

# botF:SV2:GT1b internalized from target cell plasma membrane to synaptic vesicle membrane

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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

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 1 reaction ([see Table of Contents](#))

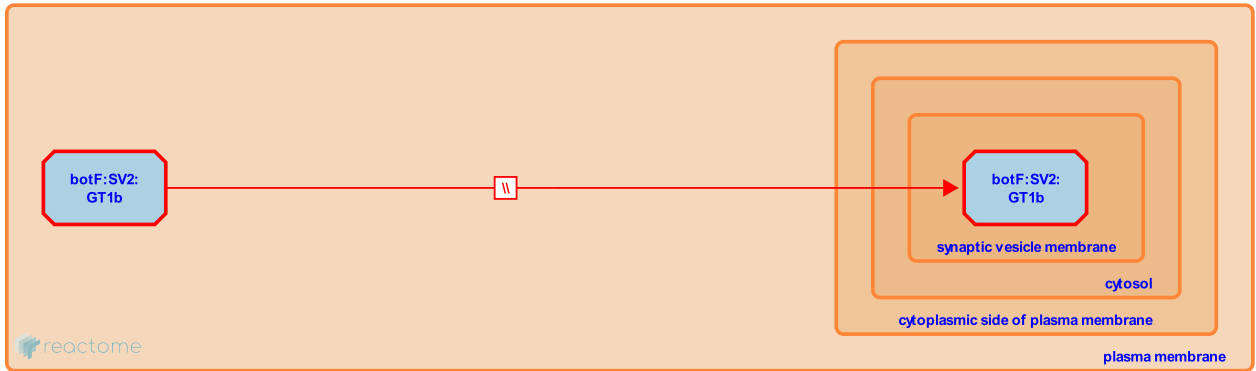
**botF:SV2:GT1b internalized from target cell plasma membrane to synaptic vesicle membrane** ↗

**Stable identifier:** R-HSA-5250875

**Type:** omitted

**Compartments:** plasma membrane, synaptic vesicle membrane

**Diseases:** botulism



Synaptic vesicles re-form rapidly after exocytosis, carrying vesicle membrane proteins that had been exposed on the cell surface by exocytosis back into the cell (Sudhoff 2004). The botulinum toxin type F disulfide-bonded heavy chain - light chain heterodimer ("dichain") (botF HC:LC) bound to ganglioside GT1b and synaptic vesicle protein 2A (SV2A), 2B (SV2B), or 2C (SV2C) is inferred to be taken up as well, delivering it to the re-formed synaptic vesicle.

**Literature references**

Sudhof, TC. (2004). The synaptic vesicle cycle. *Annu Rev Neurosci*, 27, 509-47. ↗

**Editions**

2006-06-15	Authored	Gopinathrao, G., Krupa, S.
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