



Each year the Advanced Imaging Research Center and The National Center for Research Resources host a symposium on a topic relevant to work being carried out at the Center. The purpose of the symposium is to provide information on research activities and training opportunities.

Faculty, research staff, undergraduate, graduate and post doctoral students are all encouraged to attend. Past participants have included those from academia and industry around the country. Each symposium is devoted to training in which the latest developments at the Center are discussed. Scientists, including an occasional visitor from overseas, lecture on the latest research and opportunities for investigation of metabolism.

Target Audience

This symposium is designed for students, scientists and physicians with an interest in new magnetic resonance methods for evaluating cancer and other high-impact diseases.

Purpose and Content

One of the best-known features of magnetic resonance imaging is the potential for integrating high resolution anatomical data with specific features of tissue biology. Spectroscopic information, either by detection of protons or other nuclei, provides direct information about the concentrations of key metabolites in pathological regions. The protons in water can also be imaged to reveal information about key macromolecules such as glycogen or proteins in tumors and other tissues. The power of these advanced methods to display unique physiological information will be discussed by research leaders from around the world. This workshop and symposium is supported by an NIH-funded Center for Research Resources (RR02584). Research opportunities at the Resource will also be described.

Educational Objectives

Upon completion of the course, the participant should have been able to:

- Describe the potential value of hyperpolarized ^{13}C in cancer imaging.
- Explain one potential clinical application of CEST for detection of endogenous macromolecules.
- Explain one potential clinical application of paraCEST – based contrast agents.

Agenda

Wednesday, June 1, 2011

Probing Cancer Metabolism by Magnetic Resonance

8:00 am	<i>Registration/Continental Breakfast</i>	
8:30 am	Challenges for Studying Cancer Metabolism In Vivo	Craig Malloy, M.D.
8:50 am	Advances in Coil Design at 7T	Steve Wright, Ph.D.
9:10 am	Progress in Hyperpolarized ¹³ C Imaging at MD Anderson	Jim Bankson, Ph.D.
9:30 am	Advances in Polarization Technology	Matthew Merritt, Ph.D.
10:00 am	<i>Break</i>	
10:30 am	Murine Models for Probing Metabolism in Gliomas	Robert Bachoo, M.D., Ph.D.
10:50 am	Growth-promoting Metabolic Pathways in Cancer Cells	Ralph DeBerardinis, M.D., Ph.D.
11:10 am	Imaging Metabolites in Human Brain Malignancies	Changho Choi, Ph.D.
11:30 am	Clinical Relevance of Spectroscopic Imaging	Elizabeth Maher, M.D., Ph.D.
12:00 pm	<i>Lunch</i>	

Physiology and Disease by CEST Imaging, Part 1

1:00 pm	Diamagnetic CEST	Peter Van Zijl, Ph.D.
1:45 pm	CEST Analogues of Clinically Approved MRI Agents for Accelerating the Clinical Translation of PARACEST Probes	Enzo Torino, Ph.D.
2:30 pm	<i>Break</i>	
3:00 pm	Molecular Imaging with MRS at the Speed of MRI	Fahmeed Hyder, Ph.D.
3:30 pm	Evaluating Tumor Enzymes and pH Using in Vivo PARACEST MRI	Marty Pagel, Ph.D.
4:00 pm	T2 Exchange: A New, Unintended Contrast Mechanism from PARACEST Agents	Todd Soesbe, Ph.D.
4:30 pm	Iron PARACEST Agents	Janet Morrow, Ph.D.
5:00 pm	CEST Agents for the MR Visualization of Drug-Delivery and Release	Daniela Delli Castelli, Ph.D.
5:30 pm	<i>Adjourn & Reception</i>	

Thursday, June 2, 2011

Physiology and Disease by CEST Imaging, Part 2

8:00 am	<i>Registration/Continental Breakfast</i>	
8:30 am	APT and CEST Techniques for Clinical MRI	Jochen Keupp, Ph.D.

9:15 am	In Vivo CEST and T1p Imaging at 7T	Ravinder Reddy, Ph.D
	<i>10:00 am Break</i>	
10:30 am	In Vivo Characterization of Lung Cancer by CEST Imaging in an Orthotopic Animal Model	Masaya Takahashi, Ph.D
11:00 am	CEST phase mapping using a Length and Offset VARied Saturation (LOVARS) scheme	Michael McMahon, Ph.D.
11:30 pm	CEST: Application to Brain and Spinal Cord	Seth Smith, Ph.D.
	<i>12:00 pm Lunch</i>	
1:00 pm	Quantitative Analysis of CEST MRI Contrast and its <i>In Vivo</i> Applications	Phillip Sun, Ph.D.
1:30 pm	Amide Proton Transfer Imaging of Brain Tumors and Radiation Response	Jinyuan Zhou, Ph.D.
2:00 pm	GagCEST: ex vivo and in vivo	Elena Vinogradov, Ph.D.
	<i>2:30 pm Break</i>	
3:00 pm	CESTomics; Imaging Gene Expression	Assaf Gilad, Ph.D.
3:30 pm	Efficient Saturation by Two-frequency Irradiation and its Application to CEST Contrast in Imaging	Jae-Seung Lee, Ph.D.
4:00 pm	Detection of paraCEST Agents with Reduced MT Interference Using Frequency Label Exchange Transfer	Chien-Yuan Lin, Ph.D.
	<i>4:30 pm Adjourn & Reception</i>	

Discussion of Off Label Use

Because this course is meant to educate the physicians with what is currently in use and what may be available in the future, there may be "off-Label" use discussed in the presentations. Speakers have been requested to inform the audience when off-label use is being discussed.