sABO-A:Mn2+ transfers GalNAc to H anti-gen-sec to form A antigen-sec

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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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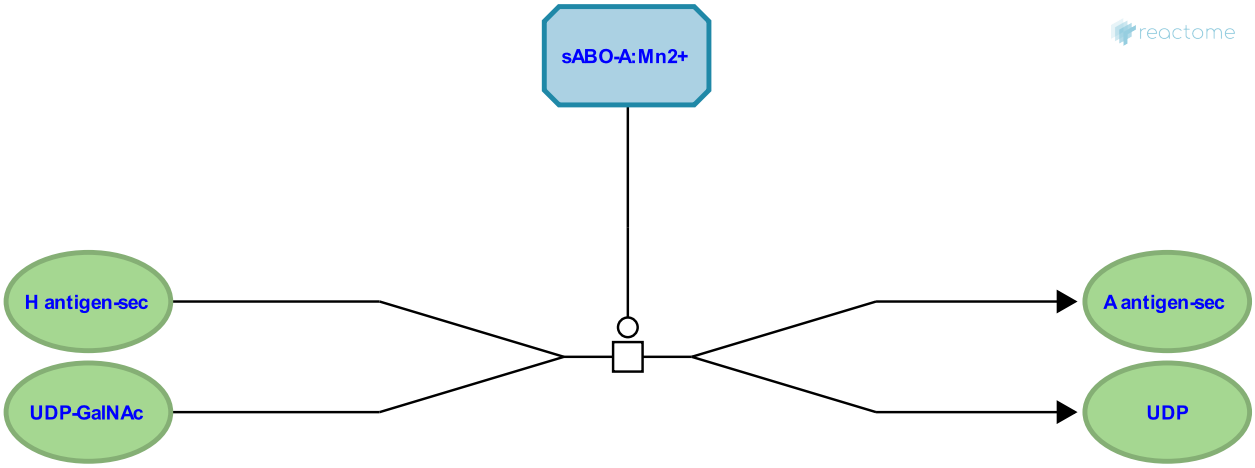
Stable identifier: R-HSA-9034042

Type: transition

Compartments: extracellular region



As well as being a Golgi membrane resident, the histo-blood group ABO system transferase (ABO) can be proteolytically processed by an unknown protease into a soluble form, fucosylglycoprotein alpha-N-acetylgalactosaminyltransferase (sABO). A, B and AB individuals express glycosyltransferase activities that convert the H antigen to the A antigen (by addition of GalNAc), to the B antigen (by addition of Gal) or to the AB antigen (by the addition of both GalNAc and Gal). O group individuals lack such activity. Differences in four critical amino acids (176, 235, 266 and 268) alter the specificity from an A to a B glycosyltransferase (Yamamoto et al. 1990, Yamamoto & McNeill 1996, Seto et al. 1999, Alfaro et al. 2008). The soluble form of histo-blood group A transferase (sABO-A) utilises UDP-GalNAc to transfer N-acetylgalactosamine (GalNAc) to the H antigen formed via Type 1 chains to form the A antigen in secretors (A antigen-sec) (Patenaude et al. 2002, Persson et al. 2007).

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Editions

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