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# **Biomedical Applications in Molecular, Structural, and Functional Imaging**

**Barjor Gimi  
Andrzej Krol**  
*Editors*

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- 9 Lung  
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- 10 Novel MR Techniques and Applications  
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**Axel Wismüller**, University of Rochester Medical Center (United States)

## Introduction

The 2016 SPIE Biomedical Applications in Molecular, Structural and Functional Imaging Conference was held at Town and Country Resort & Convention Center in San Diego, California. We maintained the high participation we saw last year, both in the number of abstracts submitted and in conference attendees. Chairs Barjor Gimi and Andrzej Krol welcomed keynote speaker Joseph J. H. Ackerman from Washington University in St. Louis. The outstanding, thoughtful keynote address provided insights on the source of magnetic resonance signal for a range of experiments and conditions, and suggested how these insights may be used to better characterize pathophysiology.

The diverse sessions included Keynote and Neurological Imaging, Novel MR Techniques and Applications, Innovations in Image Processing, Bone and Skeletal Imaging, Biomechanics, fMRI, Optical, Lung, Fluids and Cardiovascular, Cancer Imaging and Novel Imaging Methods. We are grateful to the session chairs: Armando Manduca, Axel Wismüller, Changqing Li, and Baohong Yuan.

The following researchers were awarded the conference fee waivers for outstanding papers: Karl G. Helmer, Athinoula A. Martinos Center for Biomedical Imaging (United States), Wyke Huizinga, Erasmus MC (Netherlands), and Dakai Jin, The University of Iowa (United States).

The poster session comprised vibrant discussions. A panel of five judges selected Elizabeth Duncan's, "Application of probabilistic fiber tracking method of MR imaging to measure impact of cranial irradiation on structural brain connectivity in children treated for medulloblastoma," St. Jude Children's Research Hospital (United States), for the Cum Laude Award.

The following posters were selected as honorable mentions: Manjiri Dighe's, "Regional placental BOLD changes with gestational age in normally developing pregnancies using long duration R2\* mapping in utero," University of Washington (United States); Brendan L. Eck's "Comparison of quantitative myocardial perfusion imaging CT to fluorescent microsphere-based flow from high resolution cryo-images," Case Western Reserve University (United States); and David Prabhu's, "3D registration of intravascular optical coherence tomography and cryo-image volumes for microscopic-resolution validation," Case Western Reserve University (United States).

**Barjor Gimi**  
**Andrzej Krol**



## 2016 Medical Imaging Award Recipients

### Robert F. Wagner Best Student Paper Award

Robert F. Wagner was an active scientist in the SPIE Medical Imaging meeting, starting with the first meeting in 1972 and continuing throughout his career. He ensured that the BRH, and subsequently the CDRH, was a sponsor for the early and subsequent Medical Imaging meetings, helping to launch and ensure the historical success of the meeting. The Robert F. Wagner All-Conference Best Student Paper Award (established 2014) is acknowledgment of his many important contributions to the Medical Imaging meeting and his many important advances to the field of medical imaging.



This award is cosponsored by:



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# SPIE.

2016 Recipients:

First Place: **MIND Demons for MR-to-CT deformable image registration in image-guided spine surgery** (9786-16)

S. Reangamornrat, T. De Silva, A. Uneri, Johns Hopkins Univ. (United States), J.-P. Wolinsky, Johns Hopkins Hospital (United States), A. J. Khanna, Johns Hopkins Health Care & Surgery Ctr. (United States), G. Kleinszig, S. Vogt, Siemens Healthcare (Germany), J. L. Prince, J. H. Siewerdsen, Johns Hopkins Univ. (United States)

Second Place: **Design, fabrication, and implementation of voxel-based 3D printed textured phantoms for task-based image quality assessment in CT** (9783-76)

Justin Solomon, Duke Univ. School of Medicine (United States), Alexandre Ba, Institut Univ. de Radiophysique Appliquée (Switzerland), Andrew Diao, Duke Univ. (United States), Joseph Lo, Elianna Bier, Duke Univ. School of Medicine (United States), François Bochud, Institut Univ. de Radiophysique Appliquée (Switzerland), Michael Gehm, Duke Univ. (United States), Ehsan Samei, Duke Univ. School of Medicine (United States)

## Conference 9788 Awards

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### Cum Laude Poster Award

First Place: **Application of probabilistic fiber-tracking method of MR imaging to measure impact of cranial irradiation on structural brain connectivity in children treated for medulloblastoma** (9788-98)

Elizabeth C. Duncan, Wilburn E. Reddick, John O. Glass, Jung Won Hyun, Qing Li, Yimei Li, Amar Gajjar, St. Jude Children's Hospital (United States)

