

Calmodulin dissociates KRAS4B from the plasma membrane

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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

- 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. [↗](#)
- Sidiropoulos, K., Viteri, G., Sevilla, C., Jupe, S., Webber, M., Orlic-Milacic, M. et al. (2017). Reactome enhanced pathway visualization. *Bioinformatics*, 33, 3461-3467. [↗](#)
- 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. [↗](#)

Reactome database release: 88

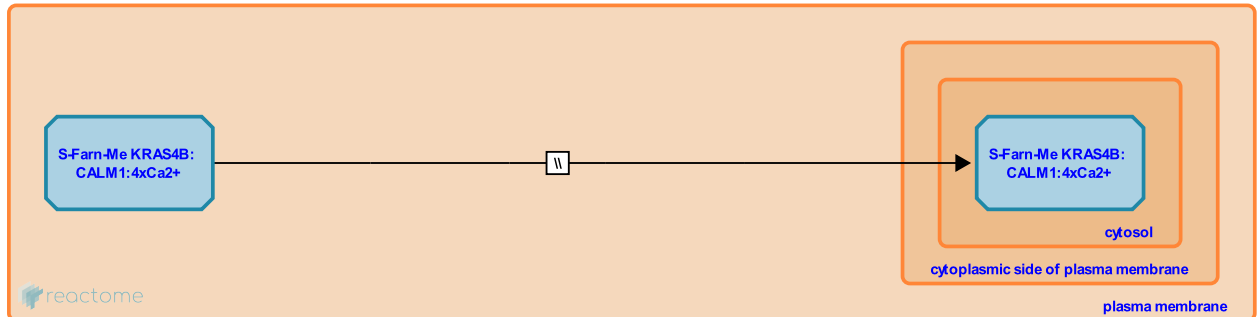
This document contains 1 reaction ([see Table of Contents](#))

Calmodulin dissociates KRAS4B from the plasma membrane [↗](#)

Stable identifier: R-HSA-9654521

Type: omitted

Compartments: plasma membrane, cytosol



Ca²⁺/calmodulin-binding to KRAS4B dissociates it from the plasma membrane independent of nucleotide state (Firaz et al, 2005; Sidhu et al, 2003; Sperlich et al, 2016; reviewed in Shimashu et al, 2017).

Literature references

- Meyer, T., Fivaz, M. (2005). Reversible intracellular translocation of KRas but not HRas in hippocampal neurons regulated by Ca²⁺/calmodulin. *J. Cell Biol.*, 170, 429-41. [↗](#)
- Weise, K., Waldmann, H., Winter, R., Sperlich, B., Kapoor, S. (2016). Regulation of K-Ras4B Membrane Binding by Calmodulin. *Biophys. J.*, 111, 113-22. [↗](#)
- McCormick, F., Nissley, DV., Simanshu, DK. (2017). RAS Proteins and Their Regulators in Human Disease. *Cell*, 170, 17-33. [↗](#)
- Bhullar, RP., Clough, RR., Sidhu, RS. (2003). Ca²⁺/calmodulin binds and dissociates K-RasB from membrane. *Biochem. Biophys. Res. Commun.*, 304, 655-60. [↗](#)

Editions

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