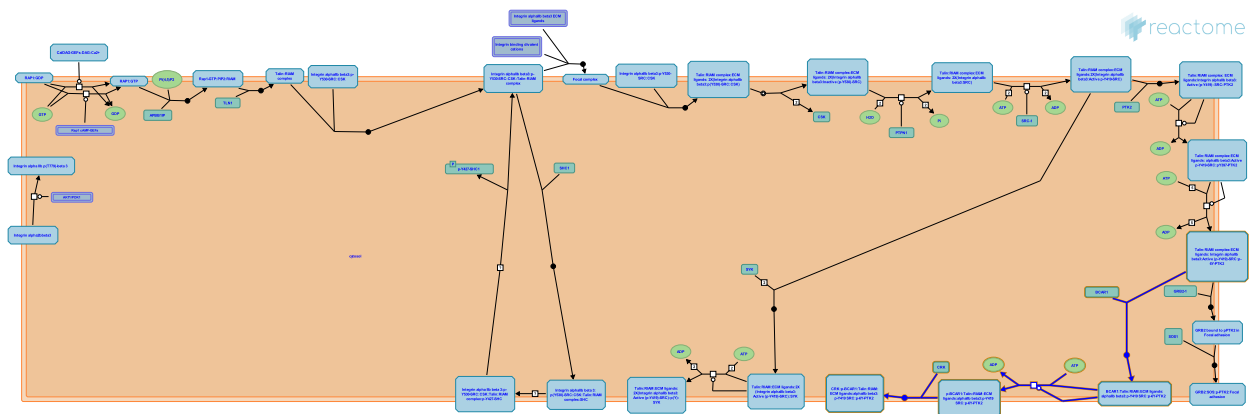


p130Cas linkage to MAPK signaling for integrins



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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).

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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.

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

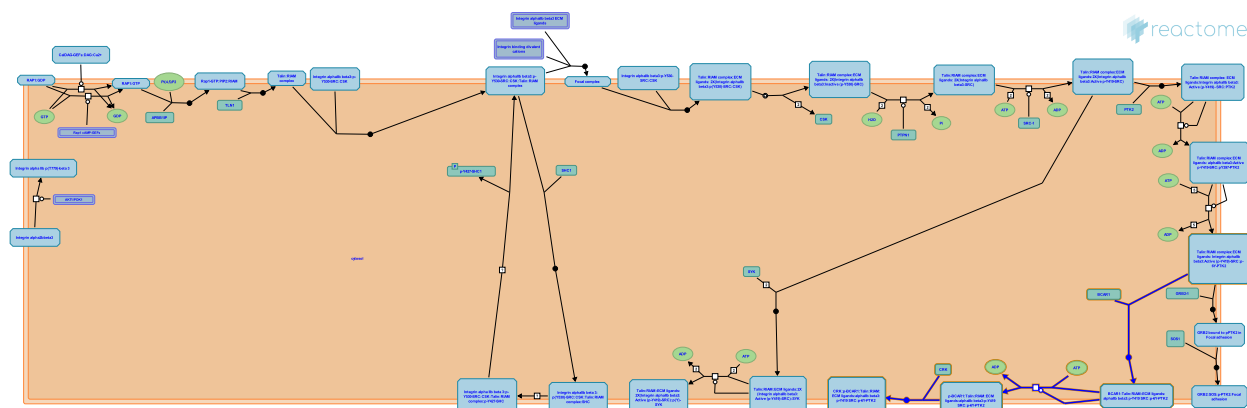
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Reactome database release: 88

This document contains 1 pathway and 3 reactions ([see Table of Contents](#))

p130Cas linkage to MAPK signaling for integrins ↗

Stable identifier: R-HSA-372708



Integrin signaling is linked to the MAP kinase pathway by recruiting p130cas and Crk to the FAK/Src activation complex.

Literature references

Defilippi, P., Di Stefano, P., Cabodi, S. (2006). p130Cas: a versatile scaffold in signaling networks. *Trends Cell Biol*, 16, 257-63. ↗

Editions

2008-06-16	Authored, Edited	Garapati, P V.
2008-09-16	Reviewed	Shattil, SJ.

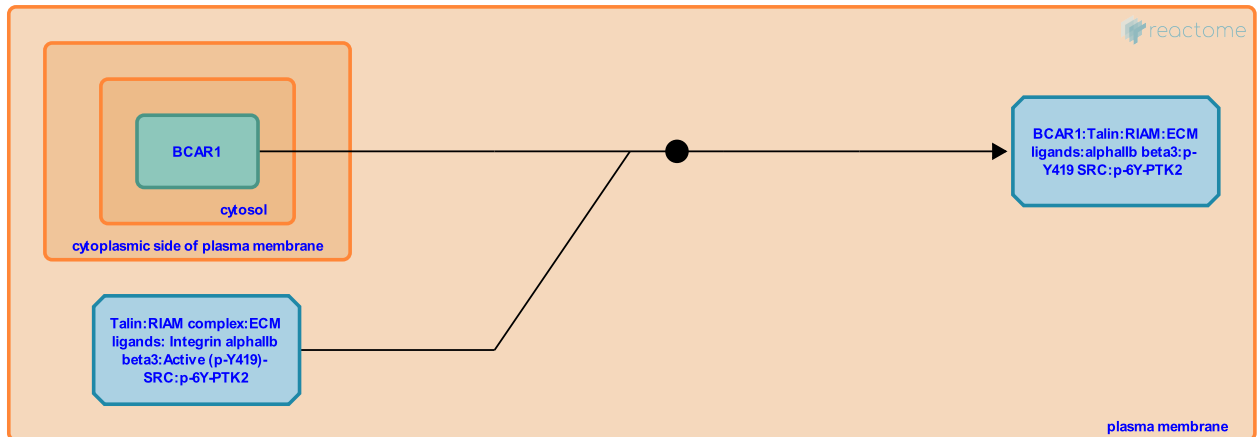
Recruitment of BCAR1 to PTK2 complex ↗

Location: p130Cas linkage to MAPK signaling for integrins

Stable identifier: R-HSA-372705

Type: binding

Compartments: plasma membrane, cytosol



BCAR1 (breast cancer anti-estrogen resistance protein1, also known as Crk-associated substrate (Cas) or p130Cas) is an adaptor protein that promotes protein-protein interactions, leading to the multiprotein complexes. The interaction of ?BCAR1/p130Cas with other proteins modulates cell motility, survival and proliferation. BCAR1/P130Cas is one of the main phosphorylation targets of the PTK2/SRC complex. The BCAR1 SH3 domain binds to PR1 and PR2 ('PxxP') domains in the PTK2 C-terminal domain.

Followed by: Phosphorylation of BCAR1 by SRC-PTK2 complex

Literature references

Defilippi, P., Di Stefano, P., Cabodi, S. (2006). p130Cas: a versatile scaffold in signaling networks. *Trends Cell Biol*, 16, 257-63. ↗

Ruoslahti, E., Hirai, H., Aizawa, S., Vuori, K. (1996). Introduction of p130cas signaling complex formation upon integrin-mediated cell adhesion: a role for Src family kinases. *Mol. Cell. Biol.*, 16, 2606-13. ↗

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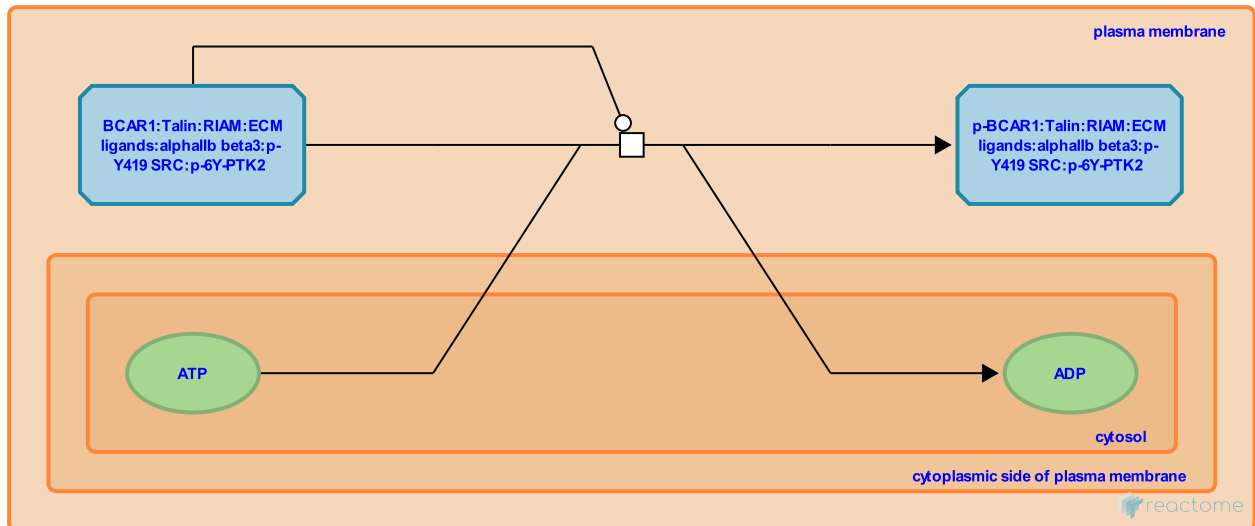
Phosphorylation of BCAR1 by SRC-PTK2 complex ↗

Location: [p130Cas linkage to MAPK signaling for integrins](#)

Stable identifier: R-HSA-372693

Type: transition

Compartments: plasma membrane, cytosol



SH3-mediated binding of BCAR1/p130Cas to PTK2 is linked to enhanced tyrosine phosphorylation of BCAR1 at multiple sites. The Cas substrate domain contains 15 separate YxxP motifs, a main site of tyrosine phosphorylation on the BCAR1 molecule. Once phosphorylated, this domain serves as a docking site for the SH2 domains of CRK or NCK adaptor proteins that affect the downstream MAPK signalling pathway, resulting in cell survival and increased motility.

Preceded by: [Recruitment of BCAR1 to PTK2 complex](#)

Followed by: [Crk binding to p130cas](#)

Literature references

Yazaki, Y., Sakai, R., Ozawa, K., Hirai, H., Nakamoto, T. (1996). Direct binding of C-terminal region of p130Cas to SH2 and SH3 domains of Src kinase. *J. Biol. Chem.*, 271, 8959-65. ↗

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Parsons, JT. (2003). Focal adhesion kinase: the first ten years. *J Cell Sci*, 116, 1409-16. ↗

Editions

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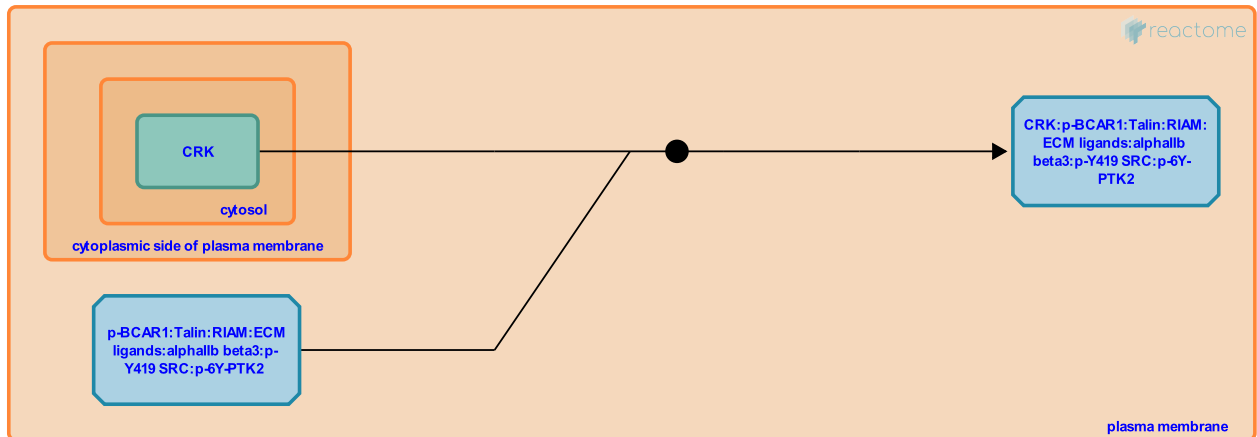
Crk binding to p130cas [↗](#)

Location: [p130Cas linkage to MAPK signaling for integrins](#)

Stable identifier: R-HSA-372697

Type: binding

Compartments: plasma membrane, cytosol



Crk is an adaptor protein with one SH2 and two SH3 domains. It is involved in integrin mediated signalling and is recruited to the focal adhesion complexes by interacting with p130Cas or paxillin through its SH2 domain.

Preceded by: [Phosphorylation of BCAR1 by SRC-PTK2 complex](#)

Literature references

Ohba, Y., Matsuda, M., Mochizuki, N., Graybiel, AM., Kobayashi, S., Otsuka, N. et al. (2000). Crk activation of JNK via C3G and R-Ras. *J Biol Chem*, 275, 12667-71. [↗](#)

Defilippi, P., Di Stefano, P., Cabodi, S. (2006). p130Cas: a versatile scaffold in signaling networks. *Trends Cell Biol*, 16, 257-63. [↗](#)

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