Project Title
Interstitial Flow Stimulated Invasion of Glioma Cells

Project Description
Interstitial fluid flow is an ever-present force in the body, necessary for normal nutrient transport through and function of tissues. In cancers, such as glioma or brain cancer, interstitial flow is abnormally high at the tumor-tissue interface, where tumor cells invade into surrounding tissues. We have previously identified mechanisms by which interstitial flow stimulates glioma cells to invade; however, we still do not understand the responses of tumor cells to variable interstitial velocities, or how interstitial flow actually changes the way cells move through tissues. Therefore, in this project, you will use microfluidic devices coupled with a 3D tissue engineered model of the glioma microenvironment to examine the changes in motility in response to interstitial flow. You will also implement and design new tools to analyze cellular motility and may extend methods to other types of cells.

Expected Qualifications of Students
A background in biology/neuroscience and engineering. Exposure to MATLAB is desired.

Faculty Bio
Dr. Jennifer Munson is an assistant professor in the Department of Biomedical Engineering and Mechanics. She has a B.S. in Chemical Engineering and Neuroscience from Tulane University and a Ph.D. in Bioengineering from Georgia Tech. Her lab specializes in the development and implementation of tools to visualize and manipulate interstitial flow in vivo, tightly control and study cellular flow responses in vitro, and model interstitial flow in silico. In 2016 she was awarded the Rita Schaffer Young Investigator Award, and in 2017 the Journal of Cellular and Molecular Bioengineering Young Innovator Award. She is also a former Fulbright Scholar and NSF Graduate Research Fellow.

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