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Optical biopsy with optical coherence tomography and microscopy

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Optical coherence tomography (OCT) is a powerful tool for assessing tissue architectural morphology. It enables three-dimensional (3D) imaging with micron-scale resolutions, and can be performed in vivo and in real-time without the need to remove and process specimens. OCM combines OCT with confocal microscopy in order to achieve high transverse resolutions, thus enabling 3D visualization of cellular features. OCT has gradually become the standard-of-care to non-invasively evaluate retinal pathology in ophthalmology clinics.Recently, applications of OCT and OCM have started to grow in other clinical and scientific areas. In this talk, recent technical advances (e.g. space-division multiplexing OCT), and novel applications using OCT and OCM for investigation of heart development in Drosophila, and cancer diagnosis in pathology laboratory, will be presented.

Biography

Chao Zhou obtained his PhD degree in Physics from the University of Pennsylvania and received Post-doctoral training at the Massachusetts Institute of Technology. In 2012, he joined the faculty at Lehigh University as an Assistant Professor in Electrical Engineering and Bioengineering. He has extensive experience in the field of biomedical optical imaging and has contributed to the development and validation of novel modalities for the imaging of humans and animals with various applications ranging from measuring the brain function to monitoring cancer treatments. He is a recipient of numerous awards, including the National Institute of Health Pathway to Independence Award.

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