



Western
Biomedical Imaging
Research Centre

SEMINAR SERIES
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September 26th, 2019, 12:30 - 1:30 pm
Shuttleworth Auditorium
St. Joseph's Health Care

Pizza will be served

Dr. Ken Tichauer, PhD

Associate Professor, Biomedical Engineering
Illinois Institute of Technology, Chicago, IL, USA

Title: Quantitative Cancer Molecular Imaging using Paired Imaging Agents: Principles, Challenges, and Applications



Abstract: The recognition that significant genetic and phenotypic differences exist between cancerous and normal cells, and that every person's cancer is unique, has led to the development of a vast array of cancer targeted drugs and imaging agents. However, genetic, molecular and physiological heterogeneity within cancers represent significant challenges to the success of many cancer targeted drugs/agents. More quantitative molecular imaging methods capable of accurately assessing the heterogeneity of molecular expression and targeted drug efficacy in vivo will be critical to overcoming these challenges, and could significantly enhance cancer detection, diagnosis, surgical guidance, and personalized/precision therapy. True quantification in molecular imaging is obfuscated by many factors, including: (1) imaging system factors (i.e., factors that affect how accurately the concentration of imaging agent is reproduced), and (2) imaging agent "kinetic" factors (i.e., factors that affect how well the imaging agent distribution describes the distribution of the targeted biological molecule). Over the last decade, our group has been spearheading efforts to overcome these factors using so-called "paired-agent" imaging methods that were first proposed in the 1950s but required imaging system advancements that were not widely available until around 2010. This presentation will provide an overview of the principles and complexity of paired-agent imaging, with a focus on some examples of clinical applications that are under development.

Ken Tichauer, PhD, received his BS in Physics from UBC in 2003 and his PhD in Medical Biophysics from Western under the mentorship of Profs. Keith St. Lawrence and Ting-Yim Lee in 2008. Since then, he received a CIHR Fellowship for postdoctoral work at Dartmouth College in Prof. Brian Pogue's lab, and in 2013 joined the faculty of the biomedical engineering department at the Illinois Institute of Technology in Chicago, where he now holds the rank of Associate Professor.

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