

YANG LIU, PHD, is a Professor in the Department of Medicine and Department of Bioengineering at the University of Pittsburgh. She received PhD degree in Biomedical Engineering from Northwestern University in 2006. After a short industry stint at Johnson & Johnson, she joined the University of Pittsburgh in 2008 to start her own laboratory. The primary focus of her research is the development of optical microscopy techniques that span seven orders of magnitude in length scales, from the mesoscale to the nanoscale to improve early detection, precision prevention and treatment of cancer and other diseases. She co-authored 87 peer-reviewed research publications and is also co-inventor on 10 issued (4 pending) US patents. Her research has been supported with approximately \$11 million by the National Institute of Health and private foundations such as Kaufman Foundation, Wallace Coulter Foundation and Broad Foundation. Dr. Liu is internationally recognized for her expertise in imaging technologies and cancer research. She was named as Pitt Innovator Awards twice, Hillman Fellow for Cancer Research, elected as a fellow of SPIE (The International Society for Optics and Photonics) and Optica, and is currently a standing member of NIH Instrumentation and Systems Development (ISD) study section.



Dr. Yang Liu

Professor

University of Pittsburgh

Friday, October 20th | 9:00 AM | EC 2300

From Molecules to Systems: Multiscale Imaging for Precision Medicine

ABSTRACT: Cancer arises from multistep accumulation of genetic and epigenetic alterations. Understanding the interplay between genomics and epigenomics at all stages of malignant transformation is essential for developing personalized strategies to improve cancer detection and treatment. My group developed label-free quantitative phase imaging and high-throughput super-resolution fluorescence microscopy. This technical innovation lets us detect subtle chromatin disruptions early in carcinogenesis, opening doors for precision prevention. Further, with a critical need to understand cellular and molecular “sociology” in the tumor microenvironment, we are developing a multi-scale multi-modal imaging platform for high-content molecular phenotyping in tissue microenvironment. This multi-scale multi-modal imaging platform is helping us to understand how cancer cells develop therapeutic resistance and the impact of microenvironment in mucosal healing in patients with inflammatory bowel diseases. By bridging molecular scale characteristics with systems biology, such multiscale platform is expected to serve as a powerful tool for a transformative era in precision medicine.



Through the generous support of the Wallace H. Coulter Foundation, the Department of Biomedical Engineering facilitates weekly lectures each year during academic terms. Experts in all areas of Biomedical Engineering are invited to provide a research seminar and to meet with faculty and students to discuss the latest developments and research in Biomedical Engineering.

Friday, October 20th, 2023 | 9:00AM - 10:00AM | EC 2300

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