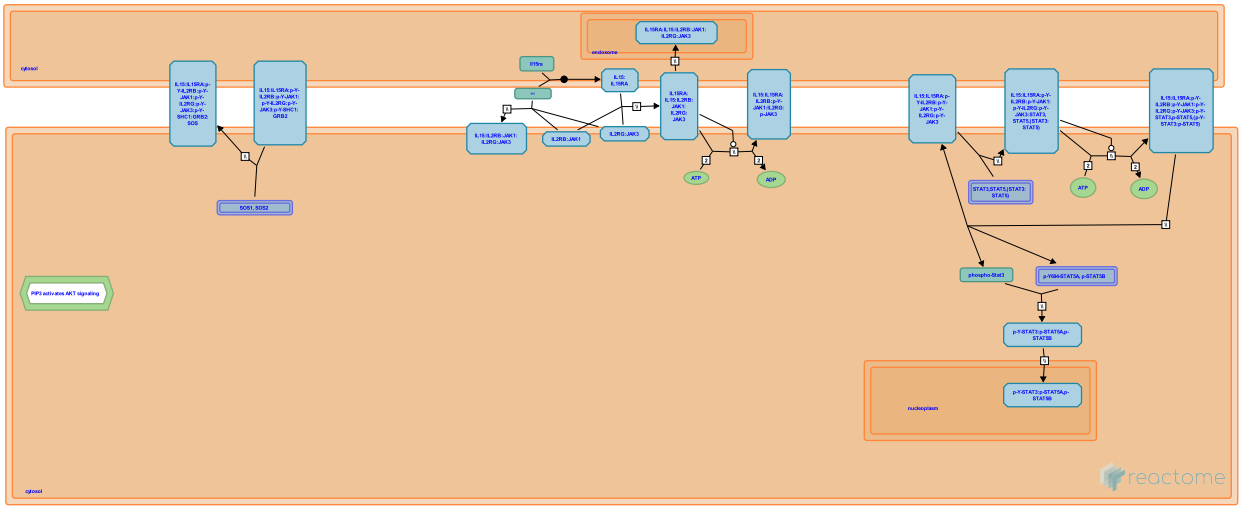
Interleukin-15 signaling



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

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.

17/05/2024

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. ↗

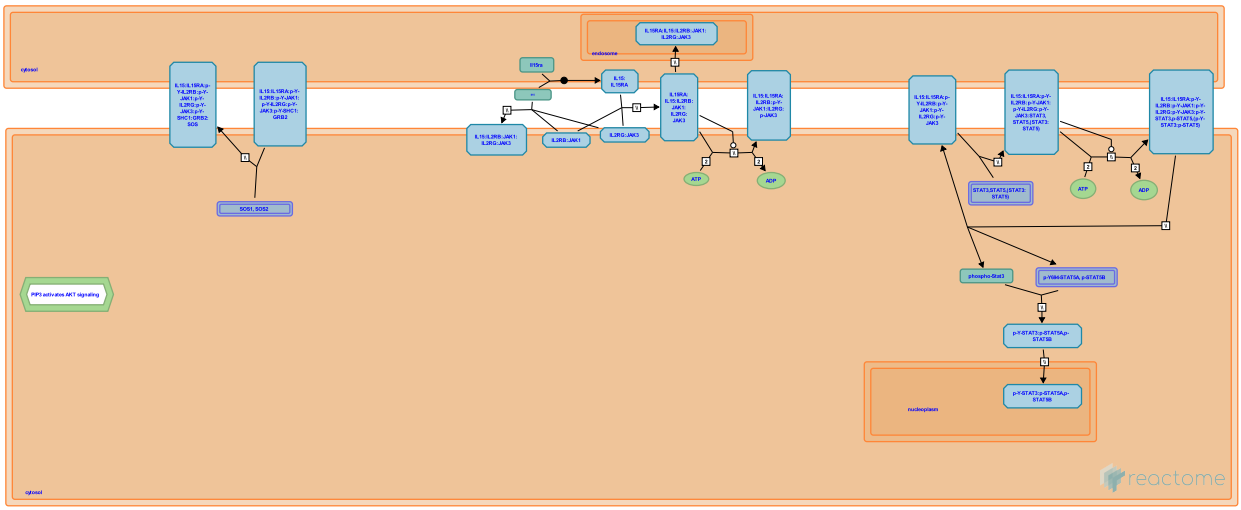
Fabregat, A., Jupe, S., Matthews, L., Sidiropoulos, K., Gillespie, M., Garapati, P. et al. (2018). The Reactome Pathway Knowledgebase. *Nucleic Acids Res, 46*, D649-D655. ↗

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. ↗

Interleukin-15 signaling ↗

Stable identifier: R-MMU-8983432

Inferred from: Interleukin-15 signaling (Homo sapiens)



This event has been computationally inferred from an event that has been demonstrated in another species.

The inference is based on the homology mapping from PANTHER. Briefly, reactions for which all involved PhysicalEntities (in input, output and catalyst) have a mapped orthologue/paralogue (for complexes at least 75% of components must have a mapping) are inferred to the other species. High level events are also inferred for these events to allow for easier navigation.

More details and caveats of the event inference in Reactome. For details on PANTHER see also: http://www.pantherdb.org/about.jsp

IL15 binds IL15RA ↗

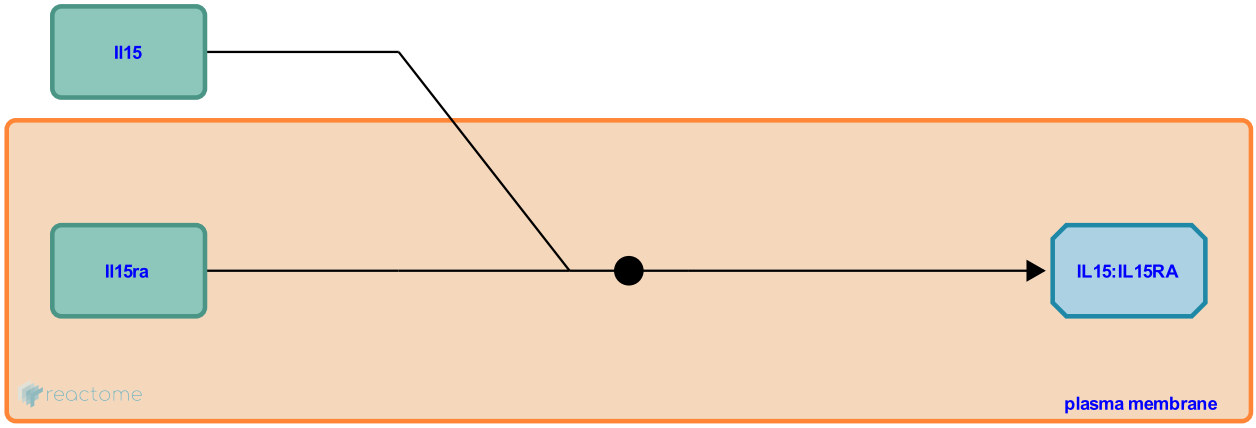
Location: Interleukin-15 signaling

Stable identifier: R-MMU-8983307

Type: binding

Compartments: plasma membrane, extracellular region

Inferred from: IL15 binds IL15RA (Homo sapiens)



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Followed by: IL15:IL15RA binds IL2RB:JAK1 and IL2RG:JAK3

IL15:IL15RA binds IL2RB:JAK1 and IL2RG:JAK3 ↗

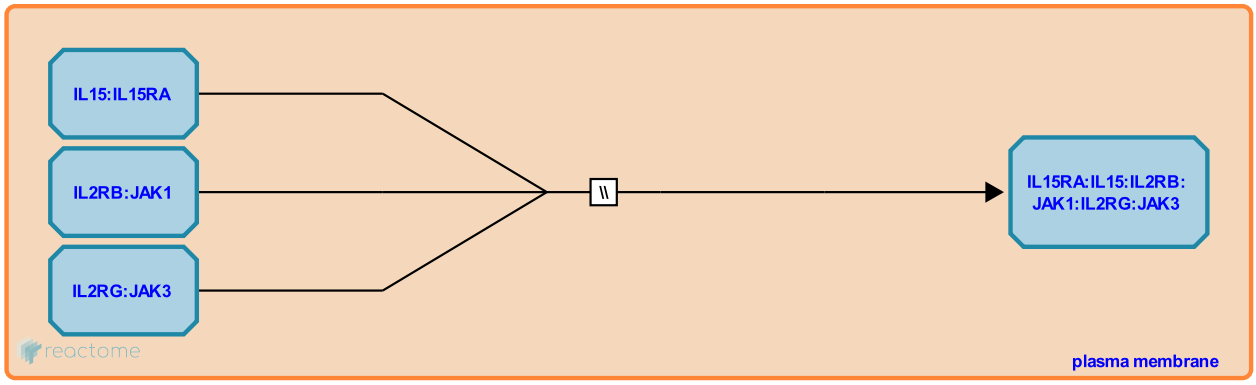
Location: Interleukin-15 signaling

Stable identifier: R-MMU-449115

Type: omitted

Compartments: plasma membrane, extracellular region, cytosol

Inferred from: IL15:IL15RA binds IL2RB:JAK1 and IL2RG:JAK3 (Homo sapiens)



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Preceded by: IL15 binds IL15RA

Followed by: IL15RA:IL15:IL2RB:JAK1:IL2RG:JAK3 phosphorylates JAK3 and JAK1

IL15 binds IL2RB:JAK1 and IL2RG:JAK3 ↗

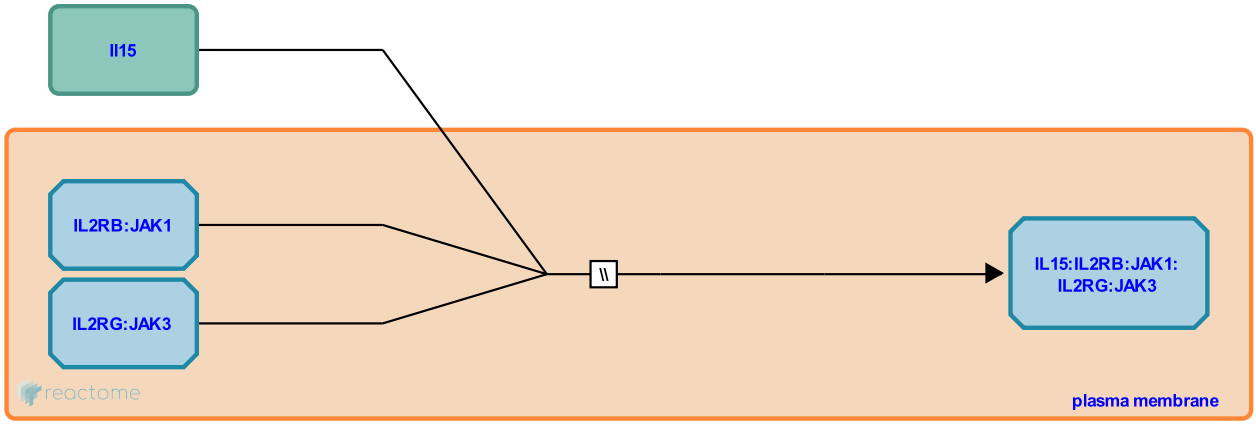
Location: Interleukin-15 signaling

Stable identifier: R-MMU-8983298

Type: omitted

Compartments: plasma membrane, extracellular region, cytosol

Inferred from: IL15 binds IL2RB:JAK1 and IL2RG:JAK3 (Homo sapiens)



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IL15RA:IL15:IL2RB:JAK1:IL2RG:JAK3 phosphorylates JAK3 and JAK1 ↗

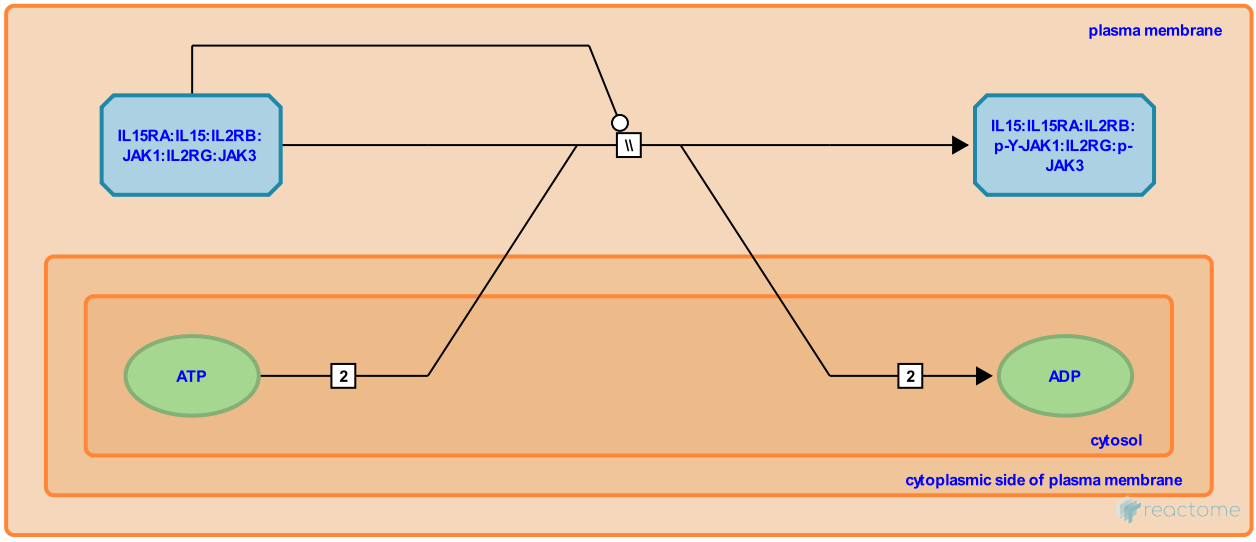
Location: Interleukin-15 signaling

Stable identifier: R-MMU-8983300

Type: omitted

Compartments: plasma membrane, extracellular region, cytosol

Inferred from: IL15RA:IL15:IL2RB:JAK1:IL2RG:JAK3 phosphorylates JAK3 and JAK1 (Homo sapiens)



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The inference is based on the homology mapping from PANTHER. Briefly, reactions for which all involved PhysicalEntities (in input, output and catalyst) have a mapped orthologue/paralogue (for complexes at least 75% of components must have a mapping) are inferred to the other species. High level events are also inferred for these events to allow for easier navigation.

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Preceded by: IL15:IL15RA binds IL2RB:JAK1 and IL2RG:JAK3

IL15:IL15RA:p-Y-IL2RB:p-Y-JAK1:p-Y-IL2RG:p-Y-JAK3 binds STAT3 and STAT5 ↗

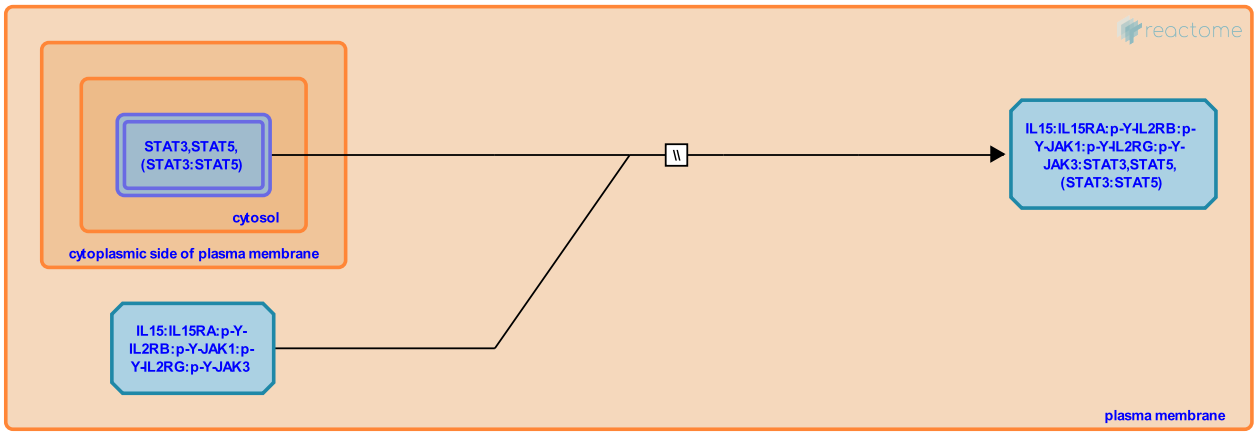
Location: Interleukin-15 signaling

Stable identifier: R-MMU-8983378

Type: omitted

Compartments: plasma membrane, extracellular region, cytosol

Inferred from: IL15:IL15RA:p-Y-IL2RB:p-Y-JAK1:p-Y-IL2RG:p-Y-JAK3 binds STAT3 and STAT5 (Homo sapiens)



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The inference is based on the homology mapping from PANTHER. Briefly, reactions for which all involved PhysicalEntities (in input, output and catalyst) have a mapped orthologue/paralogue (for complexes at least 75% of components must have a mapping) are inferred to the other species. High level events are also inferred for these events to allow for easier navigation.

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Followed by: IL15:IL15RA:p-Y-IL2RB:p-Y-JAK1:p-Y-IL2RG:p-Y-JAK3 phosphorylates STAT3 and STAT5

IL15:IL15RA:p-Y-IL2RB:p-Y-JAK1:p-Y-IL2RG:p-Y-JAK3 phosphorylates STAT3 and STAT5 ↗

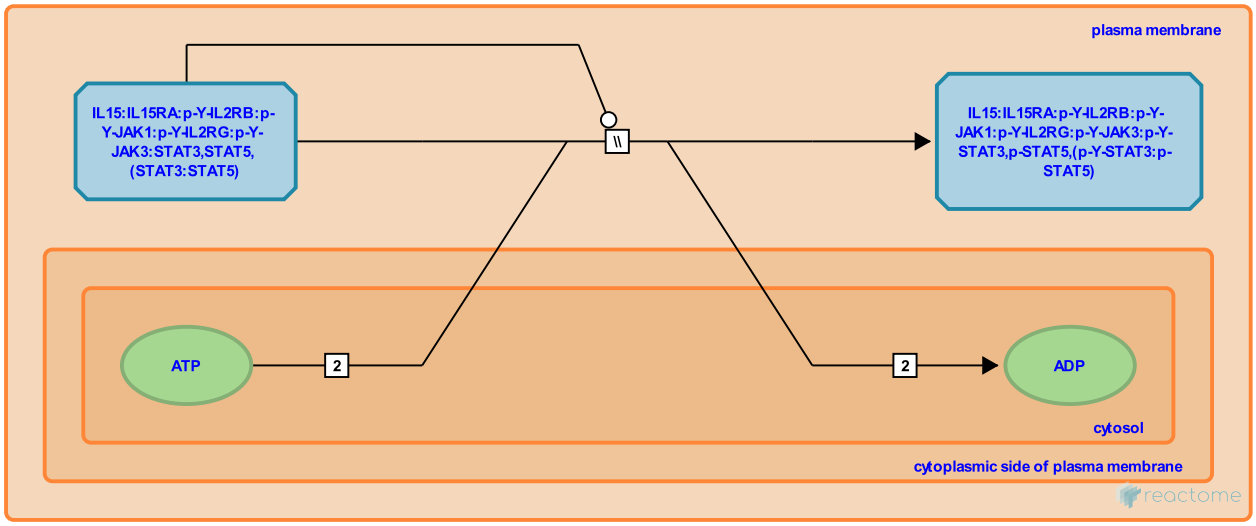
Location: Interleukin-15 signaling

Stable identifier: R-MMU-8983371

Type: omitted

Compartments: plasma membrane, extracellular region, cytosol

Inferred from: IL15:IL15RA:p-Y-IL2RB:p-Y-JAK1:p-Y-IL2RG:p-Y-JAK3 phosphorylates STAT3 and STAT5 (Homo sapiens)



This event has been computationally inferred from an event that has been demonstrated in another species.

The inference is based on the homology mapping from PANTHER. Briefly, reactions for which all involved PhysicalEntities (in input, output and catalyst) have a mapped orthologue/paralogue (for complexes at least 75% of components must have a mapping) are inferred to the other species. High level events are also inferred for these events to allow for easier navigation.

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Preceded by: IL15:IL15RA:p-Y-IL2RB:p-Y-JAK1:p-Y-IL2RG:p-Y-JAK3 binds STAT3 and STAT5

Followed by: p-Y-STAT3 and p-STAT5 dissociates from IL15:IL15RA:IL2RB:p-JAK1:IL2RG:p-JAK3:p-Y-STAT3:p-STAT5

p-Y-STAT3 and p-STAT5 dissociates from IL15:IL15RA:IL2RB:p-JAK1:IL2RG:p-JAK3:p-Y-STAT3:p-STAT5 ↗

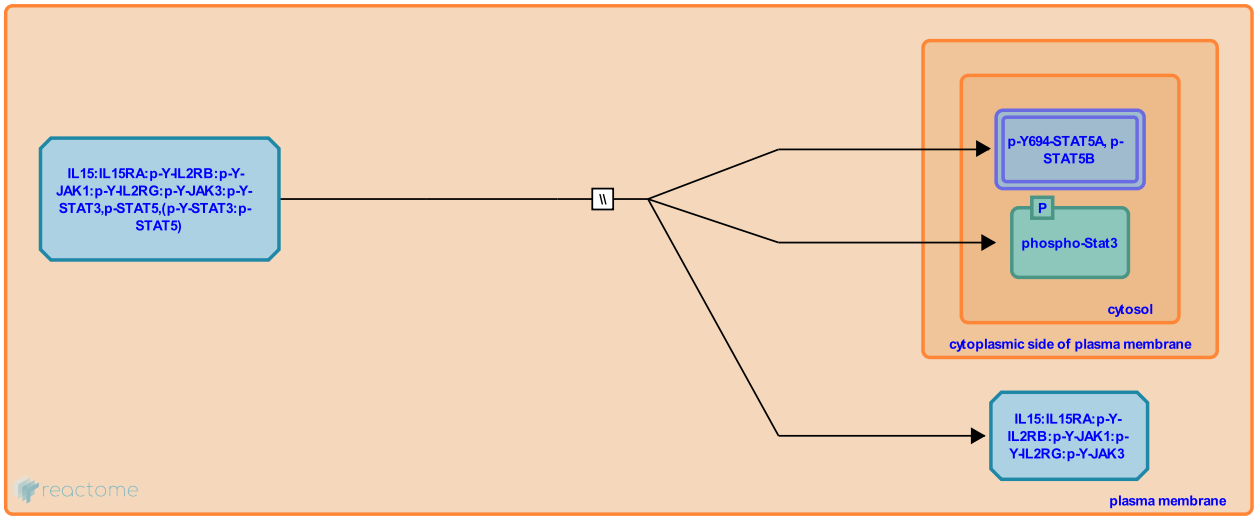
Location: Interleukin-15 signaling

Stable identifier: R-MMU-8983374

Type: omitted

Compartments: plasma membrane, extracellular region, cytosol

Inferred from: p-Y-STAT3 and p-STAT5 dissociates from IL15:IL15RA:IL2RB:p-JAK1:IL2RG:p-JAK3:p-Y-STAT3:p-STAT5 (Homo sapiens)



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More details and caveats of the event inference in Reactome. For details on PANTHER see also: http://www.pantherdb.org/about.jsp

Preceded by: IL15:IL15RA:p-Y-IL2RB:p-Y-JAK1:p-Y-IL2RG:p-Y-JAK3 phosphorylates STAT3 and STAT5

Followed by: p-Y-STAT3 binds p-STAT5

p-Y-STAT3 binds p-STAT5 ↗

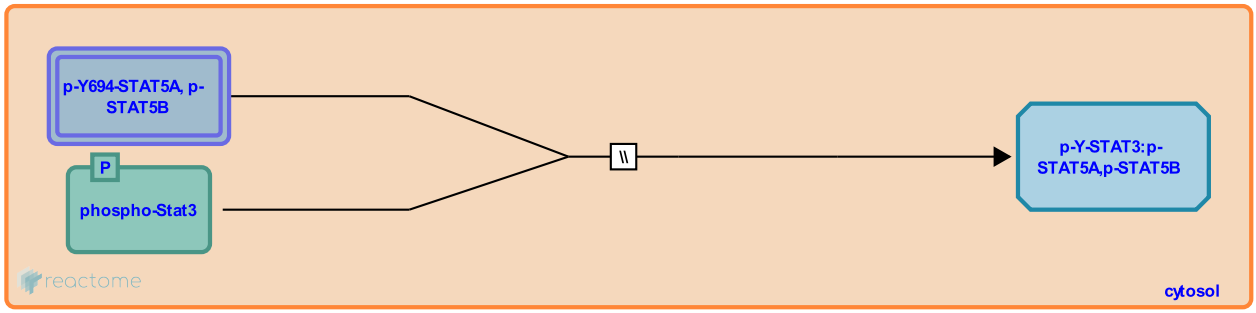
Location: Interleukin-15 signaling

Stable identifier: R-MMU-8983373

Type: omitted

Compartments: cytosol

Inferred from: p-Y-STAT3 binds p-STAT5 (Homo sapiens)



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Preceded by: p-Y-STAT3 and p-STAT5 dissociates from IL15:IL15RA:IL2RB:p-JAK1:IL2RG:p-JAK3:p-Y-STAT3:p-STAT5

Followed by: p-Y-STAT3:p-STAT5 translocates to the nucleus

p-Y-STAT3:p-STAT5 translocates to the nucleus ↗

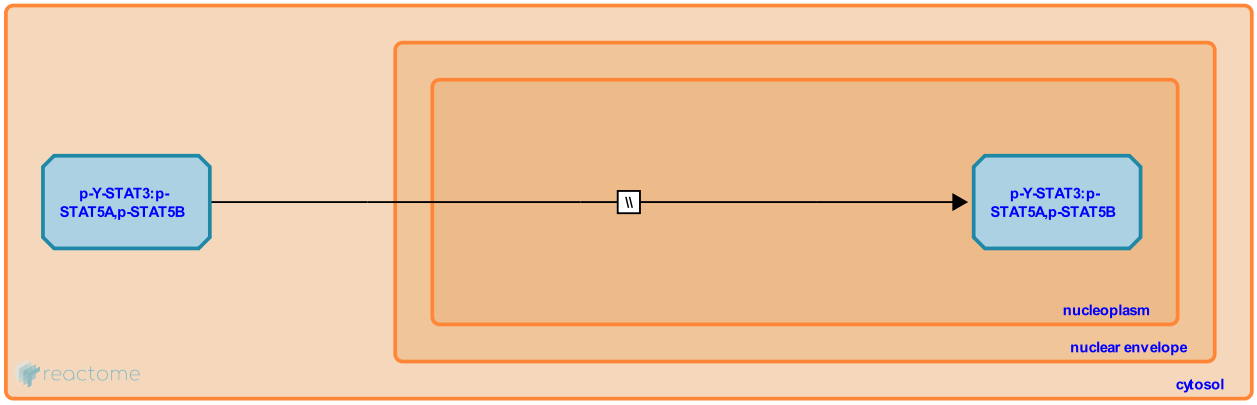
Location: Interleukin-15 signaling

Stable identifier: R-MMU-8983379

Type: omitted

Compartments: nucleoplasm, cytosol

Inferred from: p-Y-STAT3:p-STAT5 translocates to the nucleus (Homo sapiens)



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Preceded by: p-Y-STAT3 binds p-STAT5

IL15:IL15RA:p-Y-IL2RB:p-Y-JAK1:p-Y-IL2RG:p-Y-JAK3:p-Y-SHC1:GRB2 binds SOS1,SOS2 ↗

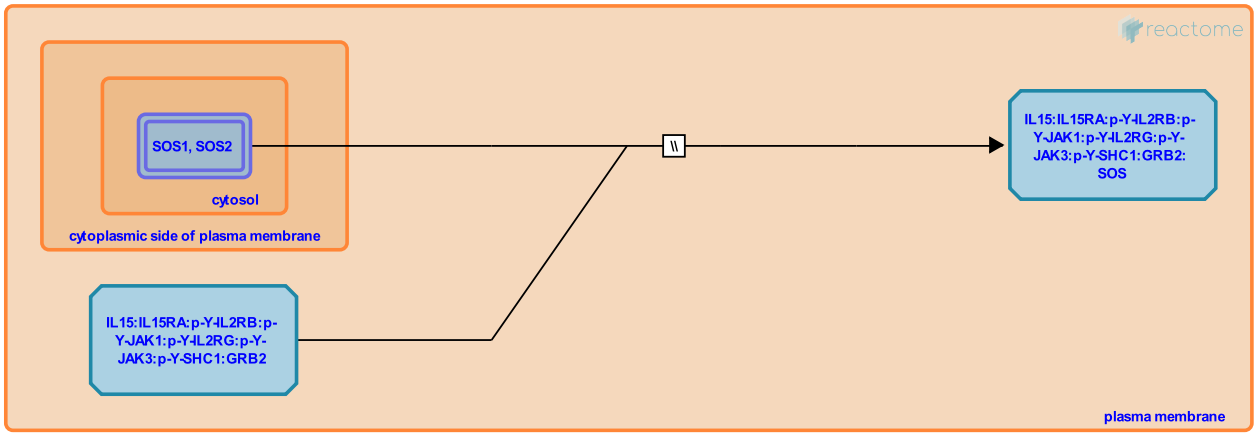
Location: Interleukin-15 signaling

Stable identifier: R-MMU-8983384

Type: omitted

Compartments: plasma membrane, extracellular region, cytosol

Inferred from: IL15:IL15RA:p-Y-IL2RB:p-Y-JAK1:p-Y-IL2RG:p-Y-JAK3:p-Y-SHC1:GRB2 binds SOS1,SOS2 (Homo sapiens)



This event has been computationally inferred from an event that has been demonstrated in another species.

The inference is based on the homology mapping from PANTHER. Briefly, reactions for which all involved PhysicalEntities (in input, output and catalyst) have a mapped orthologue/paralogue (for complexes at least 75% of components must have a mapping) are inferred to the other species. High level events are also inferred for these events to allow for easier navigation.

More details and caveats of the event inference in Reactome. For details on PANTHER see also: http://www.pantherdb.org/about.jsp

IL15:IL15RA:IL2RB:JAK1:IL2RG:JAK3 translocates from the plasma membrane to the endosome ↗

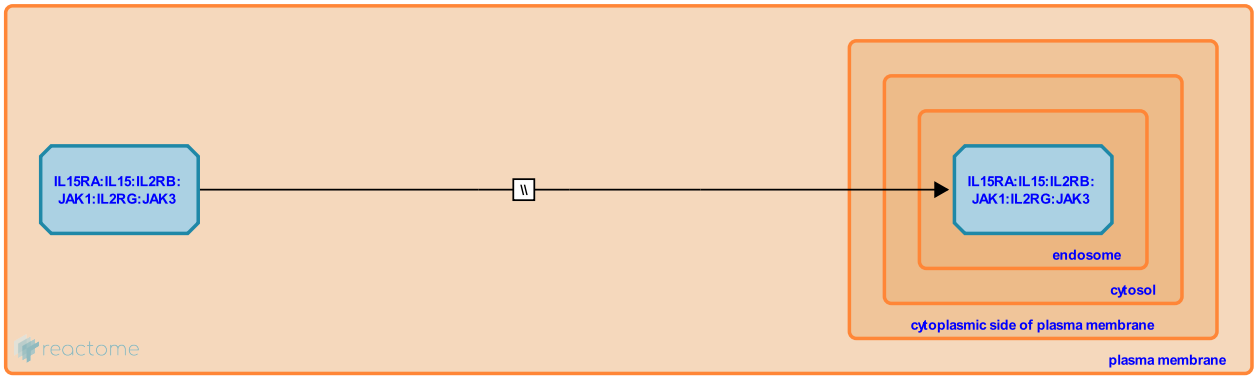
Location: Interleukin-15 signaling

Stable identifier: R-MMU-8983335

Type: omitted

Compartments: plasma membrane, extracellular region, endosome

Inferred from: IL15:IL15RA:IL2RB:JAK1:IL2RG:JAK3 translocates from the plasma membrane to the endosome (Homo sapiens)



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