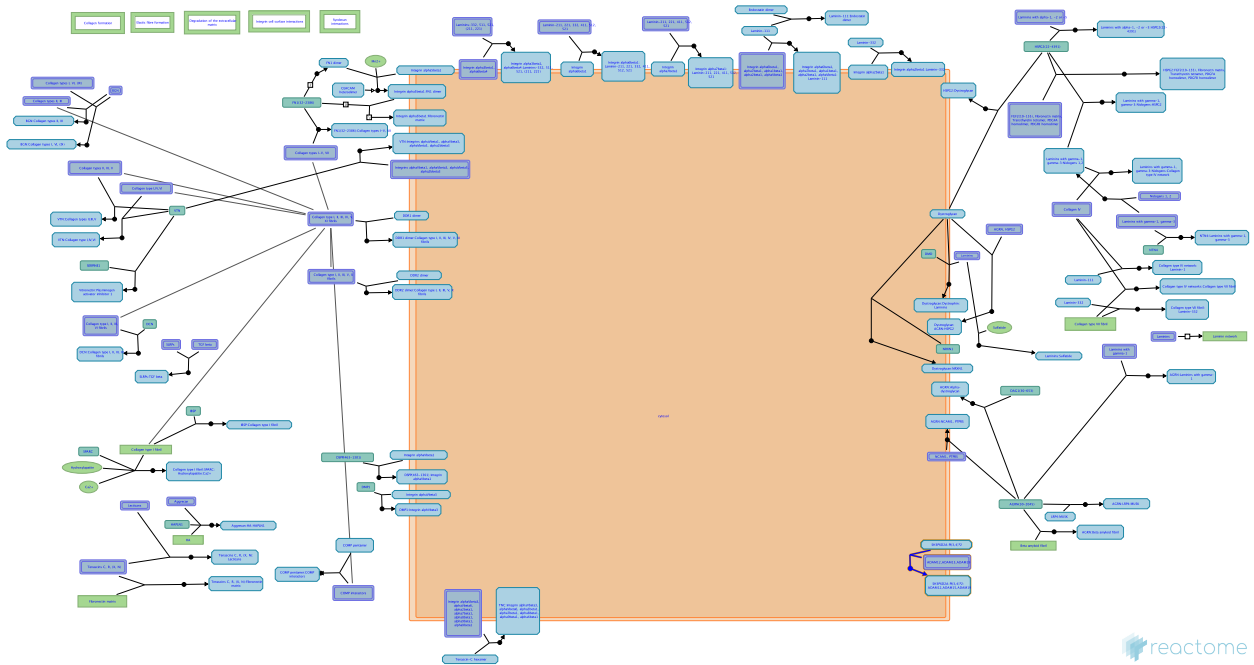


Invadopodia formation



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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

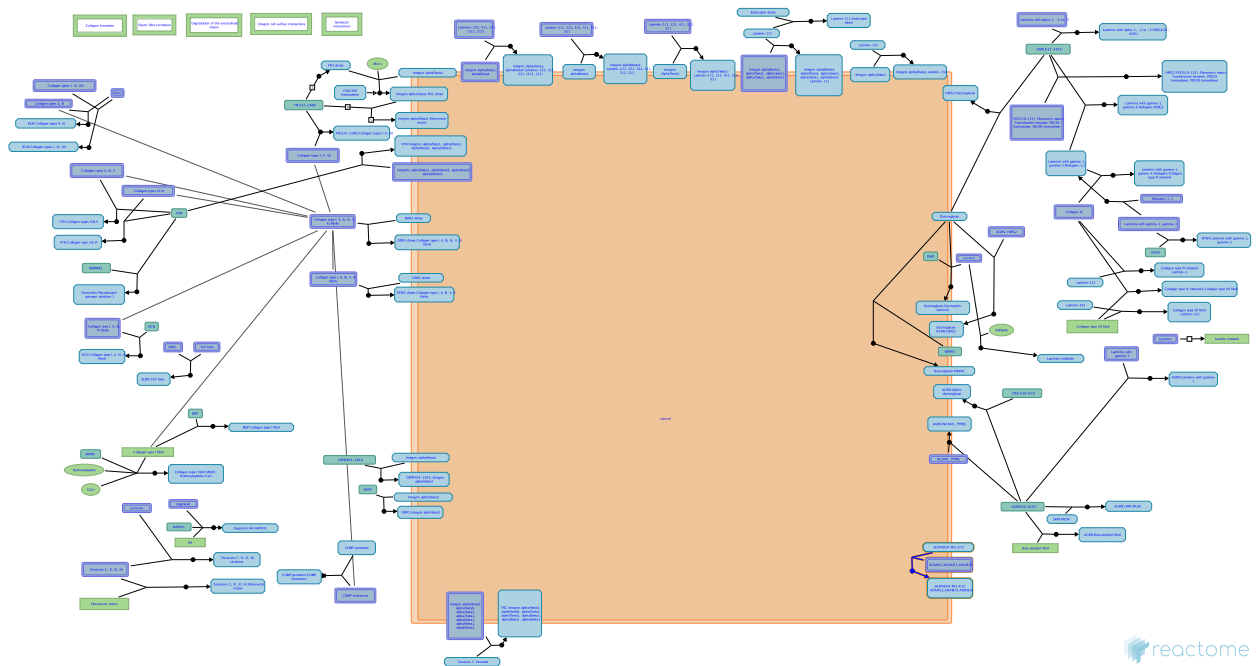
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Reactome database release: 77

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

Invadopodia formation ↗

Stable identifier: R-HSA-8941237



Podosomes and invadopodia are actin-based dynamic protrusions of the plasma membrane of metazoan cells that represent sites of attachment to and degradation of the extracellular matrix (Linder & Kopp 2005, Murphy & Courtneidge 2011). They are characteristically composed of an actin-rich core surrounded by adhesion and scaffolding proteins. Current convention is to use the term podosome for the structures found in normal cells (such as monocytic cells, endothelial cells and smooth muscle cells) and in Src-transformed fibroblasts, and invadopodium for the structures found in cancer cells. The maturation process for podosomes and invadopodia involves the recruitment and activation of multiple pericellular proteases, which facilitates ECM degradation (Artym et al. 2006).

Literature references

Jimona, M., Buccione, R., Courtneidge, SA., Linder, S. (2008). Assembly and biological role of podosomes and invadopodia. *Curr. Opin. Cell Biol.*, 20, 235-41. ↗

Editions

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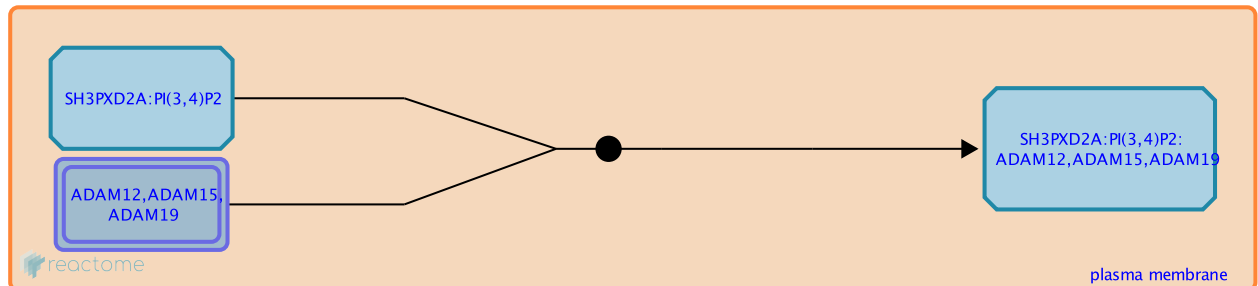
SH3PXD2A binds ADAM12,ADAM15,ADAM19 ↗

Location: [Invadopodia formation](#)

Stable identifier: R-HSA-8941234

Type: binding

Compartments: plasma membrane



SH3PXD2A (TKS5, FISH) was discovered as an adaptor protein and Src substrate (Lock et al. 1998). It is essential for invadopodia and podosome formation in many different cell types. It is not required for precursor initiation but is needed for precursor stabilization (Sharma et al. 2013). It contains a phox homology (PX) domain that binds the membrane phosphoinositides PI3P and PI(3,4)P2 (Abram et al. 2003) In Src-transformed NIH 3T3 cells, TKS5 and PI(3,4)P2 localize to podosomes via a GRB2-dependent mechanism (Oikawa et al. 2008).

TKS5 directly binds to the ADAM family proteases 12, 15, and 19 (Abram et al. 2003), N-WASP, dynamin-2, and Grb2 (Oikawa et al. 2008) and NCK1 and 2 (Styli et al. 2009). In vivo, decreased Tks5 expression correlates with reductions in tumor growth, metastasis, and angiogenesis (Blouw et al. 2008).

Literature references

Abram, CL., Seals, DF., Pass, I., Salinsky, D., Maurer, L., Roth, TM. et al. (2003). The adaptor protein fish associates with members of the ADAMs family and localizes to podosomes of Src-transformed cells. *J. Biol. Chem.*, 278, 16844-51. ↗

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Table of Contents

Introduction	1
❏ Invadopodia formation	2
➤ SH3PXD2A binds ADAM12,ADAM15,ADAM19	3
Table of Contents	4