MicroTAS 2021 Workshop 10 Information

WORKSHOP TITLE: Microfluidics for Immunology

PRESENTER AFFILIATION:

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- Cherie Stabler, Professor, University of Florida
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- Esak (Isaac) Lee, Assistant Professor, Cornell University, USA
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WORKSHOP DESCRIPTION:

In the past decade, immunological applications of microfluidics have gone from the rare exception to a major field of development, and the area continues to grow rapidly. This workshop will provide a foundational introduction to key immunological concepts for non-biologists, while providing specific examples of cutting-edge applications of microfluidics in this exciting area. In particular, the 2021 workshop will focus on inclusion of immune elements in microfluidic organs-on-chip, e.g models of immunity and inflammation in tissues, such as gut and lung, models of disease such as diabetes mellitus, and models of the lymphatic vasculature.

OVERVIEW OF MATERIAL TO BE COVERED AND WHAT ATTENDEES CAN EXPECT TO TAKE AWAY FROM THE WORKSHOP:

The lectures and live discussion will cover the following topics:

- A brief introduction to relevant components of the immune system will be woven throughout the lectures
- How microfluidic technology could benefit research in immunology

- Organ-on-chip (OOC) models for immunology, including immune competent organ-on-a-chip models such as Gut and Skin
- Models of lymphatics and blood vessel structure and function, particularly for inflammation on-chip
- Trafficking of cells through lymphatics on-chip
- Models of T cell-mediated cytotoxicity on-chip
- Validation of inflammation on-chip compared to in vivo data
- Representative Immune-centered disease models (OOC based): Type 2 diabetes mellitus and skin allergy
- Integration of sensors to quantify immune status in microfluidics cultures

WHO SHOULD ATTEND:
Early career researchers in microfluidics interested in immunology applications and representatives from the industry interested in emerging tools.

PARTICIPANTS WILL NEED THE FOLLOWING:
likely nothing, unless they cannot use a phone during the panel discussion, in which case indicate that a laptop is needed.

For those attending in-person, a laptop or iPad with headphones are required.