



Photonics Forum

March 5, 2020

10:00 -
11:30 a.m.

9th Floor

Room 901

Photonics Center

8 Saint Mary's Street

Refreshments
will be served!



Dr. Charles Lin, MGH

Hosted by BU Student Chapter of OSA/SPIE

“Intravital Microscopy: In Search of Molecular Targets”

Intravital microscopy (IVM) is an enabling tool for visualizing cell biology in vivo without removing cells from their native environment. It is ideally suited to research involving animal models of human diseases and provides deeper insights into how diseases progress and respond to therapy than is possible with human studies. In particular, by imaging models in which specific pathways are targeted using genetic or pharmacologic manipulations, or imaging animals engineered to express fluorescent proteins as reporters of specific activities, IVM has made fundamental contributions to the elucidation of key cellular and molecular pathways. However, as the field is rapidly embracing high throughput techniques (e.g. massively parallel single cell sequencing) to profile systems of pathways rather than individual pathways, we need to rethink the role of IVM and align it with the needs of the new research paradigm. Here, Dr. Lin will describe his attempt at integrating the spatial and temporal information provided by IVM with the high content molecular information provided by single cell RNA sequencing. His new optical platform enables spatially-resolved molecular profiling under image guidance. Preliminary results profiling leukemia cells in the bone marrow will be presented.

Dr. Charles Lin is the Principal Investigator at the MGH Center for Systems Biology and the Wellman Center for Photomedicine. His laboratory focuses on the development of advanced optical techniques for in vivo cell tracking and molecular imaging studies, concentrating on characterizing the bone marrow microenvironment and tracking hematopoietic cells from their origin in the bone marrow to the peripheral circulation and the central nervous system. He received his B.S. in Chemistry from Yale University and his Ph.D. in Physical Chemistry from University of Chicago.



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