

Modern Imaging Technology: Recent Advances

June 18-19, 2004

Lowes Philadelphia Hotel, Washington Room
Philadelphia, Pennsylvania

Overview:

Molecular imaging is becoming a larger part of imaging, research and practice. A significant number of the advances in molecular imaging involve nuclear medicine techniques. Through its education strategic planning processes, the Society of Nuclear Medicine has identified a knowledge gap between the nuclear medicine practitioner, and the scientist working in nuclear medicine. Both scientist and practitioners will benefit from this exciting conference designed to bring them up-to-date on the status of molecular imaging in nuclear medicine as well as in related imaging areas.

This 2-day conference is designed to bring scientist working in nuclear medicine, as well as nuclear medicine practitioners together to discuss the advances in four selected areas of imaging: Biochemical Parameters using Small Animal Imaging, Developments in Small Animal PET Imaging, Cell Labeling, and Imaging Angiogenesis Using Multiple Modality. The presentations will be on molecular imaging applications at the forefront of research, up to date on the status of molecular imaging in nuclear medicine as well as in related imaging areas. Experts will discuss the basic science of imaging techniques, and scheduled participants will engage in an exciting program that emphasizes the current status of molecular imaging as well as the role of DOE funded research in this area.

Target Audience:

This conference is designed for scientists and practitioners in nuclear medicine and molecular imaging.

Overall Program Objectives:

- Summarize imaging techniques that are complimentary to nuclear medicine.
- Describe molecular imaging applications.
- Discuss molecular imaging advances being conducted, both domestically and internationally.

This program was supported by a grant from the U.S. Department of Energy Office of Biological and Environmental Research.

This program was a live conference proceeding, and was not published, nor were transcripts made available, in either print or electronic media.

Conference Schedule - Day 1: Friday, June 18, 2004

8:00 a.m. Welcome, Introductions and Conference Goals
Michael J. Welch, PhD
Washington University School of Medicine

Can Biochemical Parameters Be Measured Using Small Animal Imaging?

8:30 a.m. SPECT Imaging
Paul Acton, PhD
University of Pennsylvania

9:00 a.m. Input Function Without Blood Sampling Using the Beta Microprobe
Frederic Pain, PhD
Institute de Physique Nucleaire d'Orsay

9:30 a.m. Quantitative in Vitro Phosphor Imaging using H-3 and F-18 Radioligands
Doris Doudet, PhD
University of British Columbia

10:00 a.m. Break

10:45 a.m. Measuring Input Functions for PET
Michael J. Welch, PhD
Washington University School of Medicine

11:15 a.m. Measuring Plasma Input Functions for PET
William C. Eckelman, PhD
NIH, Bethesda, MD

11:45 a.m. Lunch

Has Small Animal PET Development Gone As Far As It Can?

2:00 p.m. Hardware Advances
Simon Cherry, PhD
University of California, Davis

2:40 p.m. Computational Methods to Improve Resolution
Jeih-San Liow, MD
NIH, Bethesda, MD

3:20 p.m. Break

3:40 p.m. Computational Methods to Improve Resolution
Richard LaForest, MD
Washington University School of Medicine

4:20 p.m. Faster Electronics & Crystals
Joel Karp, PhD
University Hospital of Pennsylvania

5:00 p.m. A Combined Optical & PET Scanner
Arion F. Chatziioannou, PhD
University of California-Los Angeles

5:30 p.m. "Meet the Authors" Reception

Conference Schedule - Day 2: Saturday, June 19, 2004

Cell Labeling Using Multiple Modalities

- 8:30 a.m. Cell Labeling-Overview
Chrit Moonen, PhD
Universite Victor Segalen
- 9:15 a.m. Toxicity of Iron-Oxide Nano-Particles in Cell Labeling
Joseph Frank, MD
NIH, Bethesda, MD
- 9:45 a.m. In Vivo Imaging of Target Engineered T-Cells and Stem Cells In A Murine Model Using Bioluminescence and MRI
Rex A. Moats, PhD
University of Southern California
- 10:15 a.m. Break
- 10:45 a.m. Molecular Imaging of Cardiac Cell Transplantation in Living Animals Using Optical Bioluminescence and Positron Emission Tomography
Sanjiv Gambhir, MD, PhD
Stanford University
- 11:15 a.m. Direct Labeling of Cells
Michael Kilbourn, PhD
University of Michigan
- 11:45 a.m. Lunch

Imaging Angiogenesis Using Multiple Modality

- 1:00 p.m. Overview of Angiogenesis with Emphasis on Alpha V, Beta 3 Radioligands
Frans Corstens, MD, PhD
Nijmegen University
- 1:45 p.m. Crystal Structure of the Extracellular Segment of Integrin Alphav Beta3 in Complex with an Arg-Gly-Asp Ligand
M. Amin Araout, MD
Massachusetts General Hospital
- 2:15 p.m. Alpha v, Beta 3 Ligands with Dextran Polymers
David Vera, PhD
University of Michigan
- 2:45 p.m. Break
- 3:15 p.m. Imaging Tumor Angiogenesis with Contrast Ultrasound and Microbubbles Targeted to Alpha(v)Beta3
Jonathan R. Lindner, PhD
University of Michigan
- 3:45 p.m. Alpha v, Beta 3 Radioligands
Peter Conti, MD, PhD
University of Michigan
- 4:15 p.m. Clinical Studies
Marcus Schweiger, MD
University of Michigan