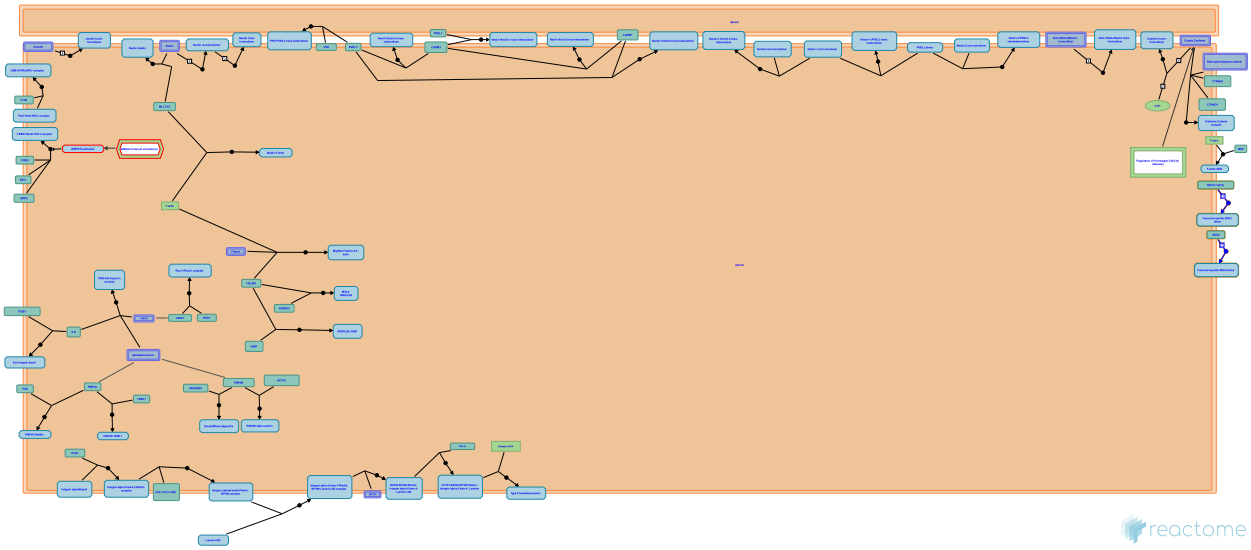
SDK interactions



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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.

03/05/2024

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).

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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. ↗

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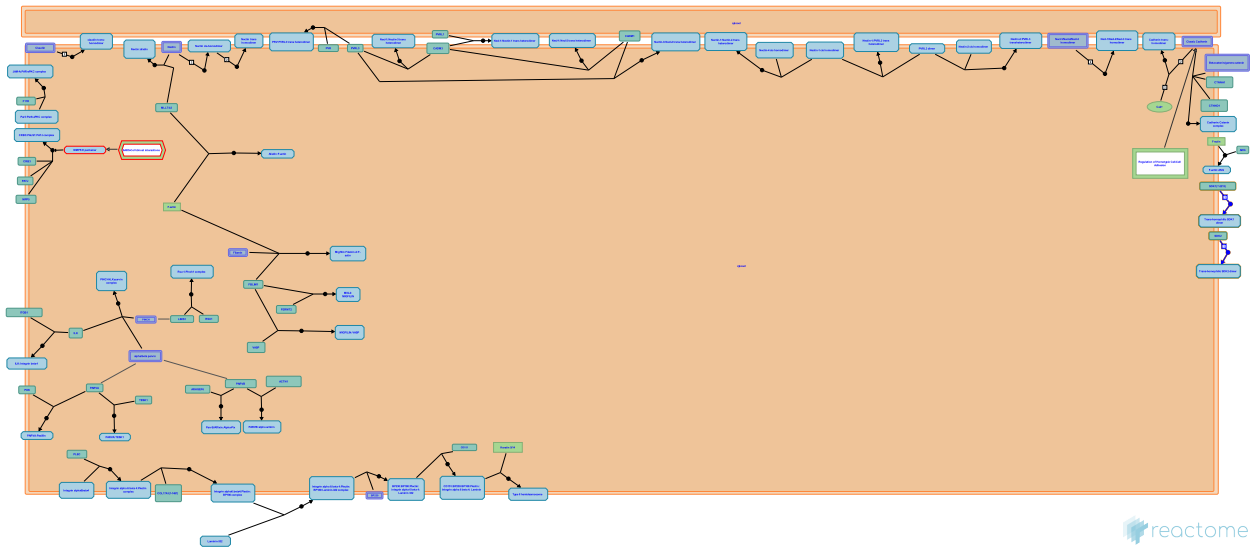
Fabregat, A., Jupe, S., Matthews, L., Sidiropoulos, K., Gillespie, M., Garapati, P. et al. (2018). The Reactome Pathway Knowledgebase. *Nucleic Acids Res, 46*, D649-D655. ↗

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. ↗

SDK interactions ↗

Stable identifier: R-HSA-373756

Compartments: plasma membrane



Sidekick-1 (SDK1) and sidekick-2 (SDK2) are cell adhesion molecules of the immunoglobulin superfamily expressed by nonoverlapping subsets of retinal neurons. They have been shown to function as neuronal targeting molecules, guiding developing neurons to specific synapses.
SDKs are concentrated at synapses that connect SDK-expressing pre- and postsynaptic partners, suggesting that their homophilic adhesion properties promote formation or stabilization of synapses.

SDKs promotes lamina-specific synaptic connections in the retina and are specifically required for the formation of neuronal circuits that detect motion (Krishnaswamy et al. 2015).

Literature references

Kurihara, H., Potla, U., Kaufman, L., Hata, Y., Dikiy, S., Coleman, S. et al. (2010). Up-regulation of the homophilic adhesion molecule sidekick-1 in podocytes contributes to glomerulosclerosis. *J. Biol. Chem., 285*, 25677-85. ↗

Weiner, JA., Sanes, JR., Yamagata, M. (2002). Sidekicks: synaptic adhesion molecules that promote lamina-specific connectivity in the retina. *Cell, 110*, 649-60. ↗

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Sanes, JR., Yamagata, M. (2008). Dscam and Sidekick proteins direct lamina-specific synaptic connections in vertebrate retina. *Nature, 451*, 465-9. ↗

Kaufman, L., Hayashi, K., Klotman, PE., Ross, MD. (2005). Definition of the critical domains required for homophilic targeting of mouse sidekick molecules. *FASEB J., 19*, 614-6. ↗

Editions

2008-02-26	Authored	de Bono, B., Garapati, P V.
2017-01-13	Edited	Jupe, S.
2017-02-01	Reviewed	Sanes, JR., Honig, B.

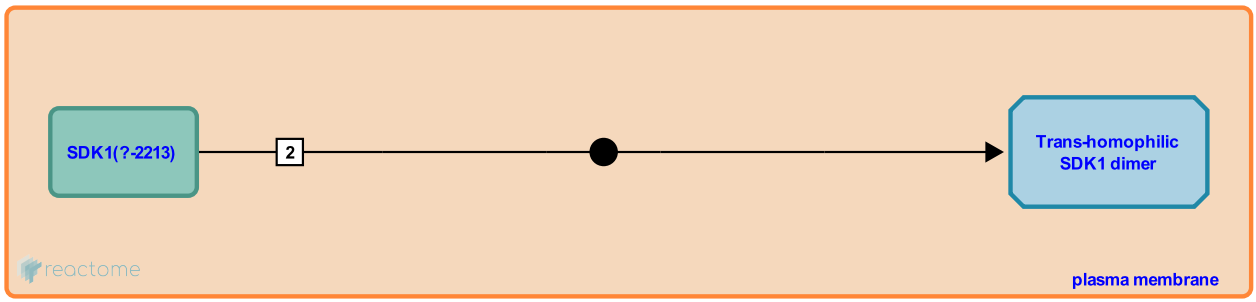
SDK1 homophillic interaction ↗

Location: SDK interactions

Stable identifier: R-HSA-373745

Type: binding

Compartments: plasma membrane



SDK1 and SDK2 are homophilic adhesion molecules. Cells expressing them exhibit a strong preference to interact exclusively with cells expressing the same sidekick form. The N-terminal four Ig domains are arranged in a horseshoe conformation and mediate homophilic adhesion, with Ig1-2 conferring the majority of binding affinity and differential specificity.

Literature references

Weiner, JA., Sanes, JR., Yamagata, M. (2002). Sidekicks: synaptic adhesion molecules that promote lamina-specific connectivity in the retina. *Cell, 110*, 649-60. ↗

Ashby, JR., Kaufman, L., Klotman, ME., Klotman, PE., Huang, L., Hayashi, K. et al. (2007). The homophilic adhesion molecule sidekick-1 contributes to augmented podocyte aggregation in HIV-associated nephropathy. *FASEB J, 21*, 1367-75. ↗

Editions

2008-02-26	Authored	de Bono, B., Garapati, P V.
2017-01-13	Edited	Jupe, S.
2017-02-01	Reviewed	Sanes, JR., Honig, B.

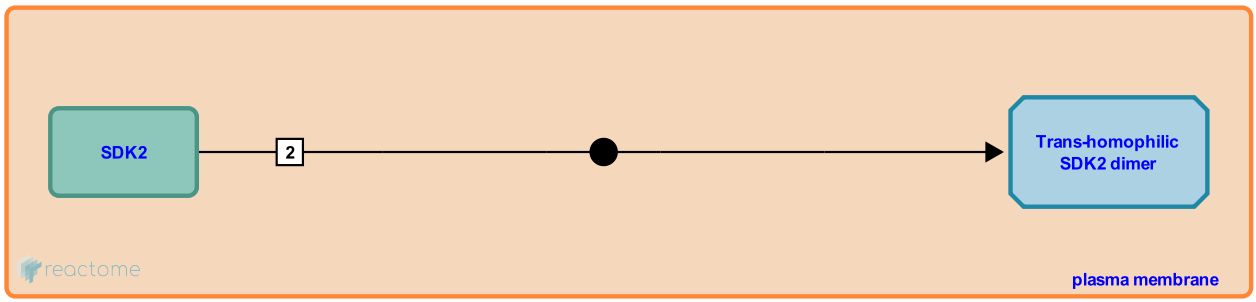
SDK2 homophillic interaction ↗

Location: SDK interactions

Stable identifier: R-HSA-373741

Type: binding

Compartments: plasma membrane



SDK1 and SDK2 are homophilic adhesion molecules. Cells expressing them exhibit a strong preference to interact exclusively with cells expressing the same sidekick form. The N-terminal four Ig domains are arranged in a horseshoe conformation and mediate homophilic adhesion, with Ig1-2 conferring the majority of binding affinity and differential specificity.

Literature references

Weiner, JA., Sanes, JR., Yamagata, M. (2002). Sidekicks: synaptic adhesion molecules that promote lamina-specific connectivity in the retina. *Cell, 110*, 649-60. ↗

Ashby, JR., Kaufman, L., Klotman, ME., Klotman, PE., Huang, L., Hayashi, K. et al. (2007). The homophilic adhesion molecule sidekick-1 contributes to augmented podocyte aggregation in HIV-associated nephropathy. *FASEB J, 21*, 1367-75. ↗

Editions

2008-02-26	Authored	de Bono, B., Garapati, P V.
2017-01-13	Edited	Jupe, S.
2017-02-01	Reviewed	Sanes, JR., Honig, B.

Table of Contents

Introduction 1

SDK interactions 2

- SDK1 homophillic interaction 3
- SDK2 homophillic interaction 4

Table of Contents 5