Cytoskeletal remodeling

Cell migration is an essential process from embryogenesis to cell death. This is tightly regulated by numerous proteins that help in the proper functioning of the cell. In diseases like cancer, this process is deregulated and helps in the dissemination of tumor cells from the primary site to secondary sites initiating the process of metastasis. For metastasis to be efficient, cytoskeletal components like actin, myosin, and intermediate filaments and their associated proteins should co-ordinate in an orderly fashion leading to the formation of many cellular protrusions-like lamellipodia and filopodia and invadopodia. Knowledge of this process is the key to controlling the metastasis of cancer cells that leads to death in 90% of patients [1].

Zhang et al crucially identified that KIF4A drives glioma growth by Rac1/Cdc42 transcriptional repressors to induce cytoskeletal remodeling in glioma cells. Knockdown of KIF4A decreased RohA, Rac1, Cdc42, Pak1 and Pak2 expression level. The study provided a prospect that KIF4A functions as an oncogene in glioma [2].

1)
Aseervatham, J. (2020). Cytoskeletal Remodeling in Cancer. Biology, 9(11). https://doi.org/10.3390/biology9110385
2)
Zhang H, Meng S, Chu K, Chu S, Fan YC, Bai J, Yu ZQ. KIF4A drives glioma growth by transcriptional repression of Rac1/Cdc42 to induce cytoskeletal remodeling in glioma cells. J Cancer. 2022 Nov 21;13(15):3640-3651. doi: 10.7150/jca.77238. PMID: 36606197; PMCID: PMC9809311.

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