PEA-15 Regulates Cell Migration in Glioblastoma via Integrin Trafficking

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In tumorous growth, cell migration becomes uncontrollable, resulting in metastasis, a process in which cancer cells spread to other regions of the body. Migration involves the making and breaking of integrin attachments between the cell and its surrounding microenvironment. Integrins lose binding, and then traffic towards the leading edge of the cell, which allows the cell to contract forward. The process is unclear, so there is much focus on the mechanisms that regulate it. This project proposes a novel role of a phosphoprotein, known as PEA-15, in endosomal trafficking of integrins. Here, PEA-15 is visually seen to co-localize with internalizing integrins. Because of its role in integrin recycling, PEA-15 is expected to regulate cell migration. To confirm this, a scratch was made to a confluent monolayer of U87MG glioblastoma cells. Cells that were not expressing PEA-15 could not properly migrate into the scratch, while cells reconstituted with PEA-15 effectively rescued migration ($p<0.05$). Cells were also transfected with phosphomutants of PEA-15 but was ineffective in rescuing migration, suggesting that phosphorylation of PEA-15 is required for effective cell migration. The evidence altogether suggests phosphorylated PEA-15 has a regulatory role in cell migration, as it appears to be involved with integrin trafficking.

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