

ST8SIA2,3,6 transfer Neu5Ac to terminal Gal of N-glycans

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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

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Reactome database release: 88

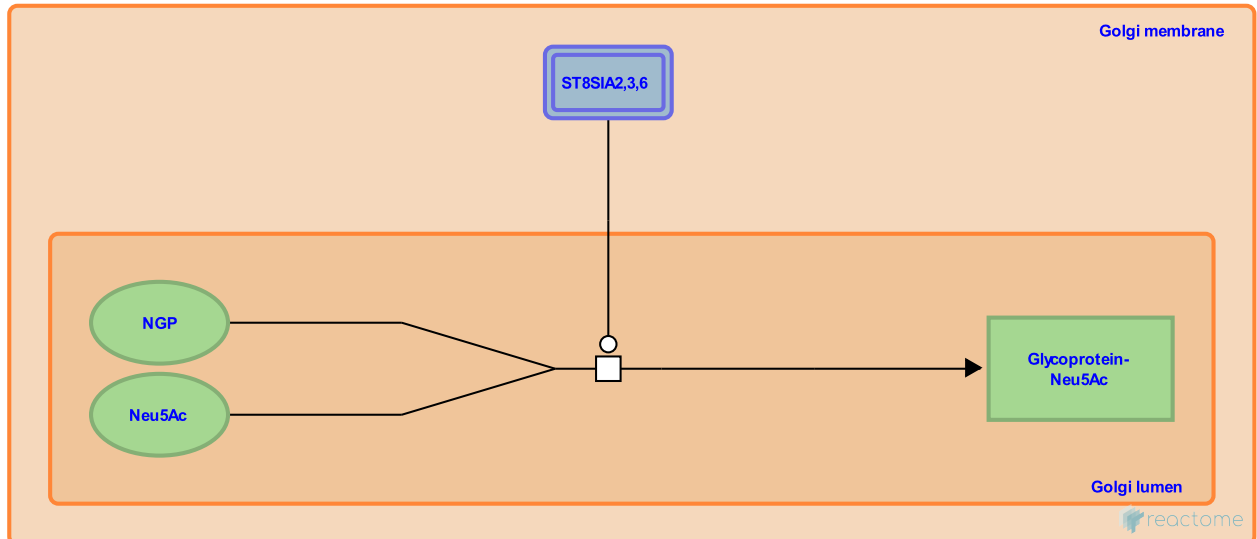
This document contains 1 reaction ([see Table of Contents](#))

ST8SIA2,3,6 transfer Neu5Ac to terminal Gal of N-glycans [↗](#)

Stable identifier: R-HSA-1022133

Type: transition

Compartments: Golgi membrane, Golgi lumen



Addition of sialic acid (Neu5Ac) to galactose-containing N-glycan. Sialic acid is usually found at terminal positions of the N-glycan. This imparts a negative charge at neutral pH which affects the chemico-physical and biological properties of the N-glycans (for a review, see Schauer 2000); moreover, this modification can lead to the addition of extraordinarily long antennae such as polysialic acid (hundreds of sials) or polylactosamine repeats (dozens of disaccharide repeats) (Harduin-Lepers 2001), while the number of modifications on the antennae of N-glycans is usually lower.

There are over 20 sialyltransferases known in humans, 5 of which are known to act on N-glycans. Beta-galactoside alpha-2,6-sialyltransferase 1

(ST6GAL1) is the only sialyltransferase known to transfer Neu5Ac to Gal on N-Glycans (Dall'Olio 2000). A second beta-galactoside alpha-2,6-sialyltransferase has been characterized, but this enzyme acts mainly on oligosaccharides (Krzewinski-Recchi et al. 2003). Neu5Ac can also be added via an alpha-2,3-linkage to Gal on N-glycans by CMP-N-acetylneuraminic acid-beta-galactosyltransferase 4 (ST3GAL4) (Ellies et al. 2002). ST8Sia II (ST8SIA2), ST8Sia III (ST8SIA3), and ST8Sia IV (ST8SIA6) have alpha-2,8-activity (Angata et al. 1997, Angata et al. 2000, Angata & Fuduka 2003).

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Editions

2009-11-10	Authored	Dall'Olio, GM.
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