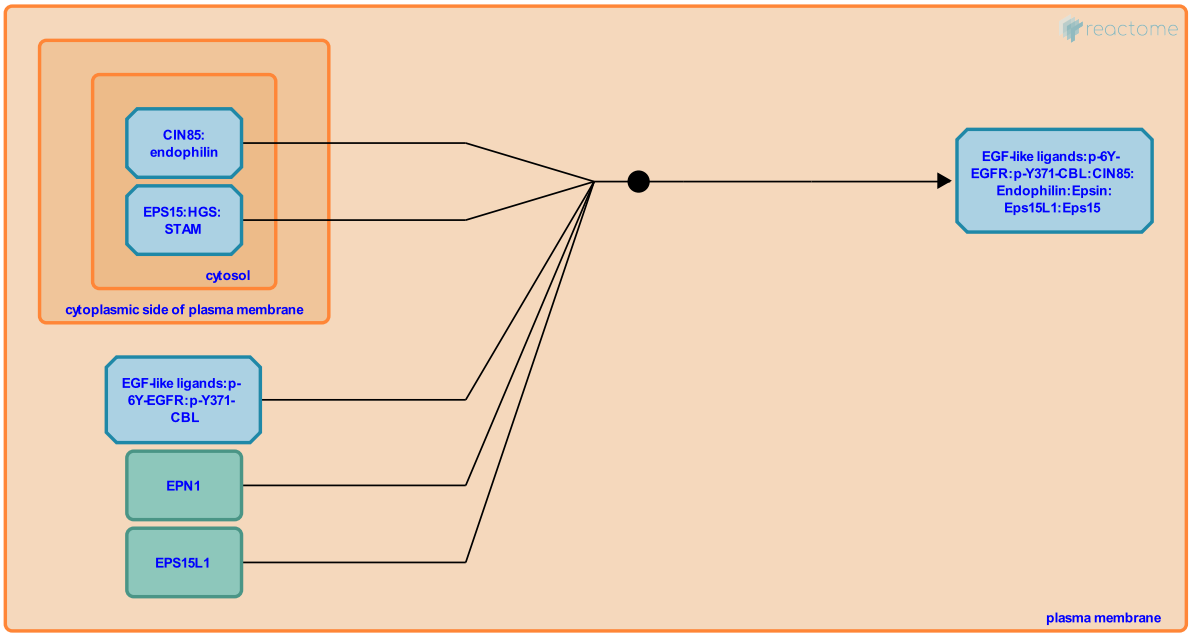
Stable identifier: R-HSA-183072

Type: binding

Compartments: cytosol, plasma membrane



At higher concentrations of ligand, a substantial fraction of the receptor (>50%) is endocytosed through a clathrin independent, lipid-raft-dependent route as the receptor becomes Y1069 (i.e. Y1045 in the mature protein) phosphorylated and ubiquitnated. Eps15 and Epsin are found in caveolae. Eps15 and Epsin are immunoprecipated with the EGF receptor. Non-clathrin internalization of ubiquitinated EGFR depends on its interaction with proteins harbouring the UIM Ub-interacting motif, as shown through the ablation of three Ub-interacting motif-containing proteins, Eps15, Eps15R and Epsin.

Literature references

Pijnenburg, M., Lemeer, S., van Bergen en Henegouwen, PM., Sorokina, I., Klapisz, E., Verkleij, AJ. (2002). A ubiquitin-interacting motif (UIM) is essential for Eps15 and Eps15R ubiquitination. *J Biol Chem, 277*, 30746-53. ↗

Di Fiore, PP., Tacchetti, C., Transidico, P., Puri, C., Maspero, E., Polo, S. et al. (2005). Clathrin-independent endocytosis of ubiquitinated cargos. *Proc Natl Acad Sci U S A, 102*, 2760-5. ↗

Editions

2006-10-10	Authored	Castagnoli, L.
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