Phosphorylation of SYK

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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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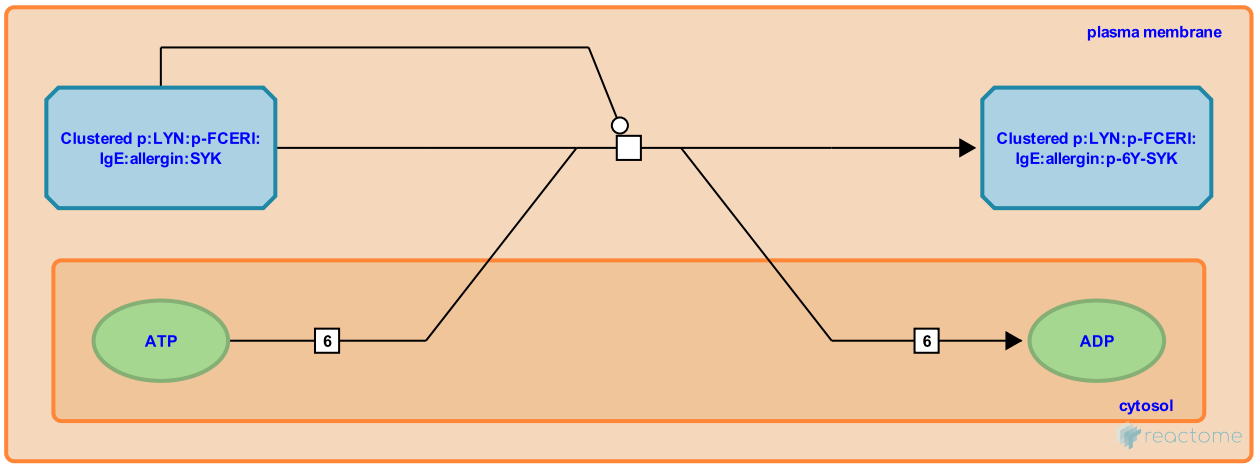
Stable identifier: R-HSA-2454239

Type: transition

Compartments: plasma membrane, cytosol

Inferred from: Phosphorylation of syk (Rattus norvegicus)



Multiple sites of phosphorylation are known to exist in SYK, which both regulate its activity and also serve as docking sites for other proteins. Some of these sites include Y131 of interdomain A, Y323, Y348, and Y352 of interdomain B, and Y525 and Y526 within the activation loop of the kinase domain and Y630 in the C-terminus (Zhang et al. 2002, Lupher et al. 1998, Furlong et al. 1997). Phosphorylation of these tyrosine residues disrupts autoinhibitory interactions and results in kinase activation even in the absence of phosphorylated ITAM tyrosines (Tsang et al. 2008). SYK is primarily phosphorylated by Src family kinases and this acts as an initiating trigger by generating few molecules of activated SYK which are then involved in major SYK autophosphorylation (Hillal et al. 1997).

Editions

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