

# Role of Toca-1 In The invasion of Cancer Cells.

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**Abstract**—*Metastatic adenocarcinomas equip themselves for signaling pathways that initiates the invasion of cancer cells. Toca-1 (transducer of Cdc42-dependent actin assembly-1) is expressed in highly invasive cancers. Toca-1 belongs to a CIP4 subfamily of F-BAR proteins. It has been shown that F-BAR (Fer/CIP4 homology-Bin/Amphiphysin/Rvs) proteins play an important role in cancer metastasis. Members of the one of the subfamily of F-BAR proteins have been shown to play a role in the invasion of lung cancer and breast cancer cells. These three family members are Toca-1 (Transducer of Cdc42-mediated actin assembly), FBP17 (formin binding protein1) and CIP4 (Cdc interacting protein 4). These proteins function as key scaffolds to recruit and activate major regulators (eg. Cdc42, formins, N-WASP, dynamin) of F-actin polymerization within invadopodia. Toca-1 localizes to the filamentous actin-rich invadopodia that are produced in response to stimulus for invasion. Stable knockdown (KD) of Toca-1 expression in MDA-MB-231 cells led to a significant defect in epidermal growth factor (EGF)-induced cell migration and invasion. Toca-1 KD cells also showed significant defects in EGF- and Src-induced ECM digestion and formation of invadopodial membrane protrusions. Taken together, our results identify Toca-1 as a proinvasive protein in adenocarcinoma and a potential therapeutic target to limit tumor metastasis.*