

RESEARCH
SEMINAR SERIES
IN
RADIOLOGICAL
SCIENCES



WHEN: Wednesday October 9, 2013

12:00 noon

**WHERE: LIVE - Irvine Campus: Medical
Education Bldg, Colloquium 3070**

**TELECAST - UC Irvine Medical Center:
Radiology Conference Room 0117**

**NOTE: Guest Speaker, will be in Med Ed Colloquium
3070; video cast will be in UCIMC Radiology Conference
Room 0117**

**Speaker: Charles A. Taylor, Ph.D
Founder & Chief Technology Officer
of HeartFlow, Inc.**

**Title: “Noninvasive Functional
Assessment of Coronary Artery Disease
Using CT and Computational Fluid
Dynamics “**

Abstract:

Coronary computed tomographic angiography (CT) has emerged as a novel non-invasive method for direct visualization of coronary artery disease (CAD), with prior multicenter studies demonstrating high diagnostic performance of CT compared to an invasive coronary angiographic (ICA) reference standard. However, CT assessment of coronary stenosis tends towards overestimation of severity and even amongst CT-identified severe stenosis that are confirmed at the time of

ICA, only a minority are found to be ischemia-causing. Recent advances in computational fluid dynamics and image-based modeling now permit determination of rest and hyperemic coronary flow and pressure from typically acquired CT scans, without the need for additional image acquisition, modification of image acquisition protocols, or administration of additional medications. These techniques have been used to non-invasively compute fractional flow reserve (FFR) - or the ratio of maximal coronary blood flow through a stenotic artery to the blood flow in the hypothetical case that the artery was normal - from CT images. In the recently reported prospective multicenter DISCOVER-FLOW and DeFACTO studies, FFR derived from CT, or FFR_{CT} , was demonstrated as superior to measures of CT stenosis severity for the determination of lesion-specific ischemia. This presentation will describe the scientific principles that underlie this technology and provide an overview of clinical data obtained to date.

About the Presenter:

Consulting Professor of Bioengineering
Stanford University

Charles A. Taylor received his B.S. degree in Mechanical Engineering in 1987, an M.S. degree in Mechanical Engineering in 1991 and his M.S. Degree in Mathematics in 1992 from Rensselaer Polytechnic Institute. He completed his Ph.D. in Mechanical Engineering at Stanford University in 1996 and then joined the faculty at Stanford in 1997 where he developed an internationally recognized research program in the departments of bioengineering and surgery focused on the development of computer modeling and imaging techniques for cardiovascular disease research, device design and surgery planning. He has published over 350 peer-reviewed journal and conference papers and has 20 issued or pending patents. Dr. Taylor co-founded HeartFlow, Inc. in 2007 where he serves as the Chief Technology Officer and leads the technology development effort.

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