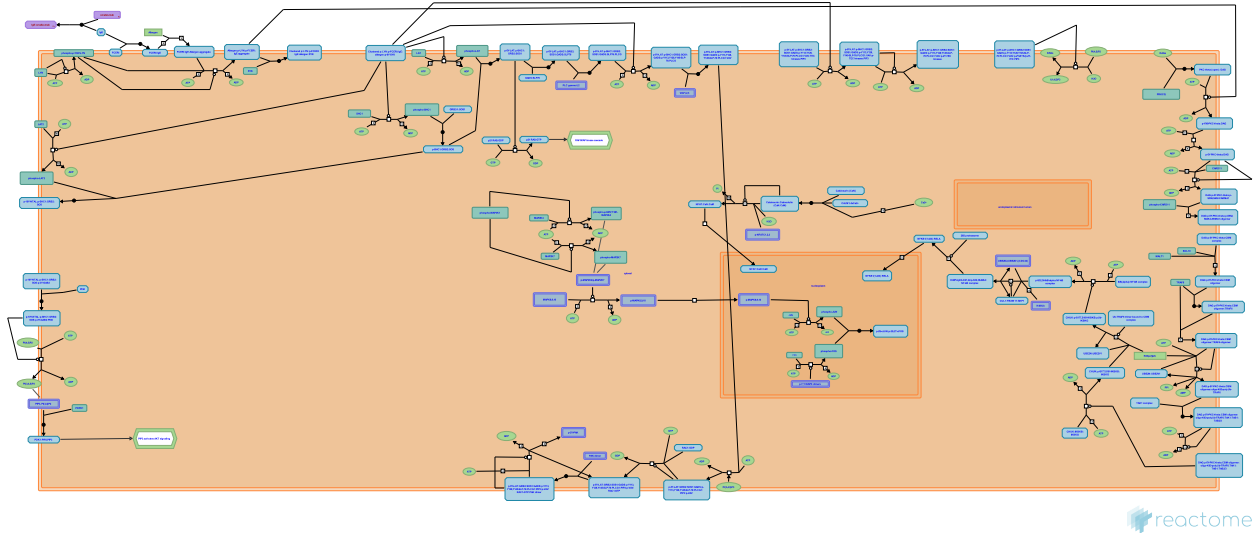


Fc epsilon receptor (FCERI) signaling



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

The contents of this document may be freely copied and distributed in any media, provided the authors, plus the institutions, are credited, as stated under the terms of [Creative Commons Attribution 4.0 International \(CC BY 4.0\) License](https://creativecommons.org/licenses/by/4.0/). For more information see our [license](https://reactome.org/licenses).

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

05/05/2024

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. [↗](#)

Reactome database release: 88

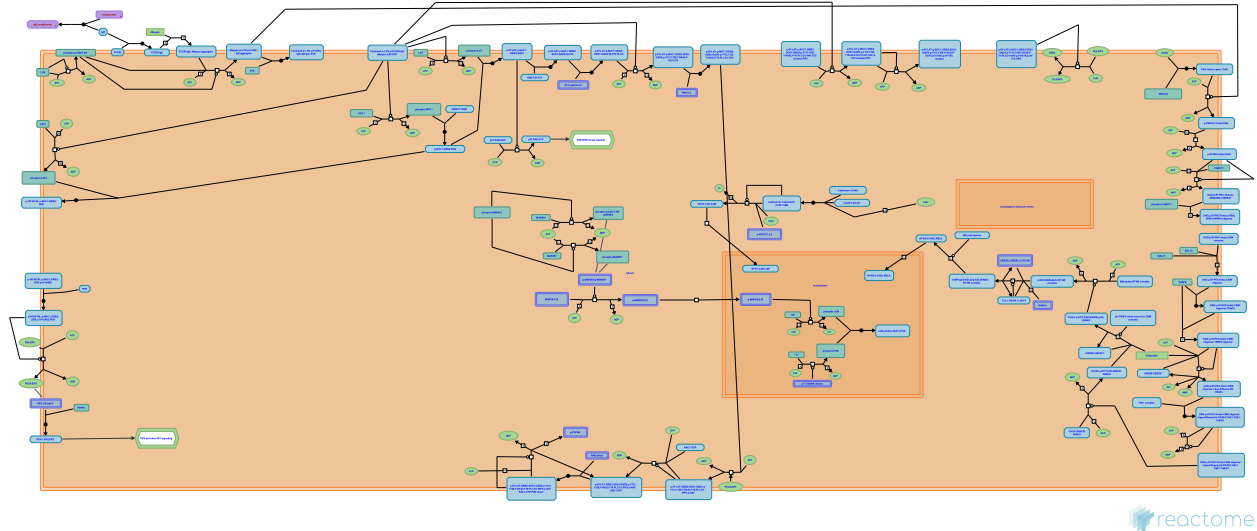
This document contains 5 pathways and 7 reactions ([see Table of Contents](#))

Fc epsilon receptor (FCERI) signaling ↗

Stable identifier: R-CFA-2454202

Compartments: plasma membrane

Inferred from: Fc epsilon receptor (FCERI) 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>

IgE binds FCERI ↗

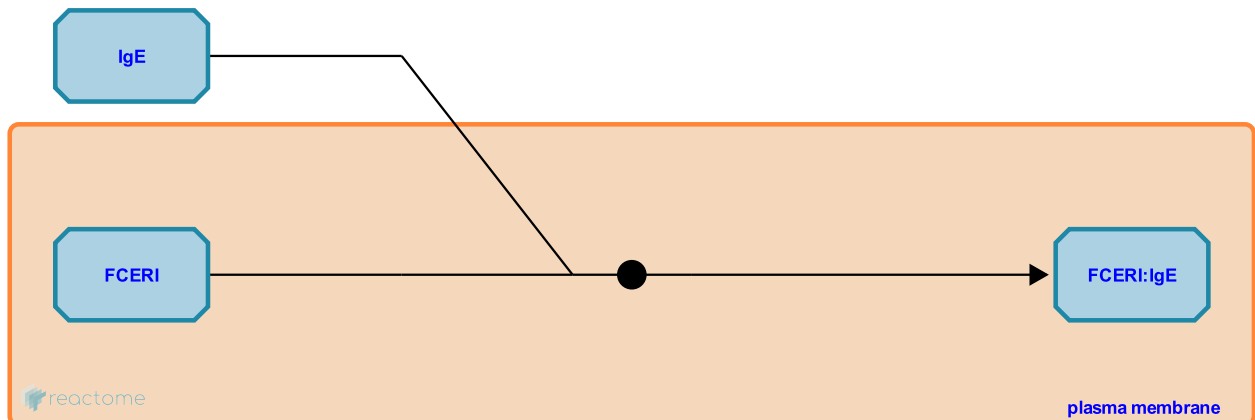
Location: Fc epsilon receptor (FCERI) signaling

Stable identifier: R-CFA-9725206

Type: binding

Compartments: plasma membrane, extracellular region

Inferred from: IgE binds FCERI (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>

Followed by: Allergen dependent IgE bound FCERI aggregation

IgE binds omalizumab ↗

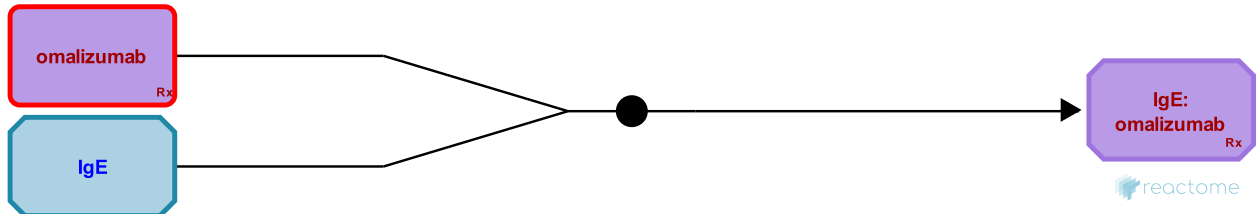
Location: Fc epsilon receptor (FCERI) signaling

Stable identifier: R-CFA-9724685

Type: binding

Compartments: extracellular region

Inferred from: IgE binds omalizumab (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.](http://www.pantherdb.org/about.jsp) For details on PANTHER see also: <http://www.pantherdb.org/about.jsp>

Allergen dependent IgE bound FCERI aggregation ↗

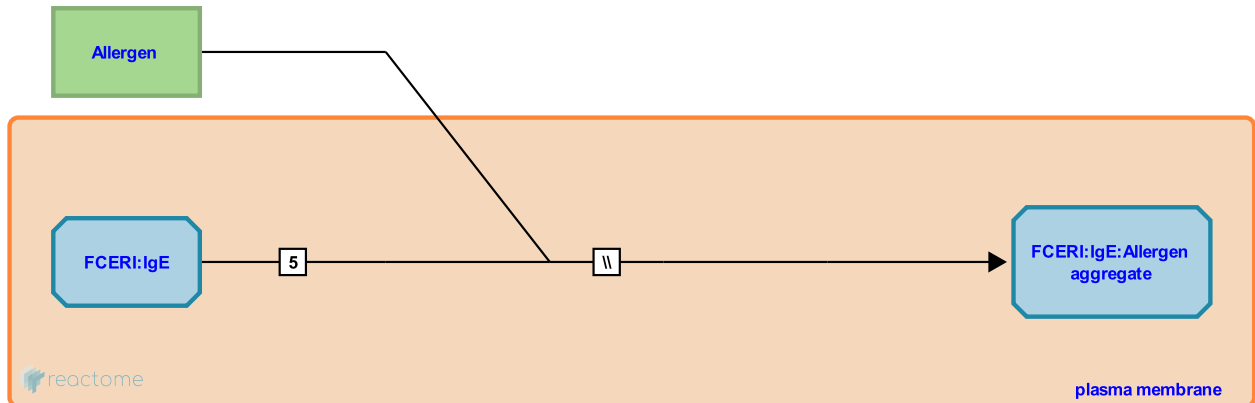
Location: [Fc epsilon receptor \(FCERI\) signaling](#)

Stable identifier: R-CFA-2454192

Type: omitted

Compartments: plasma membrane, extracellular region

Inferred from: [Allergen dependent IgE bound FCERI aggregation \(Homo sapiens\)](#)



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>

Preceded by: [IgE binds FCERI](#)

Followed by: [Phosphorylation of beta and gamma subunits by LYN](#)

Autophosphorylation of LYN kinase ↗

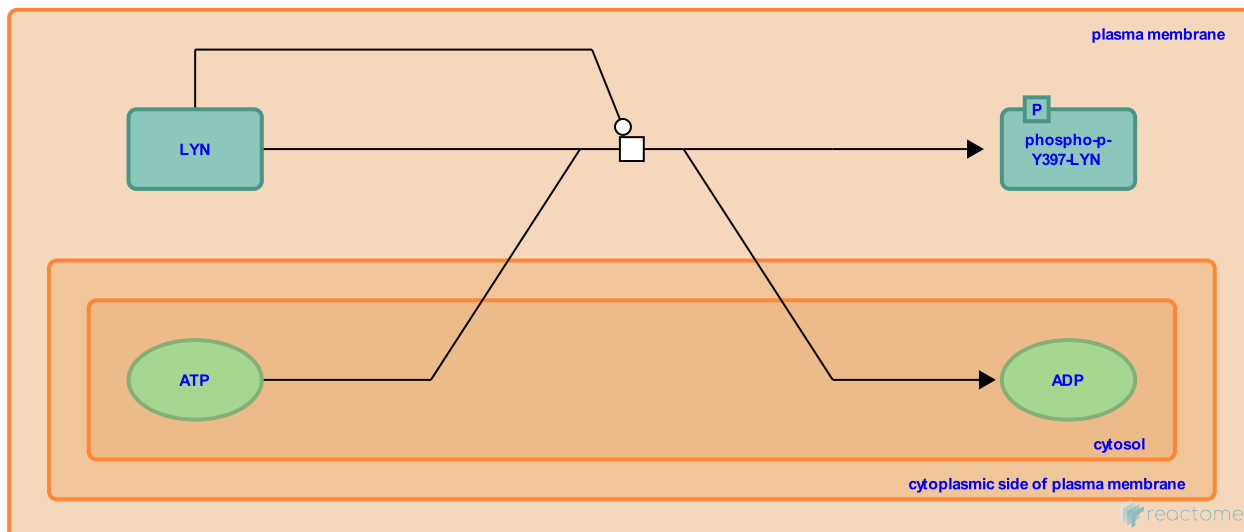
Location: Fc epsilon receptor (FCER1) signaling

Stable identifier: R-CFA-2730862

Type: transition

Compartments: plasma membrane, cytosol

Inferred from: Autophosphorylation of LYN kinase (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.](http://www.pantherdb.org/about.jsp) For details on PANTHER see also: <http://www.pantherdb.org/about.jsp>

Followed by: Phosphorylation of beta and gamma subunits by LYN

Phosphorylation of beta and gamma subunits by LYN ↗

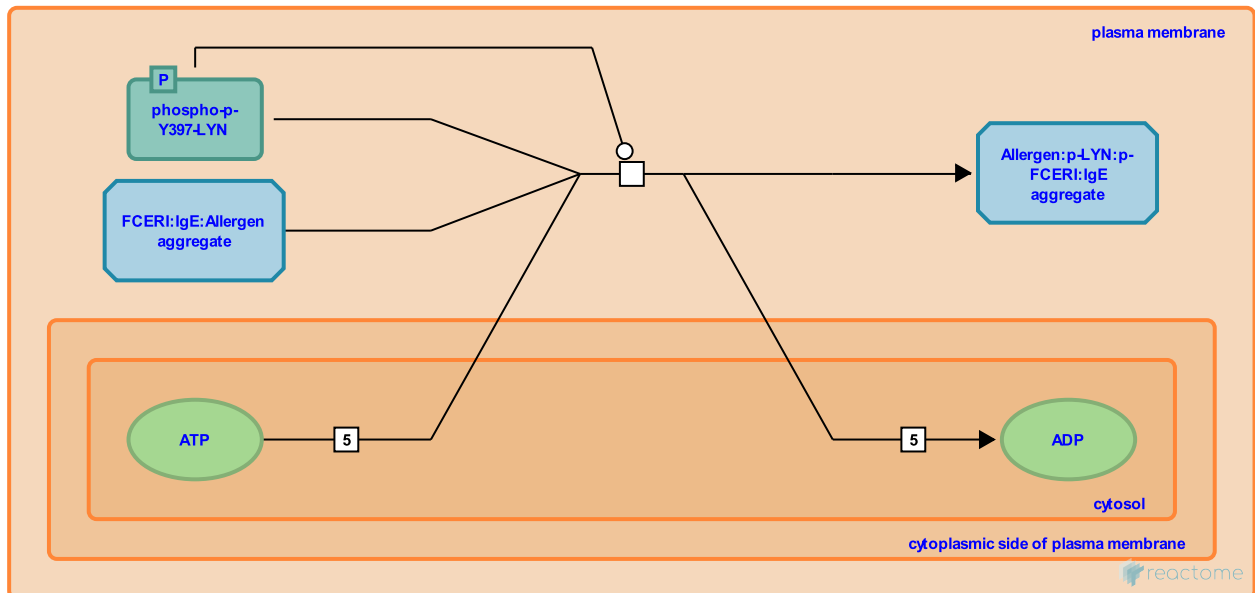
Location: Fc epsilon receptor (FCERI) signaling

Stable identifier: R-CFA-2454208

Type: transition

Compartments: plasma membrane, cytosol

Inferred from: Phosphorylation of beta and gamma subunits by LYN (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.](http://www.pantherdb.org/about.jsp) For details on PANTHER see also: <http://www.pantherdb.org/about.jsp>

Preceded by: Allergen dependent IgE bound FCERI aggregation, Autophosphorylation of LYN kinase

Followed by: Recruitment of SYK to p-FCERI gamma subunit

Recruitment of SYK to p-FCERI gamma subunit ↗

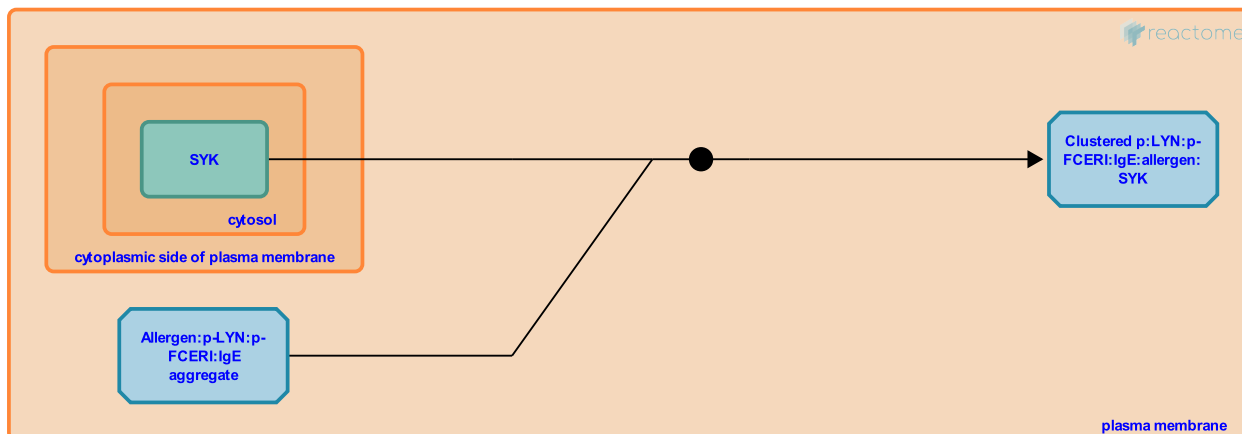
Location: Fc epsilon receptor (FCERI) signaling

Stable identifier: R-CFA-2454240

Type: binding

Compartments: plasma membrane, cytosol

Inferred from: Recruitment of SYK to p-FCERI gamma subunit (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.](http://www.pantherdb.org/about.jsp) For details on PANTHER see also: <http://www.pantherdb.org/about.jsp>

Preceded by: Phosphorylation of beta and gamma subunits by LYN

Phosphorylation of LAT by p-SYK ↗

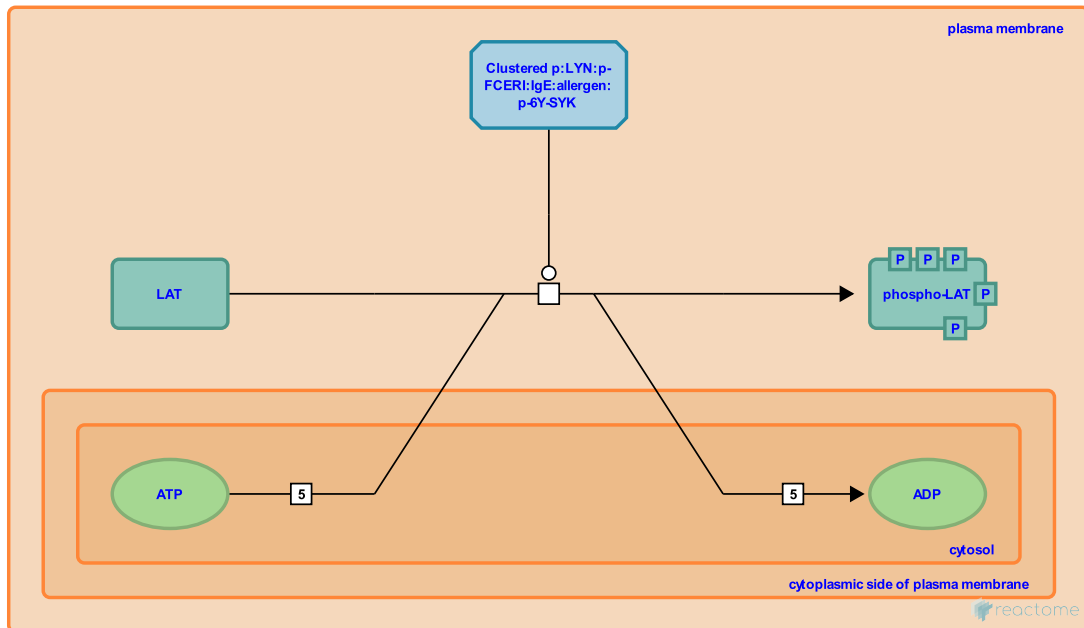
Location: Fc epsilon receptor (FCER1) signaling

Stable identifier: R-CFA-2730843

Type: transition

Compartments: plasma membrane, cytosol

Inferred from: Phosphorylation of LAT by p-SYK (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.](https://www.reactome.org) For details on PANTHER see also: <http://www.pantherdb.org/about.jsp>

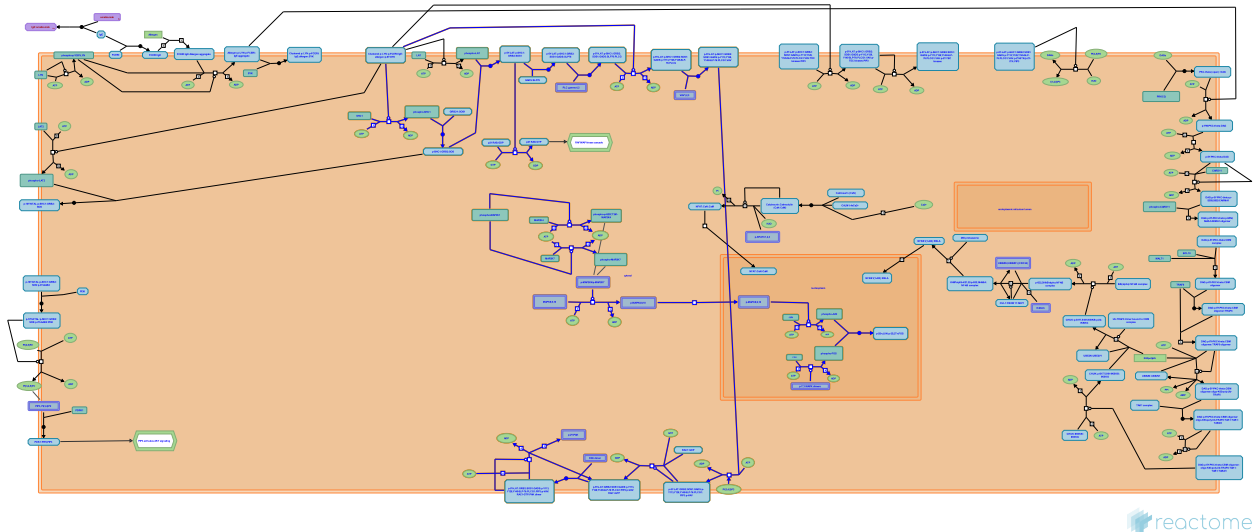
FCERI mediated MAPK activation ↗

Location: Fc epsilon receptor (FCERI) signaling

Stable identifier: R-CFA-2871796

Compartments: plasma membrane, nucleoplasm, cytosol

Inferred from: FCERI mediated MAPK activation (Homo sapiens)



reactome

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.](http://www.pantherdb.org/about.jsp) For details on PANTHER see also: <http://www.pantherdb.org/about.jsp>

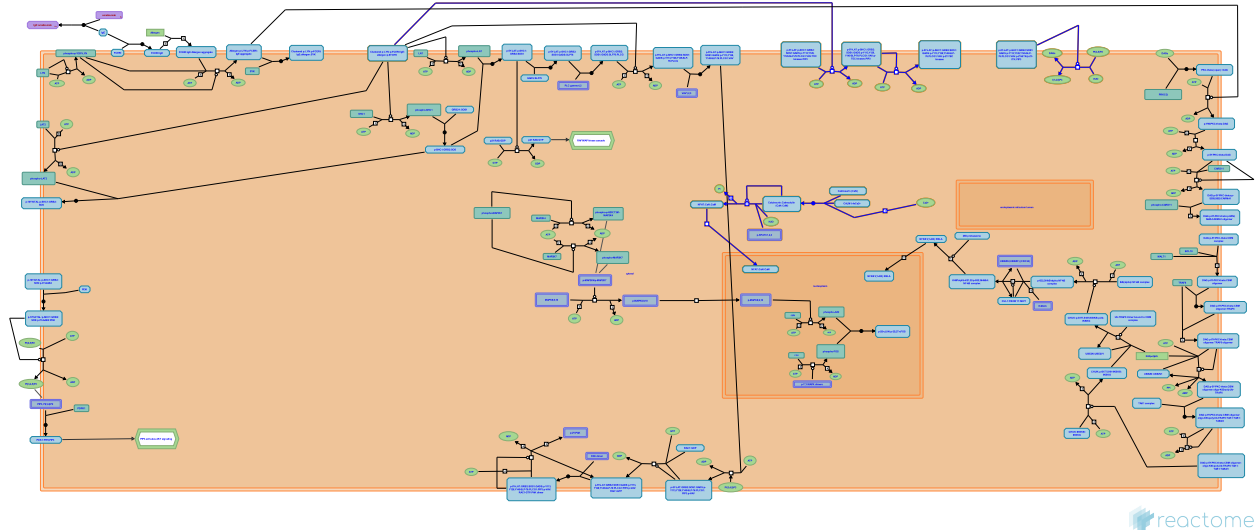
FCERI mediated Ca²⁺ mobilization ↗

Location: Fc epsilon receptor (FCERI) signaling

Stable identifier: R-CFA-2871809

Compartments: nucleoplasm, plasma membrane, cytosol

Inferred from: FCERI mediated Ca²⁺ mobilization (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.](http://www.pantherdb.org/about.jsp) For details on PANTHER see also: <http://www.pantherdb.org/about.jsp>

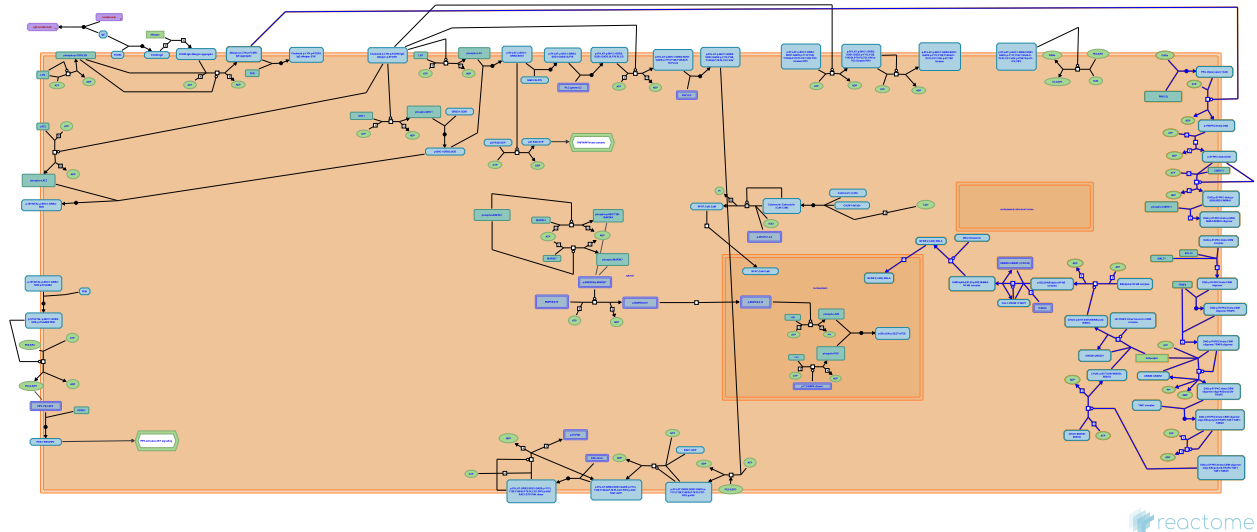
FCERI mediated NF-kB activation ↗

Location: Fc epsilon receptor (FCERI) signaling

Stable identifier: R-CFA-2871837

Compartments: plasma membrane, nucleoplasm, cytosol

Inferred from: FCERI mediated NF-kB activation (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.](http://www.pantherdb.org/about.jsp) For details on PANTHER see also: <http://www.pantherdb.org/about.jsp>

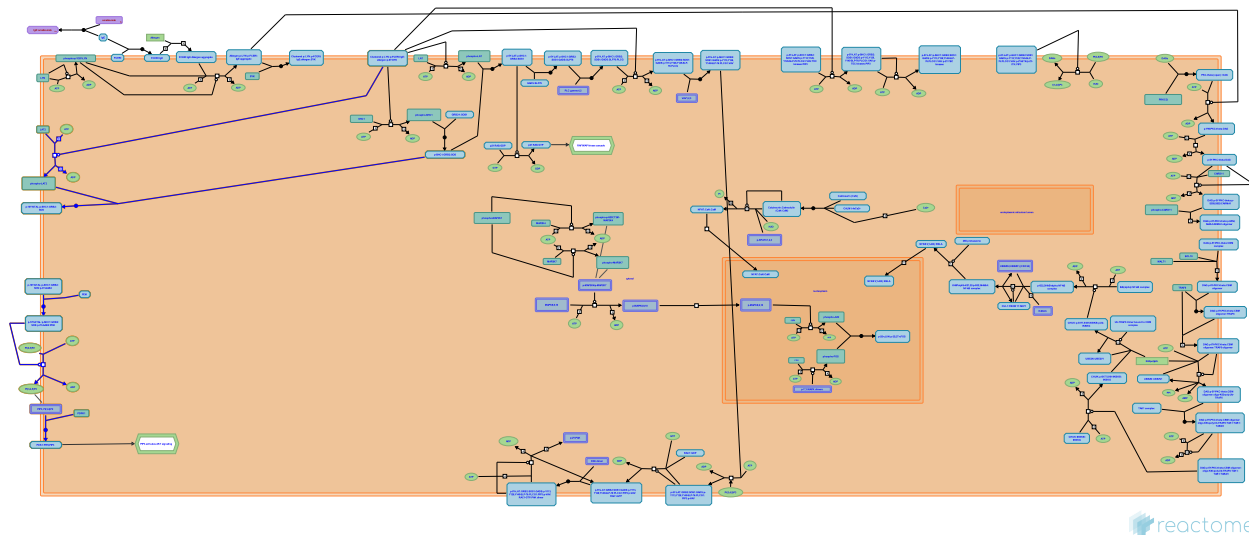
Role of LAT2/NTAL/LAB on calcium mobilization ↗

Location: Fc epsilon receptor (FCERI) signaling

Stable identifier: R-CFA-2730905

Compartments: plasma membrane, cytosol

Inferred from: Role of LAT2/NTAL/LAB on calcium mobilization (Homo sapiens)



 reactome

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.](https://www.reactome.org) For details on PANTHER see also: <http://www.pantherdb.org/about.jsp>

Table of Contents

Introduction	1
❏ Fc epsilon receptor (FCER1) signaling	2
➤ IgE binds FCER1	3
➤ IgE binds omalizumab	4
❏ Allergen dependent IgE bound FCER1 aggregation	5
➤ Autophosphorylation of LYN kinase	6
➤ Phosphorylation of beta and gamma subunits by LYN	7
➤ Recruitment of SYK to p-FCER1 gamma subunit	8
➤ Phosphorylation of LAT by p-SYK	9
❏ FCER1 mediated MAPK activation	10
❏ FCER1 mediated Ca ²⁺ mobilization	11
❏ FCER1 mediated NF-kB activation	12
❏ Role of LAT2/NTAL/LAB on calcium mobilization	13
Table of Contents	14