botF LC cleaves target cell VAMP2

D'Eustachio, P., Gopinathrao, G., Ichtchenko, K., Krupa, S., Sharma, S., Thirunavukkarasu, N.

17/05/2024

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
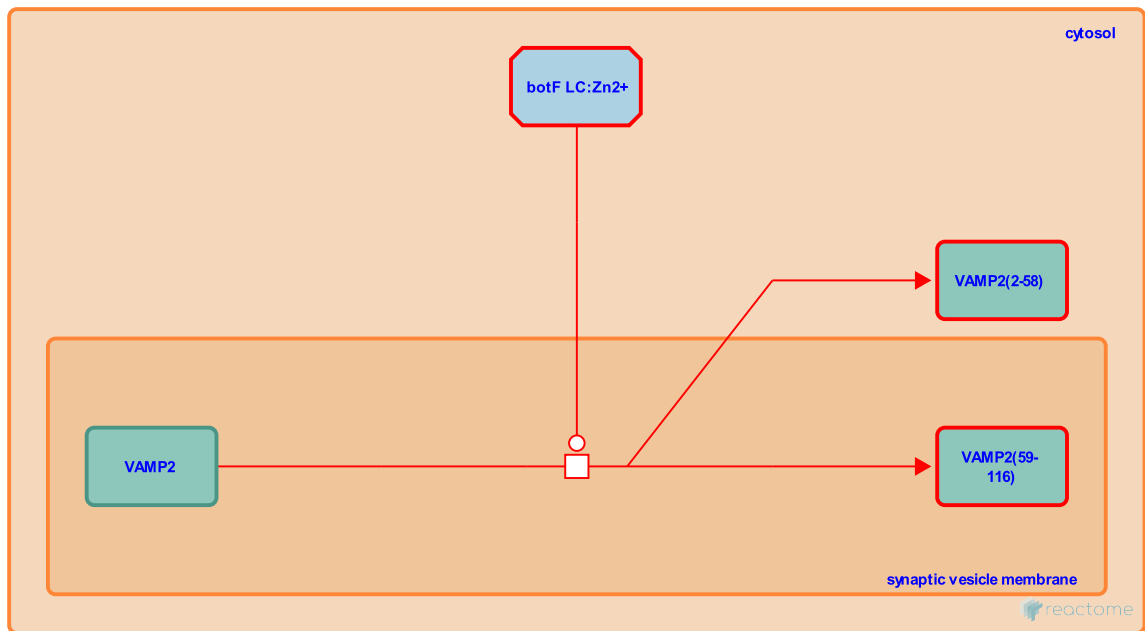
This document contains 1 reaction (see Table of Contents)

botF LC cleaves target cell VAMP2 ↗

Stable identifier: R-HSA-5250892

Type: transition

Compartments: synaptic vesicle membrane, cytosol

Diseases: botulism

Botulinum toxin type F light chain (botF LC), in the cytosol of a target cell, catalyzes the removal of an aminoterminal peptide from vesicle-associated membrane protein 2 (VAMP2). botF LC is a zinc metalloprotease (Yamasaki et al. 1994). VAMP2 is associated with the cytosolic face of the target cell synaptic vesicle and is required for vesicle docking and exocytosis. Its cleavage by botulinum toxin blocks synaptic vesicle fusion with the plasma membrane and neurotransmitter release (Sudhof et al, 1993; Sudhof 2004).

Literature references

Südhof, TC., Niemann, H., Jahn, R., De Camilli, P. (1993). Membrane fusion machinery: insights from synaptic proteins. *Cell, 75*, 1-4. ↗

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

Fykse, EM., Südhof, TC., Roques, B., Link, E., Yamasaki, S., Baumeister, A. et al. (1994). Cleavage of members of the synaptobrevin/VAMP family by types D and F botulinal neurotoxins and tetanus toxin. *J Biol Chem, 269*, 12764-72. ↗

Editions

2006-06-15	Authored	Gopinathrao, G., Krupa, S.
2006-06-16	Edited	Gopinathrao, G.
2007-08-03	Reviewed	Ichtchenko, K.
2014-02-11	Revised	D'Eustachio, P.
2014-11-18	Reviewed	Sharma, S., Thirunavukkarasu, N.