



Engineering microphysiological systems of the tumor microenvironment

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Microphysiological systems (MPS) can bridge the gap between traditional 2-dimensional *in vitro* platforms and *in vivo* models. These engineered models can recapitulate both the tissue architecture and multicellular crosstalk of the biological niche, which can have a profound effect on cellular phenotype and function. In this talk, I will detail our work on creating MPS that represent the tumor microenvironment (TME), the complex mix of stromal cells, immune cells and vasculature that surrounds the tumor. Specifically, I will describe how we use microfluidic devices to recreate the TME, mimicking the solid tumor, vasculature and stroma and demonstrate how we can use these MPS to elucidate the biology of metastasis, investigate critically understudied sites such as bone metastases and work towards creation of patient-specific models that could inform clinical decision making. Additionally, I will also discuss a microscale platform for multiplexed analysis of low volume blood samples.

ABOUT the SPEAKER

Sheena Kerr, PhD is a Scientist in the Microtechnology, Medicine and Biology (MMB) Lab directed by Dr David Beebe, which guided by physics, chemistry, and materials science principles, leverages state-of-the-art microscale techniques to build human biological/disease models to answer important research questions in cell biology, immunology, microbiology, and medicine. Dr Kerr trained in biochemistry, cell biology and immunology obtaining a BS in Biochemistry from the University of Stirling, Scotland in 1999 and a PhD in Biochemistry from the University of Dundee, Scotland in 2003, working with Dr Paul Crocker to explore the function of immune cell receptors in cancer. She joined the MMB lab in 2017 to train in microfluidics and create improved in vitro models of cancer biology and immune cell function to facilitate translational research using human cells.

Monday, October 17 at noon
1003 Engineering Centers (Tong Auditorium)