Erythropoietin activates STAT5

May, B., McGraw, KL.

European Bioinformatics Institute, New York University Langone Medical Center, Ontario Institute for Cancer Research, Oregon Health and Science University.

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This is just an excerpt of a full-length report for this pathway. To access the complete report, please download it at the Reactome Textbook.

26/12/2022
**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**


Reactome database release: 83

This document contains 1 pathway and 3 reactions (see Table of Contents)
Erythropoietin activates STAT5

**Stable identifier:** R-HSA-9027283

STAT5 (STAT5A or STAT5B) directly binds the phosphorylated cytoplasmic domain of EPOR, where it is phosphorylated by JAK2 and LYN (Oda et al. 1998, inferred from mouse homologs, reviewed in Kuhrt and Wojchowski 2015). Phosphorylated STAT5 then dissociates from EPOR, dimerizes, and transits to the nucleus where it activates gene expression.

**Literature references**


**Editions**

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STAT5 (STAT5A or STAT5B) binds the phosphorylated cytoplasmic domain of EPOR via phosphotyrosine-343 and phosphotyrosine-479 of EPOR (Chretien et al. 1996, McGraw et al. 2012, and inferred from mouse homologs). STAT5 may also bind the EPOR complex indirectly via CRKL (Ota et al. 1998).

**Followed by:** JAK2 and LYN phosphorylate STAT5 in EPO:phospho-EPOR:phospho-JAK2:LYN:IRS2

**Literature references**


**Editions**

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JAK2 and LYN phosphorylate STAT5 in EPO:phospho-EPOR:phospho-JAK2:LYN:IRS2

**Location:** Erythropoietin activates STAT5

**Stable identifier:** R-HSA-9012650

**Type:** transition

**Compartments:** plasma membrane

**Inferred from:** Epo:p-8Y-Epor:p-12Y-Jak2:Lyn:Irs2 phosphorylates Stat5 (Mus musculus)


**Preceded by:** EPO:phospho-EPOR:phospho-JAK2:LYN:IRS2 binds STAT5

**Followed by:** p-STAT5 dissociates from EPO:phospho-EPOR:phospho-JAK2:LYN:IRS2

**Literature references**


## Editions

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p-STAT5 dissociates from EPO:phospho-EPOR:phospho-JAK2:LYN:IRS2

**Location:** Erythropoietin activates STAT5

**Stable identifier:** R-HSA-9012651

**Type:** dissociation

**Compartments:** plasma membrane

**Inferred from:** p-Stat5 dissociates from Epo:p-8Y-Epor:p-12Y-Jak2:Lyn:Irs2 (Mus musculus)

After being phosphorylated, phospho-STAT5 (STAT5A or STAT5B) dissociates from the EPO:EPOR complex, dimerizes, and transits to the nucleus where it activates transcription of target genes (Oda et al. 1998, and inferred from mouse homologs).

**Preceded by:** JAK2 and LYN phosphorylate STAT5 in EPO:phospho-EPOR:phospho-JAK2:LYN:IRS2

**Literature references**


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[https://reactome.org](https://reactome.org)
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