

Abstract Submitted
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Design and use of an artificial capillary in the study of metastatic cell adhesion ADAM RAFI, REBECCA BOREN, AUGUST HEIM, WILLIAM G. MATTHEWS, Department of Physics, University of South Florida — To improve the quality of life of patients with cancer, treatments will need to both minimize existing tumors and reduce the metastasis of cancer cells. The effectiveness of potential treatments on existing tumors can be directly probed, but anti-metastasis treatments are difficult to quantify. Therefore, a detailed understanding of the metastatic process is required for drug design. Details of the metastatic deposition of tumor cells in the circulatory system are not well understood. We are investigating the binding of tumor cells to an artificial endothelium. The model system allows for control over molecular composition at the interface, presenting the proteoglycans (PGs) found in the glycocalyx to tumor cells under shear flow conditions. Whether rolling or static adhesion is preferred, as well as what mechanical properties of the interaction between the cells and the PGs are important is to be determined. The outcomes of these experiments will help guide the search for pharmaceuticals that can disrupt the metastatic process at the endothelial adhesion step.

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