1145-92-3023 **Jared O Barber***, Department of Mathematical Sciences, 402 N Blackford St, LD 270E, Indianapolis, IN 46202, and **Luoding Zhu**. *A mathematical model of breast cancer cell motion through a microfluidic device.* Preliminary report.

Deaths due to breast cancer are primarily due to metastasis to other parts of the body. Decreasing the frequency of the events that form the metastatic cascade has been the subject of many studies that aim to mitigate the effects of breast cancer on the 3.5 million Americans affected by the disease. Experiments suggest that mechanotransduction, a process by which mechanical forces initiate cellular processes, may play an important role in the metastatic cascade. Because of these insights, we have developed a mechanical model of breast cancer cell translocation for use in microfluidic devices as well as in vivo settings. The initial model is two-dimensional and consists of several interconnected viscoelastic elements that are submersed in a surrounding Stokes flow. We have used the model to consider flow through tapered and square microfluidic channels. With further calibration, we believe the model can be used to assess the effectiveness of various diagnostic microfluidic devices including suggesting ways to improve device design. We also believe that further model development will enable consideration of metastatic potential in in vivo settings. (Received September 26, 2018)