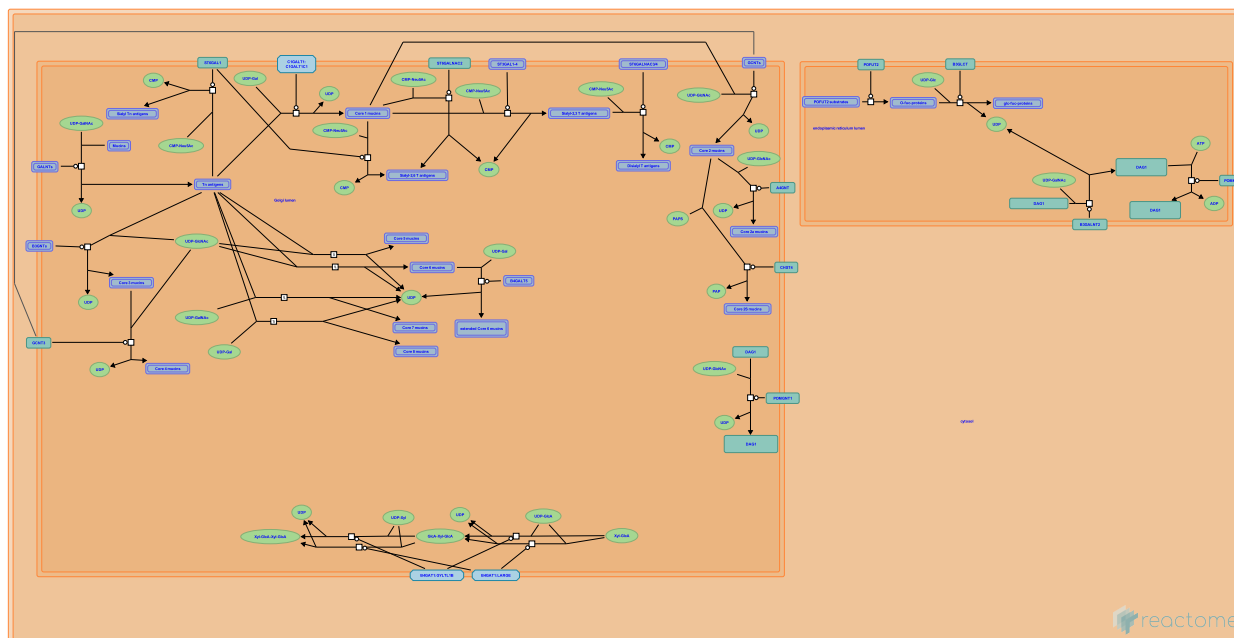


# O-linked glycosylation



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://creativecommons.org/licenses/by/4.0/).

## 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. [↗](#)

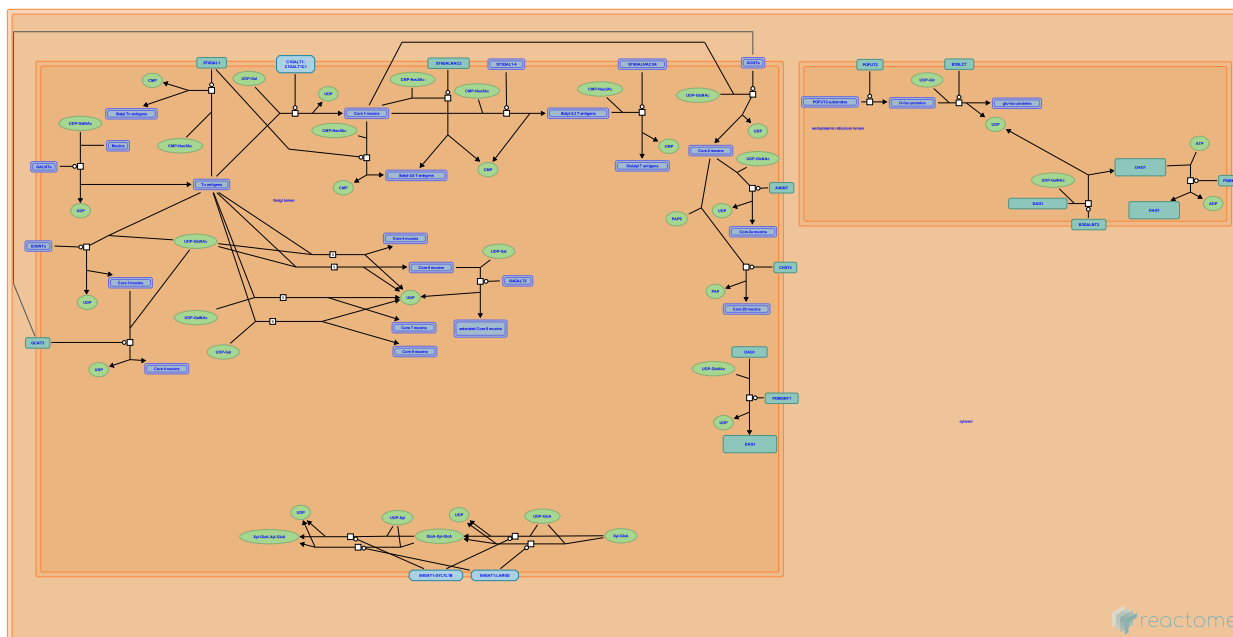
Reactome database release: 74

This document contains 3 pathways and 7 reactions ([see Table of Contents](#))

## O-linked glycosylation ↗

**Stable identifier:** R-CFA-5173105

**Inferred from:** O-linked glycosylation (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.

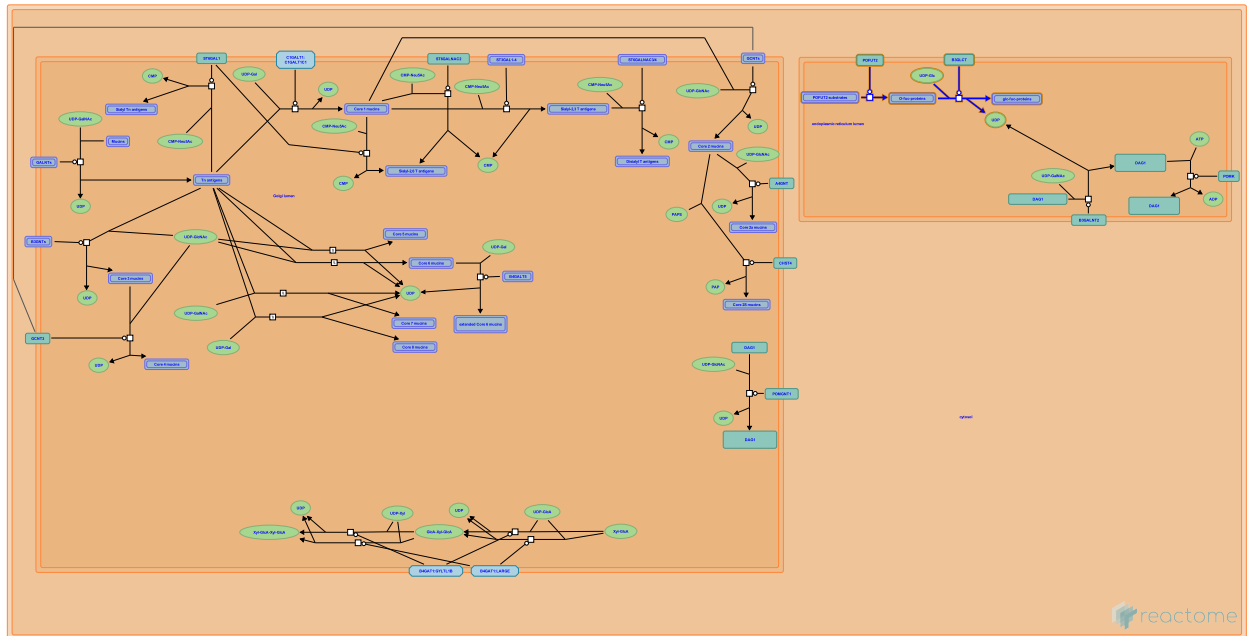
[More details and caveats of the event inference in Reactome.](/electronic_inference_compara.html) For details on PANTHER see also: <http://www.pantherdb.org/about.jsp>

## O-glycosylation of TSR domain-containing proteins ↗

**Location:** O-linked glycosylation

**Stable identifier:** R-CFA-5173214

**Inferred from:** O-glycosylation of TSR domain-containing proteins (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.

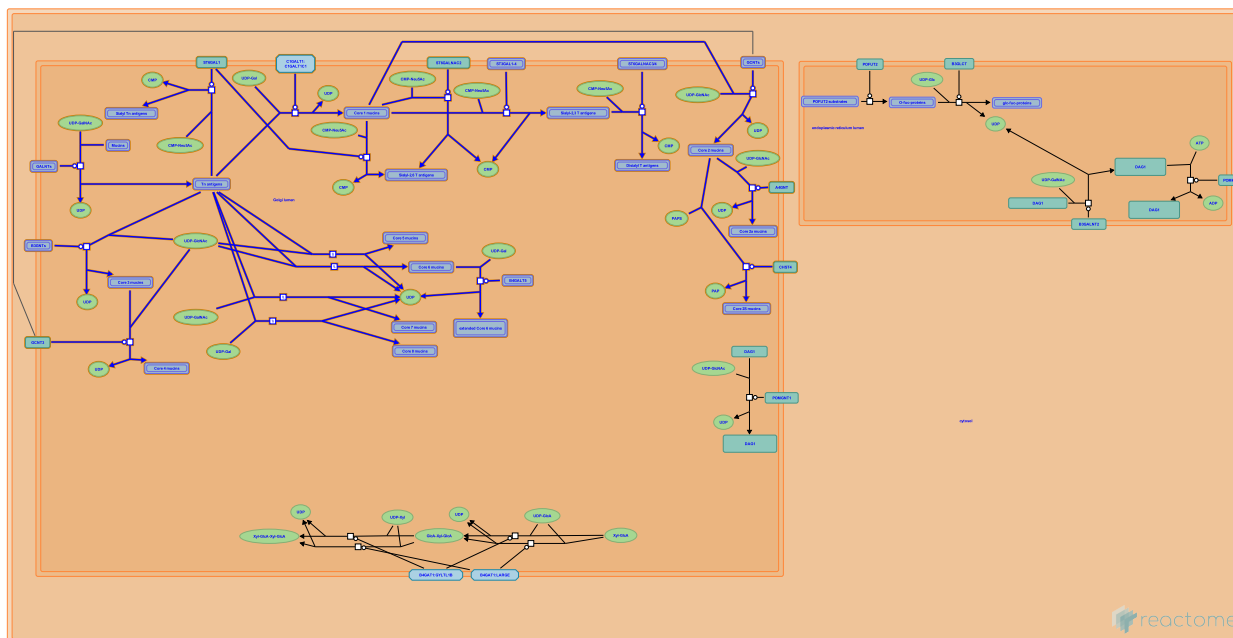
[More details and caveats of the event inference in Reactome.](/electronic_inference_compara.html) For details on PANTHER see also: <http://www.pantherdb.org/about.jsp>

## O-linked glycosylation of mucins ↗

**Location:** O-linked glycosylation

**Stable identifier:** R-CFA-913709

**Inferred from:** O-linked glycosylation of mucins (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.](/electronic_inference_compara.html) For details on PANTHER see also: <http://www.pantherdb.org/about.jsp>

## B3GALNT2 transfers GalNAc to GlcNAc-Man-DAG1 ↗

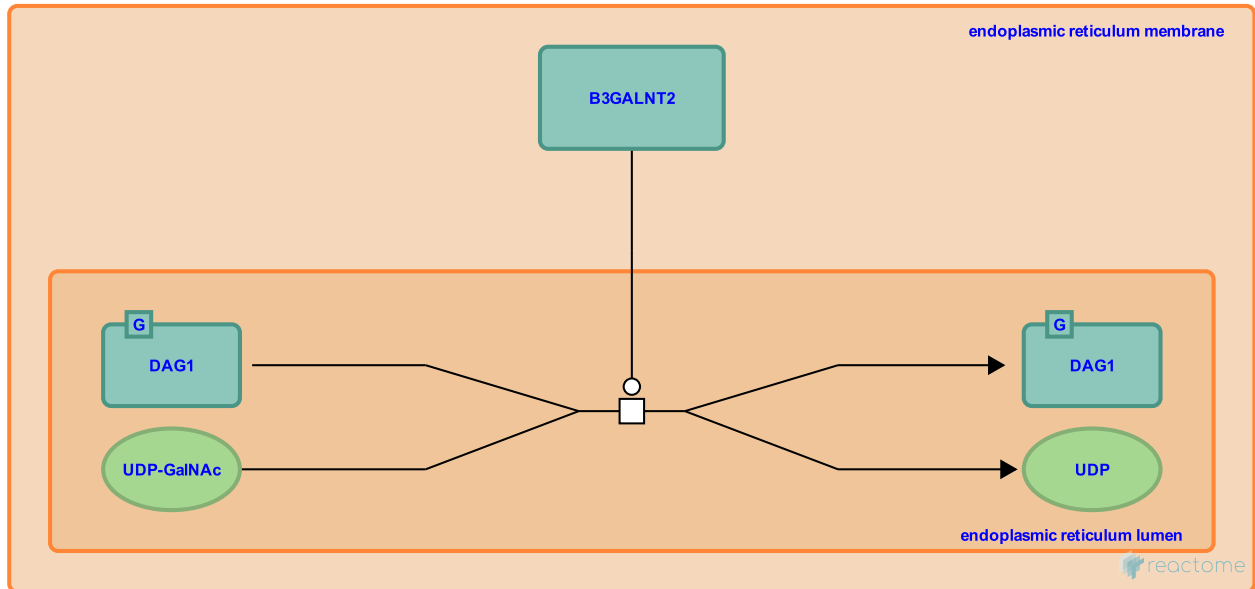
**Location:** [O-linked glycosylation](#)

**Stable identifier:** R-CFA-8931648

**Type:** transition

**Compartments:** endoplasmic reticulum lumen, endoplasmic reticulum membrane

**Inferred from:** [B3GALNT2 transfers GalNAc to GlcNAc-Man-DAG1 \(Homo sapiens\)](#)



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

## POMK 6-phosphorylates Mannose in GalNAc-GlcNAc-Man-DAG1 [↗](#)

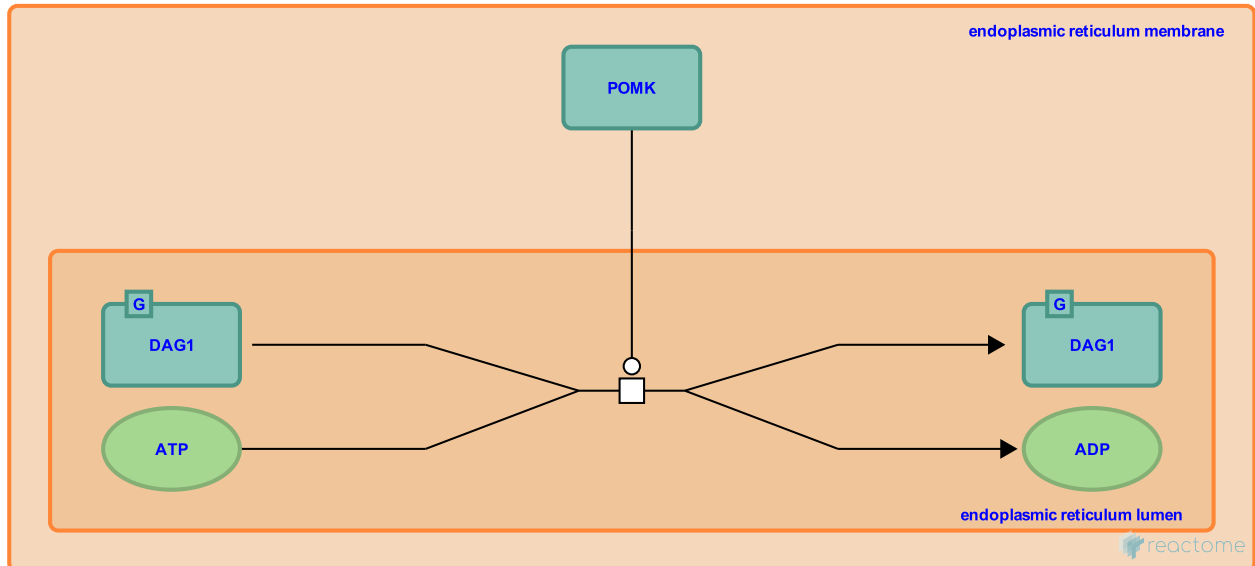
**Location:** [O-linked glycosylation](#)

**Stable identifier:** R-CFA-8931653

**Type:** transition

**Compartments:** endoplasmic reticulum lumen, endoplasmic reticulum membrane

**Inferred from:** [POMK 6-phosphorylates Mannose in GalNAc-GlcNAc-Man-DAG1 \(Homo sapiens\)](#)



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

## B4GAT1:GYLTL1B transfers GlcA from UDP-GlcA to Xyl-GlcA ↗

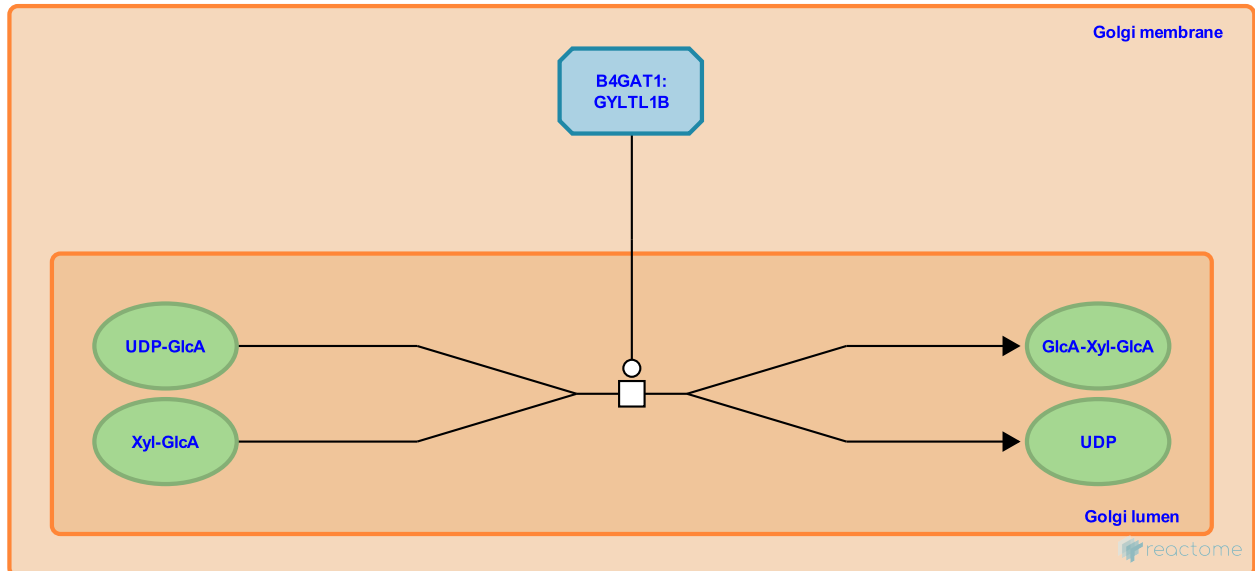
**Location:** [O-linked glycosylation](#)

**Stable identifier:** R-CFA-5617143

**Type:** transition

**Compartments:** Golgi lumen, Golgi membrane

**Inferred from:** [B4GAT1:GYLTL1B transfers GlcA from UDP-GlcA to Xyl-GlcA \(Homo sapiens\)](#)



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



## B4GAT1:LARGE transfers GlcA from UDP-GlcA to Xyl-GlcA ↗

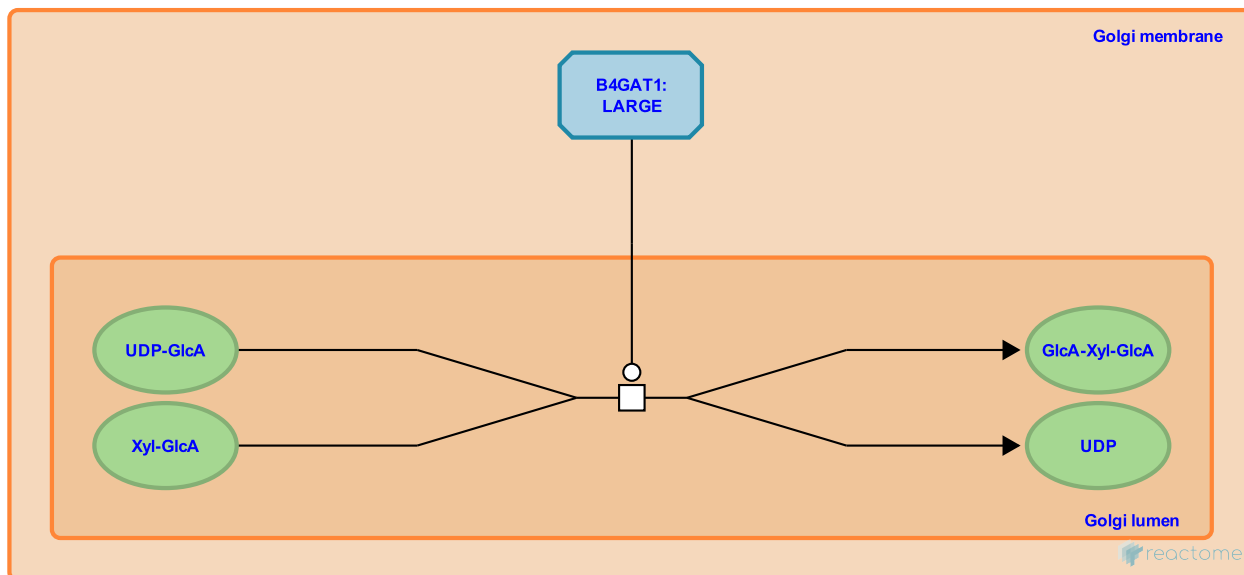
**Location:** O-linked glycosylation

**Stable identifier:** R-CFA-9638097

**Type:** transition

**Compartments:** Golgi lumen, Golgi membrane

**Inferred from:** [B4GAT1:LARGE transfers GlcA from UDP-GlcA to Xyl-GlcA \(Homo sapiens\)](#)



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

## B4GAT1:GYLTL1B transfers Xyl from UDP-Xyl to GlcA-Xyl-GlcA ↗

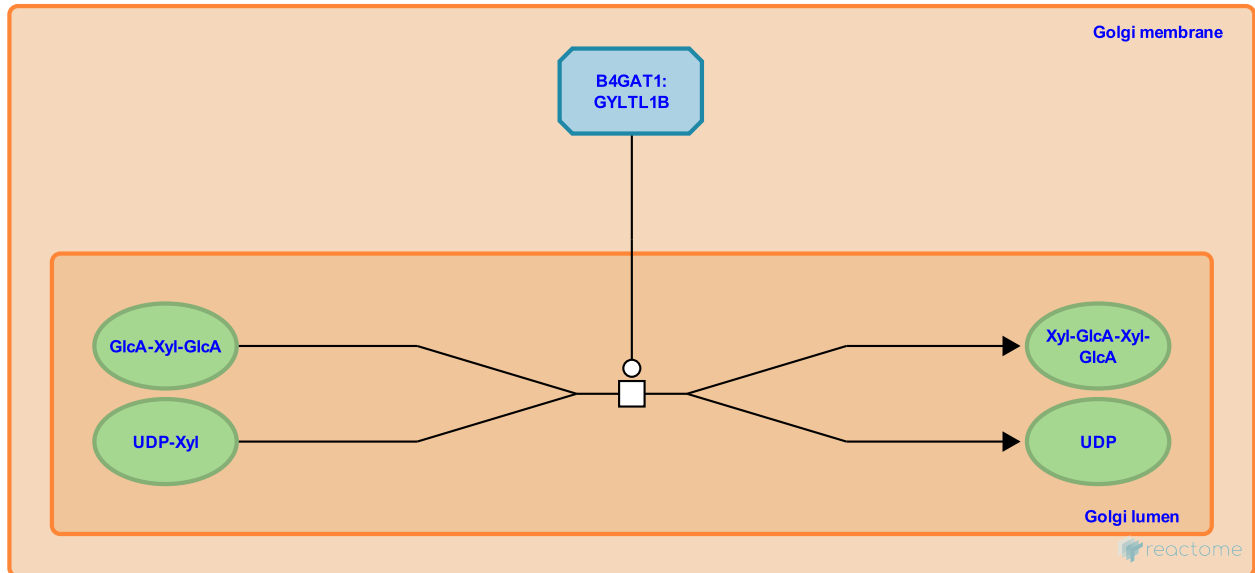
**Location:** O-linked glycosylation

**Stable identifier:** R-CFA-5617138

**Type:** transition

**Compartments:** Golgi lumen, Golgi membrane

**Inferred from:** B4GAT1:GYLTL1B transfers Xyl from UDP-Xyl to GlcA-Xyl-GlcA (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.](/electronic_inference_compara.html) For details on PANTHER see also: <http://www.pantherdb.org/about.jsp>

## B4GAT1:LARGE transfers Xyl from UDP-Xyl to GlcA-Xyl-GlcA ↗

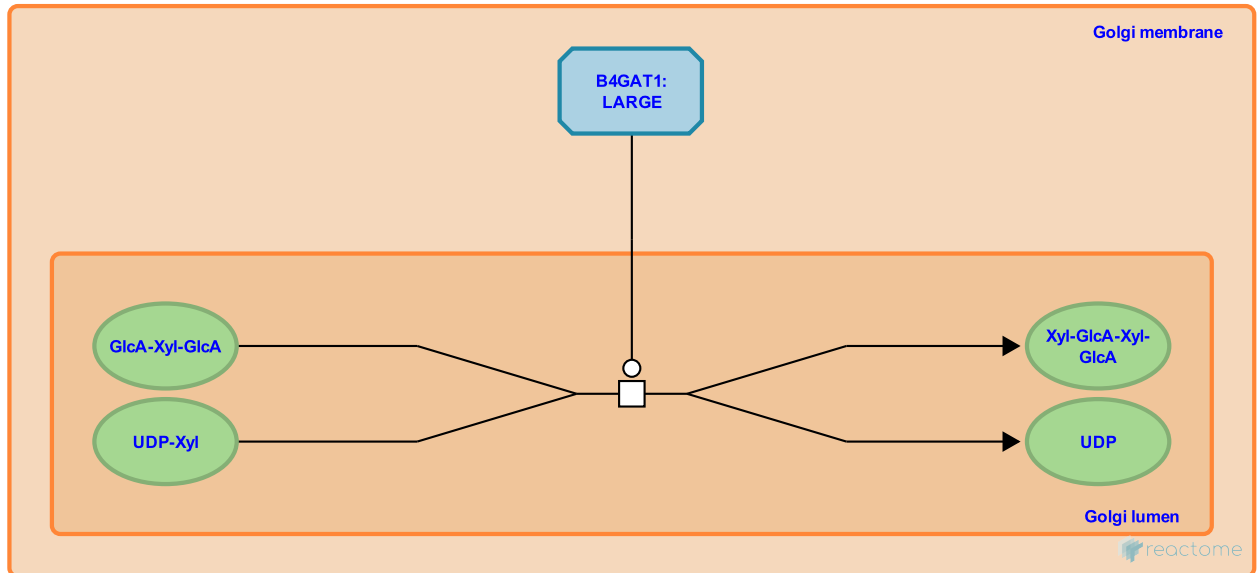
**Location:** O-linked glycosylation

**Stable identifier:** R-CFA-9638090

**Type:** transition

**Compartments:** Golgi lumen, Golgi membrane

**Inferred from:** B4GAT1:LARGE transfers Xyl from UDP-Xyl to GlcA-Xyl-GlcA (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.](/electronic_inference_compara.html) For details on PANTHER see also: <http://www.pantherdb.org/about.jsp>

## POMGNT1 transfers GlcNAc from UDP-GlcNAc to Man-O-Ser-DAG1 ↗

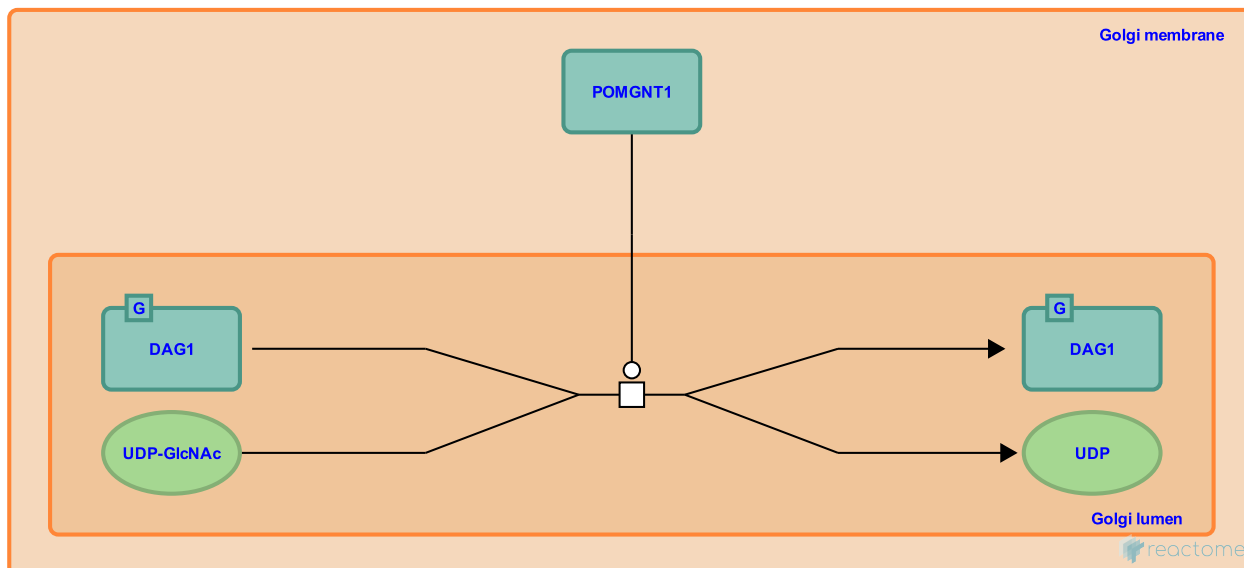
**Location:** [O-linked glycosylation](#)

**Stable identifier:** R-CFA-5617037

**Type:** transition

**Compartments:** Golgi lumen, Golgi membrane

**Inferred from:** [POMGNT1 transfers GlcNAc from UDP-GlcNAc to Man-O-Ser-DAG1 \(Homo sapiens\)](#)



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

# Table of Contents

Introduction	1
❖ O-linked glycosylation	2
❖ O-glycosylation of TSR domain-containing proteins	3
❖ O-linked glycosylation of mucins	4
↳ B3GALNT2 transfers GalNAc to GlcNAc-Man-DAG1	5
↳ POMK 6-phosphorylates Mannose in GalNAc-GlcNAc-Man-DAG1	6
↳ B4GAT1:GYLTL1B transfers GlcA from UDP-GlcA to Xyl-GlcA	7
↳ B4GAT1:LARGE transfers GlcA from UDP-GlcA to Xyl-GlcA	8
↳ B4GAT1:GYLTL1B transfers Xyl from UDP-Xyl to GlcA-Xyl-GlcA	9
↳ B4GAT1:LARGE transfers Xyl from UDP-Xyl to GlcA-Xyl-GlcA	10
↳ POMGNT1 transfers GlcNAc from UDP-GlcNAc to Man-O-Ser-DAG1	11
Table of Contents	12