Strategic Epithelialization: Utilizing RNA Interference to Inhibit Novel Microtubule Depolymerase Fidgetin Like-2 in Human Umbilical Vein Endothelial Cells

Tugbobo, Ifeoluwa (School: Elmont Memorial Junior-Senior High School)

Effective epithelialization is essential to the restoration of tissue after a chronic injury to ensure wound healing. Examination of Fidgetin Like-2 (FL2), a novel microtubule depolymerase, and the vast microtubule (MT) network suggests that the microtubule cytoskeleton might be an important functional component of this process. In this investigation, FL2 was investigated using small interfering RNA (siRNA) in Human Umbilical Vein Endothelial cells (HUVECs) to understand the role in wound healing in vitro. siRNA mediated FL2 depleted cells were stained using standard immunohistological techniques. Live cells were tracked and imaged over 15 hours for endothelial tube formation, random cell migration and scratch wound assays. Results indicate that diminished FL2 expression may result in a faster growing MT population as evidenced by the quantification of acetylation assay. This may indicate an increase in dynamic new MTs available for wound healing. No increase in speed or directionality of cells was observed. In contrast, FL2 depletion in similar studies utilizing cell types with greater differentiation increased these aspects. The difference between the cell line responses could be attributed to the level of cell differentiation in HUVECs compared to keratinocytes, osteosarcomas and fibroblasts. Ultimately these data indicate a novel finding where differences in FL2 mediated responses could impact the efficacy of wound healing in various tissues.

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