Developing retinal laser speckle contrast imaging for the diagnosis of ocular and systemic disease

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Laser speckle contrast imaging (LSCI) is a powerful modality that is capable of rapidly and non-invasively generating wide-field, dye free maps of vascular perfusion and has been employed extensively in neuroscience and diabetes research for visualizing cortical and dermal blood flow in response to injury and disease. In this seminar we explore the principles underlying LSCI, discuss the challenges of employing LSCI as a tool for studying ocular disease in both animal models and human subjects, and highlight the potential for LSCI to be employed as a diagnostic tool for the early detection of pre-symptomatic vascular alterations in neurodegenerative disease, including Alzheimer's.

ABOUT the SPEAKER

Daniel M. Lipinski, DPhil received a bachelor's degree (BSc) in Biology (2008) and a master's degree (MSc) in Virology (2009) from Imperial College London, UK, before completing his doctoral training (DPhil) under the supervision of Dr Robert E. MacLaren at the University of Oxford, UK, where his research focused on developing technologies to prevent cone photoreceptor loss in patients with retinitis pigmentosa. In 2013 Dr Lipinski was awarded a Fulbright Scholarship and moved to the University of Florida to work with Dr William W. Hauswirth, a world-renowned expert in ocular gene delivery, where he worked primarily on developing approaches to target gene delivery to the retinal vasculature. In 2016, Dr Lipinski joined the faculty at the Medical College of Wisconsin, where he currently serves as an Associate Professor of Ophthalmology & Visual Sciences, Associate Professor of Cell Biology, Neurobiology and Anatomy, and Research Director for the Department of Ophthalmology & Visual Sciences. His current research interests focus on the development of gene and cell therapy treatments to prevent vision loss in neurodegenerative and vascular diseases affecting the eye, including age-related macular degeneration, diabetic retinopathy and glaucoma, and the development of novel imaging modalities to non-invasively assess neurovascular function.

Monday, April 22 at Noon
1003 Engineering Centers (Tong Auditorium)