Cacna1d:Cacna2d2:Cacnb2 (Cav1.3 channel) transports calcium into the cytosol of an inner hair cell

Furness, DN., May, B.
**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**


Reactome database release: 83

This document contains 1 reaction ([see Table of Contents](#))
Cacna1d:Cacna2d2:Cacnb2 (Cav1.3 channel) transports calcium into the cytosol of an inner hair cell

**Stable identifier:** R-MMU-9659489

**Type:** transition

**Compartments:** plasma membrane

Voltage-gated L-type Cav1.3 calcium channels comprising Cacna1d:Cacna2d2:Cacnb2 open in response to depolarization of the inner hair cell caused by an influx of cations (calcium and potassium) through mechanoelectrical transduction (MET) channels in the apical stereocilia (Nemzou et al. 2006, Neef et al. 2009, Fell et al. 2016, Vincent et al. 2017). The calcium channels are located on the basolateral surface of the inner hair cells in close proximity to cytoplasmic ribbon structures that temporarily anchor and cluster glutamate vesicles near the inner face of the plasma membrane (Brandt et al. 2005, Nemzou et al. 2006). The proximity between the Cav1.3 calcium channels and the ribbon structures allows a small number (about 10) of calcium channels to produce high localized concentrations of Ca2+ near the site of glutamate release (Brandt et al. 2005, Frank et al. 2009, Vincent et al. 2014).

**Literature references**


Giese, A., Moser, T., Bulankina, AV., Khimich, D., Nemzou N, RM. (2006). Synaptic organization in cochlear inner hair cells deficient for the CaV1.3 (alpha1D) subunit of L-type Ca2+ channels. *Neuroscience, 141*, 1849-60.
<table>
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