NIH Workshop on
Clinical Image-Guided Therapy: Opportunities and Needs
March 10–11, 2008
Rockville, Maryland

Program

MONDAY, MARCH 10

8:00–8:15 a.m.  Introduction
                 Keyvan Farahani, Ph.D. (NCI/NIH)

8:15–8:45 a.m.  **Day 1 Keynote Address:** National Center for Image-Guided Therapy
                 Ferenc Jolesz, M.D. (BWH)

**Session 1: Prostate**

Moderator: Keyvan Farahani, Ph.D. (NCI/NIH)

8:45–9:05 a.m.  **Session Keynote:** Image-Guided Interventions in Prostate Cancer
                 Peter Choyke, M.D. (NCI/NIH)

9:05–9:20 a.m.  Prostate Image-Guided Intervention: The NCIGT Core and Beyond
                 Clare Tempany, M.D. (NCIGT/BWH)

9:20–9:35 a.m.  Image Guidance During Radiotherapeutic Interventions for Prostate Cancer
                 Cynthia Ménard, M.D. (U Toronto)

9:35–10:05 a.m. Speakers Panel

10:05–10:20 a.m. Break

**Session 2: Body**

Moderator: Pushpa Tandon, Ph.D. (NCI/NIH)

10:20–10:40 a.m. **Session Keynote:** RFA of Hepatic Tumors: Where Do We Go From Here?
                  Gerald (Chip) Dodd III, M.D. (UTHSC)

10:40–10:55 a.m. Planning, Targeting, Monitoring, Control, and Assessment of Image-Guided Percutaneous Ablations: Need for a 3-Dimensional Volumetric Approach
                  Kemal Tuncali, M.D. (NCIGT/BWH)

10:55–11:10 a.m. **MRI-Mediated Radiofrequency Ablation**
                  *Erez Nevo, M.D., D.Sc. (Robin Medical, Inc.)
11:10–11:25 a.m.  Image-Guided Osteoporotic Bone Augmentation with Intraoperative Biomechanical Guidance  
*Mehran Armand, Ph.D. (Johns Hopkins)

11:25–11:55 a.m.  Speakers Panel

11:55 a.m.–1:00 p.m.  Lunch

### Session 3:  Neursurgery

**Moderator:** John Haller, Ph.D. (NIBIB/NIH)

1:00–1:20 p.m.  **Session Keynote: Intraoperative MR-Guided Neurosurgery**  
Walter Hall, M.D., M.B.A. (SUNY Upstate, NY)

1:20–1:35 p.m.  **Image-Guided Neurosurgery**  
Ferenc Jolesz, M.D. (NCIGT/BWH)

1:35–1:50 p.m.  **Research Interfaces for Image Guided Neurosurgery**  
*Xenophon Papademetris, Ph.D. (Yale)

1:50–2:05 p.m.  **Mechanical Clot Obliteration for the Treatment of Stroke**  
*Matthew Gounis, Ph.D. (UMASS Worcester)

2:05–2:35 p.m.  Speakers Panel

2:35–3:35 p.m.  **Poster Presentations**

### Session 4:  Computation and Visualization

**Moderator:** Abraham Levy, Ph.D. (NCRR/NIH)

3:35–4:05 p.m.  **Session Keynote: Computational and Visualization Challenges in 4-Dimensional Radiotherapy**  
George Chen, Ph.D. (MGH)

4:05–4:20 p.m.  **The NCIGT Computation Core: A Technological Resource for Surgical Navigation Projects**  
William (Sandy) Wells, Ph.D. (NCIGT/BWH)

*Michael Miga, Ph.D. (Vanderbilt)

4:35–4:50 p.m.  **In-Situ Image Guidance: Recent Advances in Design, Implementation, and Psychophysics**  
*George Stetten, M.D., Ph.D. (U Pittsburgh)

4:50–5:05 p.m.  **MRI-Guided Radiation Therapy: Brachytherapy**  
Robert Cormack, Ph.D. (Rad. Onc., BWH)

5:05–5:35 p.m.  Speakers Panel
### Parallel Breakout Sessions

- **Breakout Session 1:**
  *Preoperative Functional MRI and Diffusion Tensor Imaging: Acquisition and Visualization for Neurosurgery*
  Steve Whalen, B.S., and Lauren O'Donnell, Ph.D. (NCIGT/BWH)

- **Breakout Session 2:**
  *Slicer Prostate Module*
  Steve Haker, Ph.D., and Noby Hata, Ph.D. (NCIGT/BWH)

- **Breakout Session 3:**
  *Liver Visualization: Application of Slicer 3.0 for Non-Rigid, Multi-Modality Image Registration for Thermal Ablation: Pre-Procedural MRI on Intra-Procedural CT for Tumor Targeting*
  Nicu Archip, Ph.D., and P. Morrison, M.Sc. (NCIGT/BWH)

### TUESDAY, MARCH 11

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<th>Time</th>
<th>Session Description</th>
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<tr>
<td>8:00–8:10 a.m.</td>
<td>Introduction</td>
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<td>8:10–8:40 a.m.</td>
<td><strong>Day 2 Keynote Address:</strong> <em>Image-Guided Local Drug and Gene Delivery</em></td>
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<td>Chrit Moonen, Ph.D. (U Bordeaux, France)</td>
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<td>8:40–9:00 a.m.</td>
<td><strong>Session Keynote:</strong> <em>Image-Guided Focused Ultrasound Therapy</em></td>
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<td>Kullervo Hynynen, Ph.D. (U Toronto)</td>
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<td>9:00–9:15 a.m.</td>
<td><strong>Focused Ultrasound Treatment Planning</strong></td>
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<td>Gregory Clement, Ph.D. (NCIGT/BWH)</td>
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<td>9:15–9:30 a.m.</td>
<td><strong>Guiding Cardiac Ablation Therapy with ARFI Imaging</strong></td>
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<td>*Patrick Wolf, Ph.D. (Duke)</td>
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<td>9:30–9:45 a.m.</td>
<td><strong>Spectrally Encoded Endoscopy for Image-Guided Therapy of Twin-Twin Transfusion Syndrome</strong></td>
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<td>*Gary Tearney, M.D., Ph.D. (MGH)</td>
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<td>9:45–10:15 a.m.</td>
<td><strong>Speakers Panel</strong></td>
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<td>10:15–10:30 a.m.</td>
<td><strong>Break</strong></td>
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Session 6: Imaging

Moderator: Abraham Levy, Ph.D. (NCRR/NIH)

10:30–10:50 a.m. Session Keynote: MR Imaging for Image-Guided Interventions
*John Pauly, Ph.D. (Stanford)

10:50–11:05 a.m. Building a Toolbox to Support Enhanced MR Imaging in Image-Guided Therapy
Larry Panych, Ph.D. (NCIGT/BWH)

11:05–11:20 a.m. Body Imaging – A Role for Light-Based Imaging?
*Dennis Fowler, M.D. (Columbia)

11:20–11:35 a.m. An Integrated MRI-Guided Electrophysiology Diagnosis/Therapy System: Lessons Learned for Closed-Bore Interventional Procedures
Ehud Schmidt, Ph.D. (BWH)

11:35–12:00 p.m. Speakers Panel

12:00–1:00 p.m. Lunch

Session 7: Targeted Drug and Cell Delivery

Moderator: Keyvan Farahani, Ph.D. (NCI/NIH)

1:00–1:20 p.m. Session Keynote: Image-Guided Therapy in Cancer
Zaver Bhujwalla, Ph.D. (Johns Hopkins)

1:20–1:35 p.m. Targeted Drug Delivery in the Brain via Ultrasound-Induced Blood-Brain Barrier Disruption
Nathan McDannold, Ph.D. (NCIGT/BWH)

1:35–1:50 p.m. Microbubbles as a Tool for Targeted Ultrasound Imaging and Drug Delivery
Alexander (Sasha) Klibanov, Ph.D. (U Virginia)

1:50–2:05 p.m. Cell Tracking and Cell Delivery: From Imaging to Intervention
Jeff Bulte, Ph.D. (Johns Hopkins)

2:05–2:35 p.m. Speakers Panel

2:35–2:45 p.m. Concluding Remarks

Adjournment

* NIBIB IGI RFA-06-003 Principal Investigator