GFAP binds LAMP2a multimer

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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. ↗

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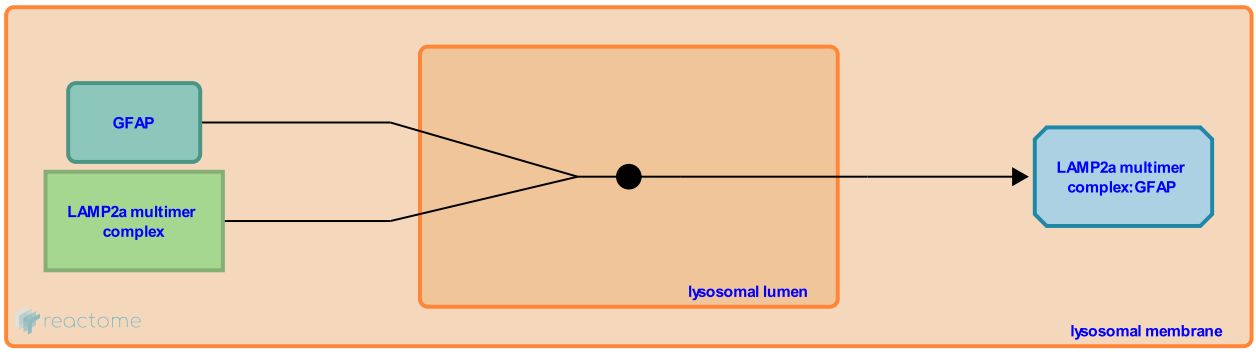
GFAP binds LAMP2a multimer ↗

Stable identifier: R-HSA-9625197

Type: binding

Compartments: lysosomal lumen, lysosomal membrane

Inferred from: Gfap binds Lamp2 multimer (Rattus norvegicus)



Intracellular proteins are targeted for proteolytic degradation in the lysosome with the aid of chaperones. Heat shock cognate 71 kDa protein (HSPA8) acts as the constitutive chaperone that binds KFERQ-domain containing substrates in the cytosol. Consequently, the HSPA8:Substrate complex translocates from cytosol to lysosomal membrane where it binds to Lysosome-associated membrane glycoprotein 2 (LAMP2a). Subsequently, HSPA8 is released and Heat shock protein HSP 90 binds to the lysosomal luminal end of LAMP2a. This LAMP2a complex then multimerizes into a 700 kDa entity and is stabilized by the binding of Glial fibrillary acidic protein (GFAP) (Bandyopadhyay U et al. 2010). Subsequently, the substrate is unfolded and internalized into the lumen. Experiments confirming this binding were performed on rat models.

Literature references

Cuervo, AM., Kiffin, R., Sridhar, S., Kaushik, S., Bandyopadhyay, U. (2010). Identification of regulators of chaperone-mediated autophagy. *Mol. Cell, 39*, 535-47. ↗

Cuervo, AM., Kiffin, R., Kon, M., Sridhar, S., Bandyopadhyay, U., Kaushik, S. et al. (2011). Chaperone-mediated autophagy at a glance. *J. Cell. Sci., 124*, 495-9. ↗

Editions

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