BIOEN 509 – DEPARTMENTAL SEMINAR SERIES

Thursday, Feb. 11 2010, 12:30-1:20 PM
Foege Bioengineering Building N130A

Improving Quantitation in PET/CT Imaging for Clinical Trials and Assessing Response to Therapy

Dr. Paul Kinahan

Department of Radiology, University of Washington

Lung cancer remains one of the major causes of cancer-related death throughout the developed world. There has been little improvement over many decades in the survival of patients diagnosed with lung cancer. Lung cancer is also becoming an increasing health problem in developing countries. A challenge to the development of new lung cancer therapies is the increasing cost and falling success rate in developing new drugs and biologicals. One solution to this dilemma is rule out unpromising therapeutic candidates earlier in the development chain. Here medical imaging has a role both in preclinical imaging and for early phase human studies.

Most tomographic assessments of response are based on the somewhat controversial x-ray CT RECIST criteria, where size of a lesion is roughly measured over months. Positron emission tomography (PET) is able to measure in vivo changes in pathophysiology on the order on minutes with a unique combination of quantitative accuracy and sensitivity. The combination of PET/CT as platform for multimodal molecular imaging biomarker allows for much more efficient and sensitive response assessment studies. In PET/CT imaging of lung cancer, however, there remain confounding technical challenges due to respiratory motion, noise/resolution tradeoffs and pooling of multicenter data. We will present our results on estimating and mitigating these effects.

Dr. Paul Kinahan is a Professor of Radiology, adjunct Electrical Engineering and Bioengineering, at the University of Washington in Seattle. His is director of PET/CT Physics at the University of Washington Medical Center. He received his PhD from the University of Pennsylvania in 1994 in Bioengineering and became an Assistant Professor at the University of Pittsburgh. While there he was part of the group that built the first prototype combined PET/CT scanner. He moved to the University of Washington in 2001. His research interests include quantitative imaging with PET/CT, objective assessment of image quality and image reconstruction algorithms and their application to assessing response to therapy. He has been a member of and/or chaired several grant review panels and national committees on medical imaging. His awards include the IEEE Nuclear Medicine Imaging Science Council Young Investigator Award. He has been principle investigator on 15 research grants and was a recipient of the NIH FIRST award. Currently he is a member of the Science Council of the American Association of Physicists in Medicine.

For more information please visit http://courses.washington.edu/bioetalk