JAK1 phosphorylates Y338, Y392 and Y510 of IL2RB

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16/01/2021

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.

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. ↗

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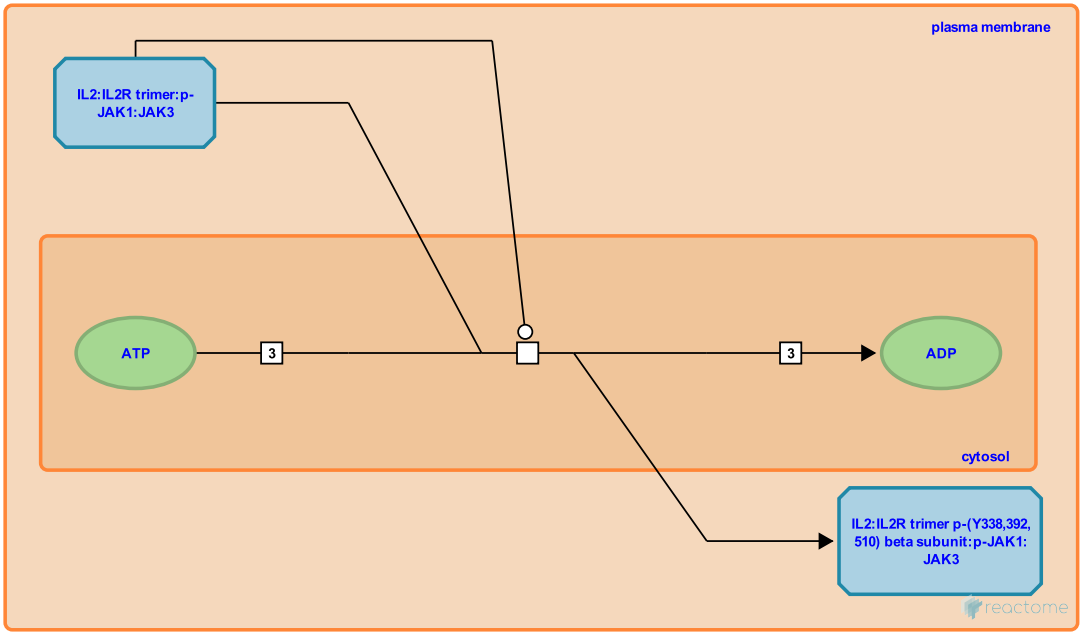
Stable identifier: R-HSA-452122

Type: transition

Compartments: cytosol, plasma membrane



Following stimulation by IL2, the IL2R beta chain become phosphorylated on multiple tyrosine residues. These phosphotyrosine residues recruit position-specific signaling or adaptor proteins, leading to the activation of downstream signaling pathways. Although multiple kinases are involved in the phosphorylation of IL-2R beta, JAK1-dependent phosphorylation of tyrosines 338, 392 and 510 is known to be involved in STAT protein binding (Gaffen et al. 1996). Phospho-tyrosine 338 has also been shown to participate in recruitment and subsequent phosphorylation of the adaptor Shc (Friedmann et al. 1996). N.B. Numbering in the literature is based on the mature peptide, with the 26 residue signal peptide removed. Positions given in this reaction refer to the canonical Uniprot sequence, e.g. 338 is equivalent to 364 of the canonical sequence P14784.

Literature references

Friedmann, MC., Migone, TS., Russell, SM., Leonard, WJ. (1996). Different interleukin 2 receptor beta-chain tyrosines couple to at least two signaling pathways and synergistically mediate interleukin 2-induced proliferation. *Proc Natl Acad Sci U S A, 93*, 2077-82. ↗

Editions

2010-05-17	Authored	Ray, KP.
2010-08-06	Edited	Jupe, S.
2011-02-11	Reviewed	Villarino, A.
2011-03-17	Reviewed	Dooms, H.