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***In Vitro* Migration of Human Dermal Fibroblasts on the Electrospun Fibrous Scaffold** YING LIU, DILIP GERSASPPE, ALICIA FRANCO, Stony Brook University, SARAJANE GROSS, ELIAS GOODMAN, North Shore Hebrew Academy High School, RICHARD CLARK, MIRIAM RAFAILOVICH, Stony Brook University — Cell migration has become the focus of much research due to its importance through out cell life. We hypothesized that the aligned scaffold obtained from electrospinning would enhance the rate of cell migration and ultimately the rate of new tissue ingrowth. An *in vitro* en- masse assay was used to study the effects of fiber diameter and alignment on the cell migration. It was found that, while the cells were spreading out on the fibers with diameter of 200nm, nearly all the cells were oriented along the fibers for the 1 and 8 micron scaffolds. In addition to fiber diameter, orientation is another crucial parameter which can determine cell migration. Cell migration rates and persistence increased on the aligned PMMA fibers compared to the random fibers. The role of focal adhesions during cell migration was detected by staining the Vinculin after 6 and 24h of cell culture time. The computational model was used to stimulate cell migration on the aligned scaffold, and it was turned out that various cellular parameter were integrated to accomplish the specific cell locomotion pattern on the aligned scaffold.

Ying Liu

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