GluN1:GluN2 (GRIN1:GRIN2) NMDA receptors bind to postsynaptic density proteins

Bhattacharya, S., Camp, C., Orlic-Milacic, M., Traynelis, SF.

European Bioinformatics Institute, New York University Langone Medical Center, Ontario Institute for Cancer Research, Oregon Health and Science University.

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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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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. ↗

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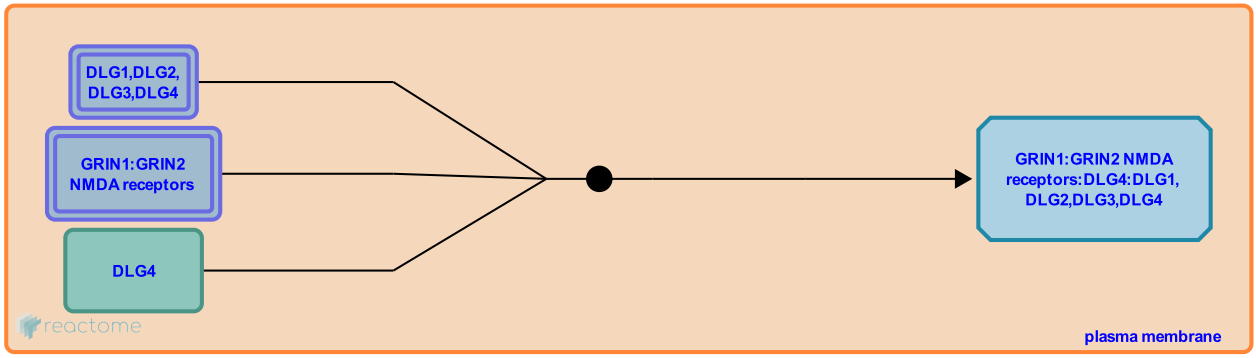
Stable identifier: R-HSA-9610653

Type: binding

Compartments: plasma membrane

Inferred from: GluN1 (Grin1) binds to Dlg4 (Rattus norvegicus)



All GluN2 (GRIN2) family subunits, GluN2A (GRIN2A), GluN2B (GRIN2B), GluN2C (GRIN2C) and GluN2D (GRIN2D), can bind to any of the PSD-95 protein family members DLG1 (SAP-97), DLG2 (PSD-93), DLG3 (SAP-102) and DLG4 (PSD-95). Binding to different PSD-95 family members does not affect transport of GluN1:GluN2 (GRIN1:GRIN2) NMDA receptors to the plasma membrane, but does affect their positioning and retention at the plasma membrane postsynaptic density, as well as their excitability (Cui et al. 2007, Cousins et al. 2008, Bard et al. 2010). DLG4, the most prominent postsynaptic density protein, can also interact directly with GluN1 isoforms that possess the PDZ-binding domain in their C-terminus (Kornau et al. 1995).

Literature references

Garman, D., Cui, H., Tymianski, M., Phan, T., Sun, HS., Lu, PS. et al. (2007). PDZ protein interactions underlying NMDA receptor-mediated excitotoxicity and neuroprotection by PSD-95 inhibitors. *J. Neurosci., 27*, 9901-15. ↗

Editions

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