



BIOENGINEERING

UNIVERSITY of WASHINGTON

A Department of the College of Engineering & School of Medicine

## BIOEN 509 – DEPARTMENTAL SEMINAR SERIES

Thursday, Jan. 14<sup>th</sup> 2010, 12:30-1:20 PM

Foege Bioengineering Building N130A

# Molecular Imaging with Coupled Molecular Contrast Agents

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*Professor in Bioengineering, Frank and Julie Jungers Dean of Engineering, UW  
Elected member of National Academy of Engineering*

Abstract: Nanosystems have been designed over the last decade as molecularly targeted contrast agents. Although many of them show great sensitivity, specificity is greatly limited by background signals unrelated to the agent. In this talk we will present a new class of molecular agents, called coupled contrast agents, that can dramatically improve the specific contrast of targeted nanosystems. Examples of photoacoustic molecular imaging using these agents will be presented.

*Dr. O'Donnell received his BS and Ph.D. in Physics, University of Notre Dame, Notre Dame, IN, 1972 and 1976. Following his graduate work, Dr. O'Donnell moved to Washington University in St. Louis, MO as a postdoctoral fellow in the Physics Department working on applications of ultrasonics to medicine and non-destructive testing. He subsequently held a joint appointment as a Senior Research Associate in the Physics Department and a Research Instructor of Medicine in the Department of Medicine at Washington University. In 1980 he moved to General Electric Corporate Research and Development Center in Schenectady, NY, where he continued to work on medical electronics, including MRI and ultrasound imaging systems. During the 1984-1985 academic year, he was a visiting fellow in the Department of Electrical Engineering at Yale University in New Haven, CT investigating automated image analysis systems. In 1990, Dr. O'Donnell became a Professor of Electrical Engineering & Computer Science at the University of Michigan in Ann Arbor, MI. Starting in 1997, he held a joint appointment as Professor of Biomedical Engineering. In 1998, he was named the Jerry W. and Carol L. Levin Professor of Engineering. From 1999-2006, he also served as Chair of the Biomedical Engineering Department. During 2006, he moved to the University of Washington in Seattle, WA where he is now the Frank and Julie Jungers Dean of Engineering and also a Professor of Bioengineering. His most recent research has explored new imaging modalities in biomedicine, including elasticity imaging, in vivo microscopy, optoacoustic arrays, optoacoustic contrast agents for molecular imaging and therapy, thermal strain imaging, and catheter based devices. Dr. O'Donnell has over 300 archival publications and 55 patents. He has won numerous awards, including the Achievement Award from the IEEE Ultrasonics, Ferroelectrics & Frequency Control Society. He is a fellow of the IEEE and AIMBE and is a member of the National Academy of Engineering.*



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