



The Singapore Bioimaging Consortium (SBIC)
presents a seminar

on

**"Illuminating Biomedical Discovery with Advanced
Photonic Imaging"**

Speaker: Vasilis Ntziachristos
Professor and Director
Institute for Biological and Medical Imaging
Helmholtz Center Munich & Technical University of Munich

Date : Monday, 12 December 2011
Time : 1.30pm – 2.30pm
Venue : SBIC Seminar Room, 11 Biopolis Way
Level 2, Helios Building
Singapore 138667
(Please use Level 1 entrance)

Abstract

Optical imaging is unequivocally the most versatile and widespread visualization modality in the life sciences. Yet it is significantly limited by photon scattering, which complicates imaging beyond a few hundred microns. Recently however, there has been an emergence of powerful new optical imaging methods that offer high resolution imaging beyond the penetration limits of microscopic procedures. Of particular importance is the development of multi-spectral opto-acoustic tomography (MSOT) methods that bring unprecedented imaging performance in visualizing anatomical, physiological and molecular imaging biomarkers through several millimeters to centimeters of tissue. Its attractive features include the ability to offer 10-100 microns resolution and real-time imaging. In parallel, we have achieved the first in-human clinical translation of targeted fluorescent probes which opens the way for advanced surgical and endoscopy procedures and personalized theranostics and screening.

MSOT can enable exceptional insights to cellular and sub-cellular processes through entire small animals, embryos, fish and insects. This talk describes current progress with instruments, methods and applications for in-vivo optical- and opto-acoustic tomography of whole intact animals and model biological organisms. We show how new opto-acoustic and fluorescence imaging concepts are necessary for accurate and quantitative molecular investigations in tissues and why it could be a valuable tool for accelerated research of therapeutic efficacy and outcome. We further demonstrate that cellular functions and bio-chemical changes can be detected in-vivo, through intact tissues at high sensitivity and molecular specificity. Pre-clinical and

clinical results are presented and advantages and limitations of these methods along with future directions are discussed.

About the Speaker

Vasilis Ntziachristos is a Professor and Chair for Biological Imaging at the Technische Universität München and director of the Institute for Biological and Medical Imaging at the Helmholtz Zentrum München. Prior to this appointment, he served as faculty at Harvard University and the Massachusetts General Hospital. He received his masters and doctorate degrees from the Bioengineering Department of the University of Pennsylvania and his diploma on Electrical Engineering from the Aristotle University of Thessaloniki, Greece. Professor Ntziachristos serves as chair in various international meetings and is part of the editorial board of a number of acclaimed scientific journals. In 2004 he was named one of the world's top innovators by the Massachusetts Institute of Technology (MIT) Technology Review. His main research interests involve the development of optical methodologies for probing physiological and molecular events in tissues using non-invasive methods.

--- Admission is free and all are welcome ---