

# ROBO1 binds SLIT2

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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

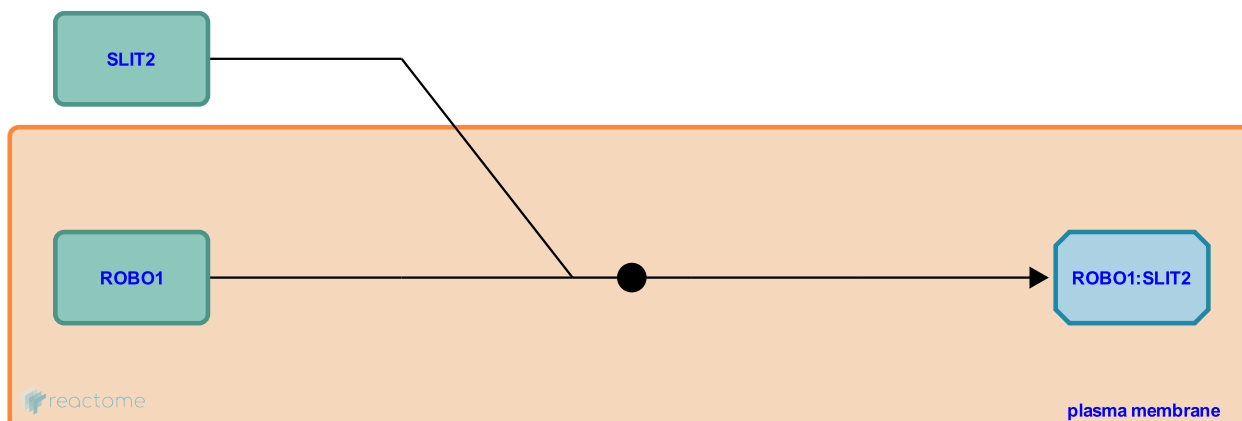
This document contains 1 reaction ([see Table of Contents](#))

## ROBO1 binds SLIT2 [↗](#)

**Stable identifier:** R-HSA-204364

**Type:** binding

**Compartments:** plasma membrane



SLIT2 ligand forms a complex with the ROBO1 receptor (Brose et al. 1999). The SLIT family consists of three members that are all expressed in the ventral midline (floor plate) of the neural tube. SLIT1 is predominantly expressed in the nervous system whereas SLIT2 and SLIT3 are also expressed outside the nervous system.

SLIT proteins are the ligands for the ROBO receptors. In humans, there are four ROBO genes: ROBO1, ROBO2, ROBO3 and ROBO4. The extracellular domain of ROBO comprises five Ig domains and three FN domains except for ROBO4 (two Ig + two FN). Ig1 and Ig2 domains of ROBO1 and ROBO2 are highly conserved and are important for SLIT binding. The concave face of SLIT's second LRR domain accommodates the Ig1 and Ig2 domains of ROBO1 and ROBO2. ROBO3 does not bind SLITs (Camurri et al. 2005, Mambetisaeva et al. 2005, Zelina et al. 2014, Jaworski et al. 2015). SLIT binding with ROBO4 is controversial as the interaction is weak and it has been observed using the in-vitro methods (Wang et al. 1999, Brose et al. 1999, Piper et al. 2003, Andrews et al. 2007).

Binding of secreted (cleaved) SLIT2 to ROBO1 and ROBO2 is involved in fasciculation (bundling) of motor axons, which facilitates axon pathfinding and muscle innervation (Jaworski and Tessier-Lavigne 2012).

### Literature references

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Piper, M., Little, M. (2003). Movement through Slits: cellular migration via the Slit family. *Bioessays*, 25, 32-8. [↗](#)

### Editions

2008-09-05	Authored, Edited	Garapati, P V.
2009-08-18	Reviewed	Kidd, T.
2017-06-23	Edited	Orlic-Milacic, M.
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