MED28 (Magicin) Regulates Migration and Cell Cycle Progression in MCF-7 Human Breast Cancer Cells

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Magicin is both a Mediator subunit (MED28) and a cytoskeleton-associated protein. The association of MED28 with multiple proteins, including Grb2, Src, merlin, and actin, strongly suggests that MED28 involves in many cellular signaling pathways. Several tumors, including breast cancer, exhibit aberrant MED28 expression, whereas the underlying mechanism is unclear. Therefore, the objective of this study is to understand the role of MED28 in the aspects of cellular migration and proliferation in breast cancer cells. RNA interference-mediated depletion of Med28 inhibited migration, which coincided with a lower matrix metalloproteinase-2 (MMP-2) expression, in MCF-7 cells. The disruption of Med28 also inhibited the expression of several migration-related signaling molecules, including focal adhesion kinase (FAK), Src, and extracellular signal-regulated kinase (ERK). These data suggest that MED28 might regulate MMP-2-mediated cellular migration. Moreover, Med28 siRNA delayed cell cycle progression in MCF-7 cells as evidenced by the decreased bromodeoxyuridine incorporation and cyclin D1 expression, and the increased expression of HMG-box transcription factor 1 (HBP1). Taken together, our data demonstrate that MED28 involves in cellular migration and proliferation in breast cancer cells.

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