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## Dynamin 2 and BAR domain protein pacsin 2 cooperatively regulate formation and maturation of podosomes

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### ABSTRACT

Podosomes are actin-rich adhesion structures formed in a variety of cell types, such as monocytic cells or cancer cells, to facilitate attachment to and degradation of the extracellular matrix (ECM). Previous studies showed that dynamin 2, a large GTPase involved in membrane remodeling and actin organization, is required for podosome function. However, precise roles of dynamin 2 at the podosomes remain to be elucidated.

In this study, we identified a BAR (Bin-Amphiphysin-Rvs167) domain protein pacsin 2 as a functional partner of dynamin 2 at podosomes. Dynamin 2 and pacsin 2 interact and co-localize to podosomes in Src-transformed NIH 3T3 (NIH-Src) cells. RNAi of either dynamin 2 or pacsin 2 in NIH-Src cells inhibited podosome formation and maturation, suggesting essential and related roles at podosomes. Consistently, RNAi of pacsin 2 prevented dynamin 2 localization to podosomes, and reciprocal RNAi of dynamin 2 prevented pacsin 2 localization to podosomes. Taking these results together, we conclude that dynamin 2 and pacsin 2 co-operatively regulate organization of podosomes in NIH-Src cells.

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