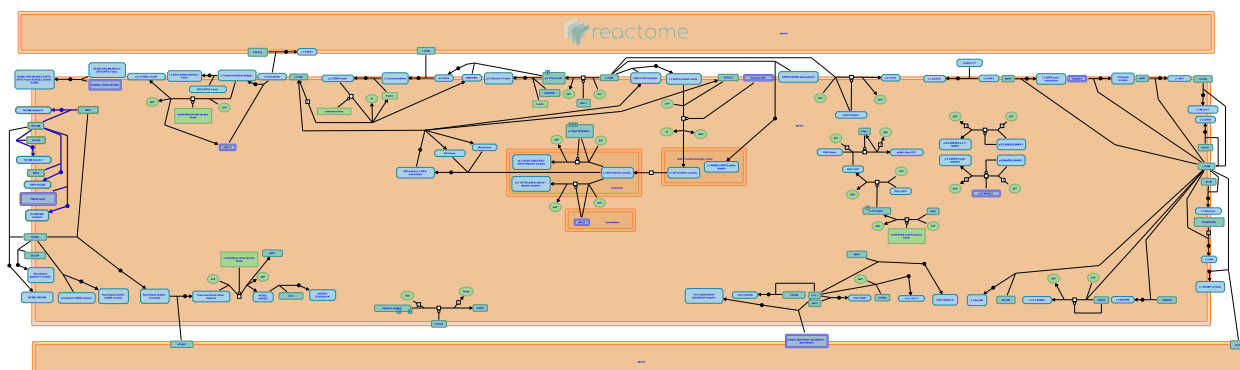


# NrCAM interactions



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This is just an excerpt of a full-length report for this pathway. To access the complete report, please download it at the [Reactome Textbook](https://reactome.org/Textbook).

06/05/2024

## 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

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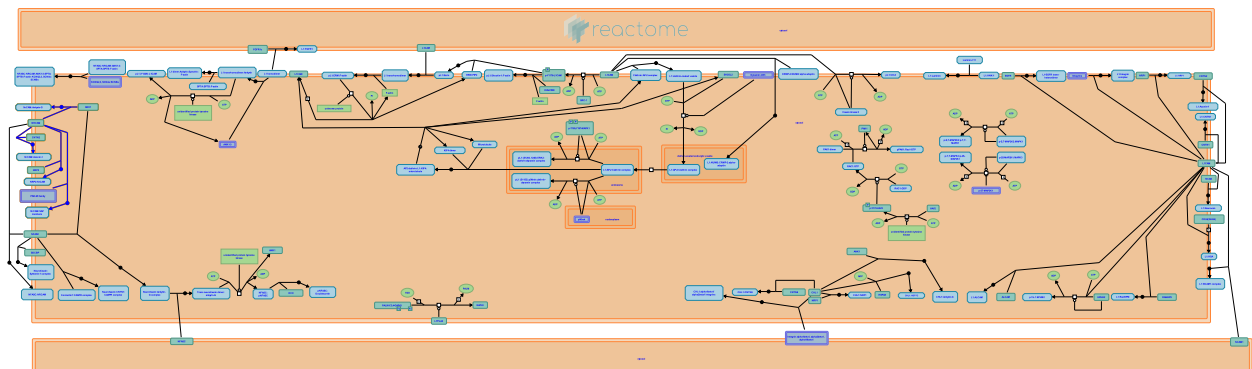
Reactome database release: 88

This document contains 1 pathway and 4 reactions ([see Table of Contents](#))

## NrCAM interactions ↗

**Stable identifier:** R-HSA-447038

**Compartments:** plasma membrane



The NgCAM-related cell adhesion molecule (NrCAM) is member of the L1 family involved in the eye development and node of Ranvier. Like all the other members of L1 family NrCAM also has the ability to bind to ankyrins. The last C-terminal amino acids of NrCAM form a PDZ-binding motif and can interact with SAP (synapse-associated protein) 102 and SAP97. Member of the GPI-anchored TAG-1/axonin-1 have been shown to interact with NrCAM. NrCAM also binds the Sema3B receptor NP-2 to mediate repulsive axon guidance.

## Literature references

Castellani, V., Grumet, M., Sanes, JR., Hoyo-Becerra, C., Bozon, M., Nawabi, H. et al. (2005). Dual functional activity of semaphorin 3B is required for positioning the anterior commissure. *Neuron*, 48, 63-75. ↗

Hortsch, M. (2000). Structural and functional evolution of the L1 family: are four adhesion molecules better than one?. *Mol Cell Neurosci*, 15, 1-10. ↗

Gunn-Moore, FJ., Hill, M., Herron, LR., Davey, F. (2009). The intracellular interactions of the L1 family of cell adhesion molecules. *Biochem J*, 419, 519-31. ↗

## Editions

2008-07-30	Authored, Edited	Garapati, P V.
2010-02-16	Reviewed	Maness, PF.

## NrCAM binds Ankyrin-G ↗

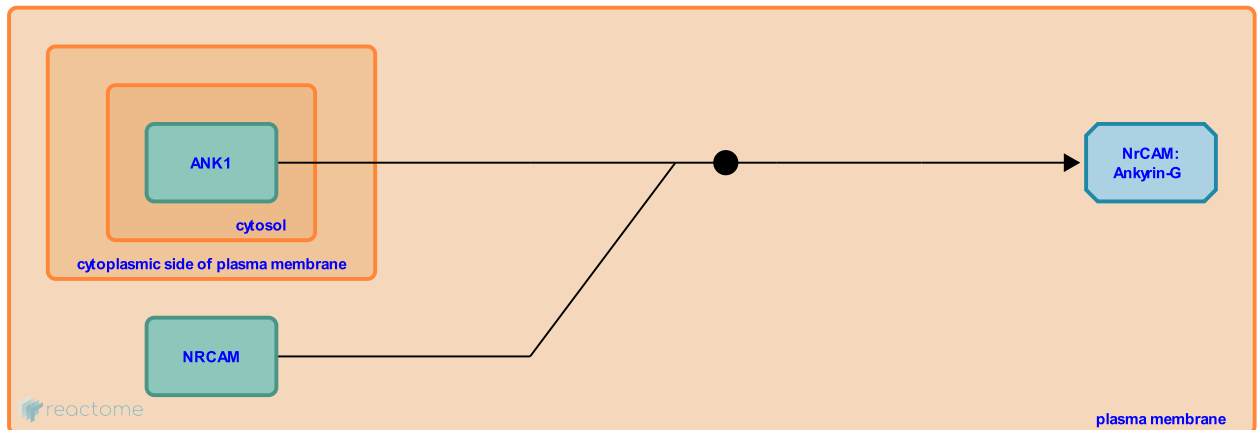
**Location:** [NrCAM interactions](#)

**Stable identifier:** R-HSA-447030

**Type:** binding

**Compartments:** plasma membrane, cytosol

**Inferred from:** [NrCAM binds Ankyrin-G \(Rattus norvegicus\)](#)



NrCAM is expressed specifically at node of ranvier where it interacts with the cytoskeletal adaptor protein ankyrin-G with the conserved motif F1272IGQY.

### Editions

2008-07-30	Authored, Edited	Garapati, P V.
2010-02-16	Reviewed	Maness, PF.

## NrCAM binds axonin-1 [↗](#)

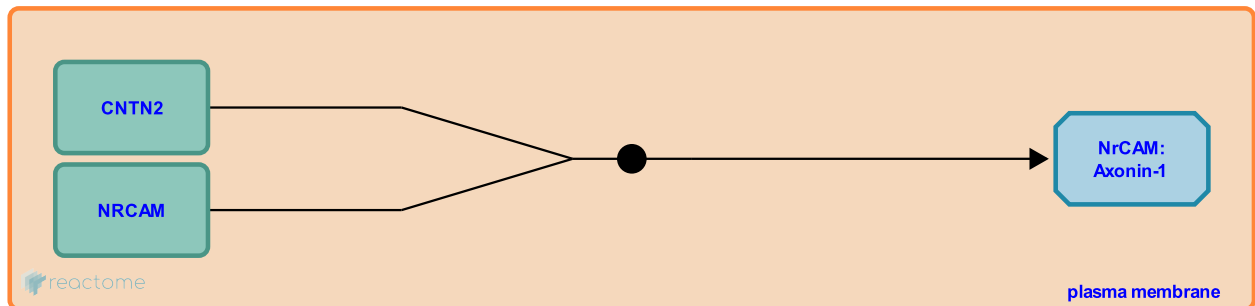
**Location:** [NrCAM interactions](#)

**Stable identifier:** R-HSA-445067

**Type:** binding

**Compartments:** plasma membrane

**Inferred from:** [NrCAM binds axonin-1 \(Gallus gallus\)](#)



Axonin-1 expressed on the commissural axons interacts in trans with NrCAM expressed on floor plate. This interaction is required for commissural axons to enter the floor plate and cross the midline.

### Editions

2008-07-30	Authored, Edited	Garapati, P V.
2010-02-16	Reviewed	Maness, PF.

## NrCAM binds synapse-associated proteins [↗](#)

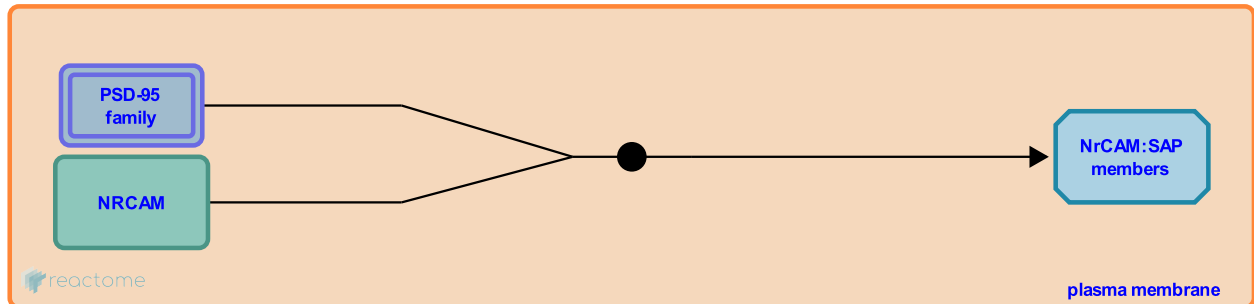
**Location:** [NrCAM interactions](#)

**Stable identifier:** R-HSA-376134

**Type:** binding

**Compartments:** plasma membrane

**Inferred from:** [NrCAM binds synapse-associated proteins \(Mus musculus\)](#)



NrCAM is the only mammalian L1CAM family member containing a consensus PDZ binding motif. NrCAM interacts with the PDZ domain containing proteins SAP-102, SAP-95 and SAP-97 and recruits them to the cell membrane. These SAP family members are colocalized with NrCAM in photoreceptor cells of the mammalian retina.

### Editions

2008-07-30	Authored, Edited	Garapati, P V.
2010-02-16	Reviewed	Maness, PF.

## NrCAM binds Neuropilin-2 [↗](#)

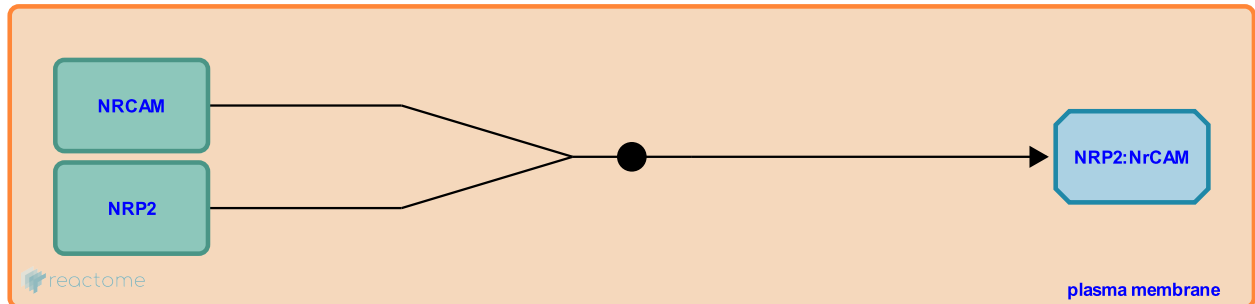
**Location:** [NrCAM interactions](#)

**Stable identifier:** R-HSA-549060

**Type:** binding

**Compartments:** plasma membrane

**Inferred from:** [NrCAM binds Neuropilin-2 \(Mus musculus\)](#)



NrCAM associates with NP2 and is required for Sema3B- and Sema3F-induced attractive and repulsive responses.

### Editions

2008-07-30	Authored, Edited	Garapati, P V.
2010-02-16	Reviewed	Maness, PF.

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