

CSF3 dimer:2xCSF3R:LYN:JAK1 induces phosphorylation of JAK1

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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. [↗](#)

Reactome database release: 88

This document contains 1 reaction ([see Table of Contents](#))

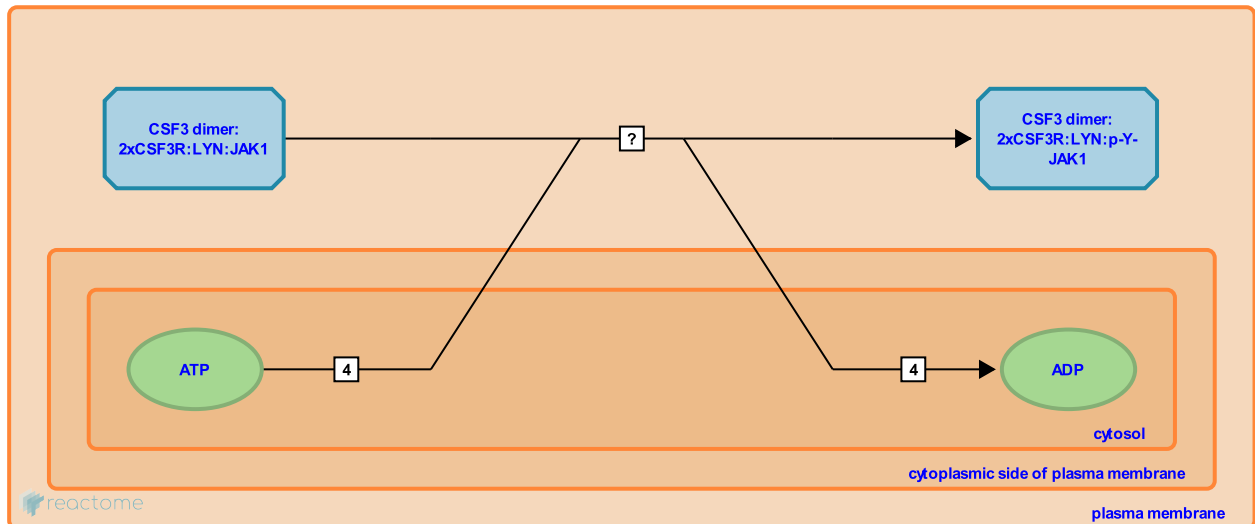
CSF3 dimer:2xCSF3R:LYN:JAK1 induces phosphorylation of JAK1 ↗

Stable identifier: R-HSA-9674546

Type: uncertain

Compartments: plasma membrane

Inferred from: Csf3:Csf3r induces phosphorylation of Jak1 (Mus musculus)



JAK1 is phosphorylated by an unknown kinase in response to CSF3 binding CSF3R (Nicholson et al. 1994, Tian et al. 1994, Marino and Roguin 2008). Phosphorylated JAK1 is required for subsequent phosphorylation of CSF3R (Shimoda et al. 1997, inferred from mouse homologs). The SRC-related protein kinase LYN is constitutively associated with CSF3R (Corey et al. 1994).

Literature references

- Tian, SS., Seidel, HM., Rosen, J., Stein, RB., Lamb, P. (1994). Rapid activation of the STAT3 transcription factor by granulocyte colony-stimulating factor. *Blood*, 84, 1760-4. ↗
- Nagata, S., Ihle, JN., Murakami, H., Stark, GR., Rogers, NC., Feng, J. et al. (1997). Jak1 plays an essential role for receptor phosphorylation and Stat activation in response to granulocyte colony-stimulating factor. *Blood*, 90, 597-604. ↗
- Oates, AC., Ziemiecki, A., Layton, JE., Nicholson, SE., Wilks, AF., Harpur, AG. (1994). Tyrosine kinase JAK1 is associated with the granulocyte-colony-stimulating factor receptor and both become tyrosine-phosphorylated after receptor activation. *Proc. Natl. Acad. Sci. U.S.A.*, 91, 2985-8. ↗
- Corey, SJ., Tweardy, DJ., Bolen, JB., Tkatch, LS., Burkhardt, AL., Geahlen, RL. (1994). Granulocyte colony-stimulating factor receptor signaling involves the formation of a three-component complex with Lyn and Syk protein-tyrosine kinases. *Proc. Natl. Acad. Sci. U.S.A.*, 91, 4683-7. ↗
- Marino, VJ., Roguin, LP. (2008). The granulocyte colony stimulating factor (G-CSF) activates Jak/STAT and MAPK pathways in a trophoblastic cell line. *J. Cell. Biochem.*, 103, 1512-23. ↗

Editions

2020-01-11

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