Each year the Advanced Imaging Research Center and The National Center for Research Resources (recently dissolved and reorganized under the National Institute of Biomedical Imaging and Bioengineering) 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 postdoctoral 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.

There will be no poster presentations. Instead, all attendees are encouraged to submit a one-page abstract on a primary research interest (instructions are available on the registration page). These abstracts, along with speaker abstracts, will be distributed in a booklet at the meeting registration desk. The intent of the booklet is to outline attendee research interests and expertise to augment Investigator interaction. Faculty, research staff, and undergraduate, graduate and postdoctoral students are encouraged to attend. Past participants have included those from academia and industry around the country. Instead of poster presentations, all attendees are encouraged to submit a one page abstract on a primary research interest (instructions are available on the registration page). These abstracts, along with speaker abstracts, will be distributed in a booklet at the meeting registration desk. The intent of the booklet is to outline attendee research interests and expertise to augment Investigator interaction.

**Target Audience**
This Symposium is intended for students, scientists and physicians with an interest in understanding and advancing methods for clinical imaging of brain injury, with emphasis on MR and PET methods.

**Purpose and Content**
Traumatic brain injury (TBI) is a major socio-economic problem with devastating long-term consequences. TBI also predisposes to Alzheimer’s disease (AD). However, the link between neurodegeneration triggered by TBI and eventual development of AD is unclear. TBI causes axonal injury, hypoxia, inflammation, abnormal glucose metabolism and oxidative stress, all
factors that influence outcome from TBI and may influence the risk of AD. The ability to image these features of the brain in human patients would have a major impact on our ability to understand outcomes from TBI as well as the links among genetic predisposition, TBI and AD.

The clinical focus of the Symposium is on TBI and AD since there are many pathological and perhaps imaging features common to both diseases. One goal is to review current methods for imaging brain injury and our current understanding of brain plasticity. With this background, advanced methods for imaging specific features of brain function will be reviewed by the authorities in the field. Techniques to image axonal connections, brain oxygen consumption, brain glucose metabolism and protein deposition will be presented. These are just a few examples of recent advances in this exciting field. This Symposium is supported by the National Institute of Health - National Institute of Biomedical Imaging and Bioengineering (NIH-NIBIB: EB015908) and by the University of Texas Southwestern Medical Center.

Educational Objectives
Upon completion of the course, the participant should be able to:

- Describe the clinical significance of TBI
- Explain two MR methods for imaging connections between different regions of the brain
- Describe one current method for brain imaging oxygen consumption
- Describe one current method for measuring glucose metabolism in the brain.
- Identify future needs for imaging in support of relevant clinical trials.

Agenda

Wednesday, April 30, 2014
Updates on Cancer Imaging from Collaborations of the Advanced Imaging Research Center at UT Southwestern Medical Center, Texas A & M and MD Anderson

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<th>Time</th>
<th>Session</th>
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<tr>
<td>07:30 AM</td>
<td>Breakfast and Registration</td>
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<tr>
<td>8:30 - 8:45 AM</td>
<td>CPRIT and Multi-Institutional Collaborations</td>
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<td>8:45 - 9:10 AM</td>
<td>In vivo CEST Imaging for Early Detection of a Therapeutic Response in Glioblastoma</td>
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<td>9:10 - 9:35 AM</td>
<td>An Update on Metabolic Imaging of Cancer Biomarkers</td>
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<td>9:35 - 10:00 AM</td>
<td>Opportunities in Imaging Prostate Cancer: Probing Prostate Cancer Metabolism to Improve Detection</td>
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<td>10:00 - 10:15</td>
<td>Discussion</td>
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<td>10:15 - 10:30</td>
<td>Break</td>
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<td>10:30 - 10:55</td>
<td>Imaging and Spectroscopy of Cancer: Challenges at 7T</td>
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<td>10:55 - 11:20</td>
<td>Advances in Imaging of Hyperpolarized Substrates at MDACC</td>
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<td>11:20 - 11:45</td>
<td>Hyperpolarized 13C MR Imaging at UTSW Medical Center</td>
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<tr>
<td>11:45 - 12:00</td>
<td>Discussion</td>
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<tr>
<td>12:30 PM</td>
<td>Lunch</td>
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Wednesday, April 30

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
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<tbody>
<tr>
<td>1:00 PM</td>
<td>Registration</td>
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<tr>
<td>2:00 PM</td>
<td>Imaging Brain Injury</td>
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<td>2:45 PM</td>
<td>Response of Brain to Injury</td>
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Thursday Morning, May 1

Moderator: Hanzhang Lu, Ph.D.

7:30 AM Registration and Breakfast

8:30 AM Perfusion Imaging by MR
Eric Wong, Ph.D., M.D.

9:15 AM Resting State Networks
Catie Chang, Ph.D.

10:00 AM Break

10:30 AM The Connectome
Kamil Ugurbil, Ph.D.

11:15 AM PET Ligands for Brain Metabolism and Injury
Robert Innis, M.D., Ph.D.

12:00 Lunch

Thursday Afternoon, May 1

Moderator: Mark Goldberg, M.D.

1:00 PM Tau: New Horizons in Neurodegenerative Imaging
Mark Mintun, M.D.

1:45 PM Regional Glucose Metabolism by PET
Andrei Vlassenko, M.D., Ph.D.

2:30 PM Break

3:00 PM Metabolic Management of Brain Injury
David Hovda, Ph.D.

Imaging Endophenotypes of TBI for Clinical Trials
Ramon Diaz-Arrastia, M.D., Ph.D.

3:45 PM Discussion and Adjourn

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.