



Office of Continuing Medical Education 720 Rutland Avenue / Turner 20 Baltimore, Maryland 21205-2195

11th Interventional **MRI Symposium**

October 7-8, 2016

Baltimore, Maryland **Baltimore Marriott** Waterfront Hotel

https://HopkinsCME.cloud-cme.com/ More details are available at This is a one time mailing. aph.aspx?P=5&EID=1523



Permit No. 5839 Nonprofit Org. Baltimore, MD U.S. Postage PAID

CONTINUING MEDICAL EDUCATION



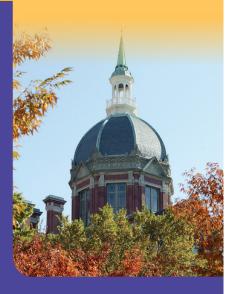
11th Interventional MRI Symposium

October 7-8, 2016

Baltimore Marriott Waterfront Hotel

700 Aliceanna Street Baltimore, Maryland 21202





JOINTLY PROVIDED BY:







Description

Over the past two decades image-guided therapies have expanded into every organ system and disease state. Interventional MRI has become vital to current multimodality image-guided therapies and also provides an entirely new platform for novel therapies. In light of the rapid developments in the field and due to the success of the 10th Interventional MRI Symposium 2014 in Leipzig, we would like to cordially invite you to attend the 11th Interventional MRI Symposium 2016 in Baltimore, Maryland, USA.

The Interventional MRI Symposium is a cutting-edge platform for researchers, clinicians, and other health-care specialists to present their latest results and interact with international leaders and innovators in the field. The current program will be composed of lectures from both invited speakers and proffered papers. We encourage all professionals working in the field of interventional MRI to submit scientific abstracts to this symposium.

Who Should Attend

This activity is intended for MRI radiologists, interventional radiologists, MR researchers, cardiologists, minimally-invasive surgeons, neurosurgeons, technologists, and nurses.

Objectives

After attending this activity, the participant will demonstrate the ability to:

- Integrate safety protocols for interventional MRI into clinical practice.
- Define new clinical applications for interventional MRI.
- Recognize basic systems available for interventional MRI.
- Explore new technologies available for interventional MRI.

General Information

Registration

Friday, October 7, 2016 | 7:00 – 8:00 a.m.

Location

Baltimore Marriott Waterfront Hotel 700 Aliceanna Street, Baltimore, Maryland 21202

Fees

Registration Cut-Off Date: October 1, 2016

Methods of Payment: Payment by check or credit card must accompany the registration form prior to the activity. On-site payments by credit card only. Foreign payments must be by credit card or with a U.S. Dollar World Money Order. The registration fee includes instructional materials, continental breakfasts, refreshment breaks and lunches.

	On or before 8/19/16	After 8/19/16
Physicians	\$550	\$600
Allied Health Professionals/		
Nurses/Scientists	\$450	\$500
Residents*/Fellows*/Students* *with verification of status	\$250	\$300
Printed Syllabus		 \$50

You will receive a confirmation by e-mail if you have provided your e-mail address. Otherwise confirmation will be sent by mail. If you have not received it by October 1, 2016, call (410) 502-9634 to confirm that you are registered. A certificate of attendance will be sent by November 22, 2016 to the e-mail address you provide on the registration form.

The Johns Hopkins University reserves the right to cancel or postpone any activity due to unforeseen circumstances. In this event, the University will refund the registration fee but is not responsible for travel expenses. Additionally, we reserve the right to change the venue to a comparable venue. Under such circumstances registrants will be notified as soon as possible.

Late Fee and Refund Policy

A \$50 late fee applies to registrations received after 5:00 p.m. ET on **October 1, 2016**. A handling fee of \$50 will be deducted for cancellation. An additional fee may apply for cancellation of other events, including workshops and social activities. Refund requests must be received by fax or mail by **October 1, 2016**. No refunds will be made thereafter. Transfer of registration to another Johns Hopkins conference in lieu of cancellation is not possible.

Syllabus

All registrants will receive a flash drive with the slides and paper for note-taking. This is included in the cost of your registration. A link to the syllabus will be provided via email shortly before the activity begins if you prefer to study or print the syllabus. A printed copy may be ordered at the time of registration for an additional fee of \$50. The printed copy will be provided during activity registration. Cancellations or refunds for the printed copy will not be permitted.

Social Event

A complimentary reception for registrants and faculty will be held on October 7, 2016 at 7:00 p.m. at The Engineers Club at the Garrett-Jacobs Mansion, 11 West Mount Vernon Place, Baltimore, Maryland 21201. Guests are invited to attend at an additional charge of **\$120 per person.** Please indicate your attendance on

Accreditation Statement

This activity has been planned and implemented in accordance with the accreditation requirements and policies of the Accreditation Council for Continuing Medical Education (ACCME) through the joint providership of Johns Hopkins University School of Medicine and the Universitätsklinikum Leipzig and the Brigham and Women's Hospital. The Johns Hopkins University School of Medicine is accredited by the ACCME to provide continuing medical education for physicians.

Credit Designation Statement

The Johns Hopkins University School of Medicine designates this live activity for a maximum of 14.75 AMA PRA Category 1 Credits™. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

Other Credits

American Nurses Credentialing Center (ANCC) accepts AMA PRA Category 1 Credit™ from organizations accredited by the ACCME.

The Johns Hopkins University has approved this activity for 14.75 **contact hours for non-physicians.**

Policy on Speaker and Provider Disclosure

It is the policy of the Johns Hopkins University School of Medicine that the speaker and provider disclose real or apparent conflicts of interest relating to the topics of this educational activity, and also disclose discussions of unlabeled/unapproved uses of drugs or devices during their presentation(s). The Johns Hopkins University School of Medicine OCME has established policies in place that will identify and resolve all conflicts of interest prior to this educational activity. Detailed disclosure will be made in the activity handout materials.

the registration form. Transportation will be provided. NOTE: The commercial support received is solely for the educational component of this activity and will not be used to support this social event.

Hotel and Travel Arrangements

Baltimore Marriott Waterfront Hotel

700 Aliceanna Street Phone +1 (410) 385-3000 Baltimore, Maryland 21202 Fax +1 (410) 895-1900 Toll Free +1 (800) 228-9290

Hotel Reservation Cut-Off Date: September 15, 2016

A limited block of sleeping rooms has been reserved for your convenience and will be available on a first come, first served basis.

The Baltimore Marriott Waterfront is located directly on the famed Inner Harbor in downtown Baltimore, Harbor East. The hotel offers guests an unsurpassed location from which to explore the vibrant city of Baltimore, Maryland. Please use this specific website, https://aws.passkey.com/g/53561537, or call the toll free reservation line, +1 (800) 228-9290, to ensure you receive the special group rate of \$229 plus tax per night. Onsite parking is available at your own expense. Check-in time is 4:00 p.m. Check-out time is 12:00 p.m.

Evaluation

A form will be available to attendees to evaluate each session and each speaker's presentation, as well as to identify future educational needs.

Outcomes Survey

A survey will be sent to all physician attendees within three months post activity to assist us in determining what impact this activity had on the attendee's practice.

Emergency Calls

On **October 7-8, 2016** direct emergency calls to +1 (410)-385-3000 and ask that a message be sent to the Johns Hopkins registration desk. Messages will be posted for participants.

Americans with Disabilities Act

The Johns Hopkins University School of Medicine fully complies with the legal requirements of the ADA and the rules and regulations thereof. *Please notify us if you have any special needs*.

To Register or For Further Information

Register Online https://HopkinsCME.cloud-cme.com (credit card and eCheck)

Register by Phone +1 (410) 502-9634

(credit card only)

Register by Fax +1 (866) 510-7088

Confirmation/Certificates +1 (410) 502-9634
General Information +1 (410) 955-2959

E-mail the Office of CME cmenet@jhmi.edu

Twitter: http://twitter.com/HopkinsCME

Facebook: http://www.facebook.com/HopkinsCME

For general information visit the CME web page:

https://HopkinsCME.cloud-cme.com/aph.aspx?P=5&EID=1523

Sponsoring Department,

Radiology and Radiological Science Website: http://www.hopkinsmedicine.org/radiology

Program

Program	
Friday, Octob	per 7, 2016
7:00 - 8:00	Registration and Breakfast Buffet
8:00 - 8:15	Welcome and Symposium Goals Jonathan Lewin, MD, FACR; Thomas Kahn, MD; Clare Tempany, MD
8:15 - 9:00	Ferenc A. Jolesz Memorial Lecture – "IMRI in 2030!" Roderic Pettigrew, MD, PhD
9:00 - 10:00	As Yet Unseen: Industry Advances in Neuro-Interventions Moderators: Paul Bottomley, PhD and Alastair Martin, PhD
10:00 - 10:20	Refreshment Break
	nces in Neuro-Interventions n Anderson, MD, PhD and Nathan McDannold, PhD
10:20 - 10:30	iMRIS in Functional Neurosurgery: Laser Ablation and DBS Lead Placement Techniques William Anderson, MD, PhD
10:30 - 10:40	Anterior Cervical Discectomy and Fusion (ACDF) Procedures: The Potential and the Need for Efficient MRI-Guidance Ehud Schmidt, PhD
10:40 - 10:50	MR-Guided Neuromodulation Nathan McDannold, PhD
10:50 - 12:10	Abstract Presentations
12:10 - 1:00	Lunch Buffet/SIM Center
1:00 - 2:00	Poster Review/SIM Center The SIM Center is an opportunity for hands on testing, use, and instruction of recent innovations in interventional MRI technology. SIM Center and Poster Review sessions are not approved for AMA PRA Category 1 Credits TM
	liac and Vascular Interventions Lederman, MD and Professor Reza Razavi
2:00 - 2:10	MR-Imaging Guided Interventional Procedures in Electrophysiology and Congenital Heart Disease Using Active and Passive Catheter Tracking Matthias Gutberlet, MD, PhD, EBCR
2:10 - 2:20	Groovy MRI Catheterization Procedures Robert Lederman, MD
2:20 - 2:30	MR-Guided Cardiac and Vascular Interventions Professor Reza Razavi
2:30 - 3:30	Abstract Presentations
3:30 - 3:50	Refreshment Break
	endly" IMRI (Robots, Pulse Sequences, Breathing Motion, Navigation and Planning) Tuncali, MD and Tamas Ungi, MD, PhD
3:50 - 4:00	Enabling Technologies for MRI-Guided Percutaneous Interventions <i>Kemal Tuncali, MD</i>
4:00 - 4:10	Robotics and Navigation in MRI-Guided Therapies Nobuhiko Hata, PhD
4:10 - 4:20	Prototyping of MR/Ultrasound Fusion-Guided Intervention Systems Tamas Ungi, MD, PhD
4:20 - 4:30	Visualization and Navigation Techniques Harald Busse, PhD
4:30 - 5:30	Abstract Presentations
Reception	
7:00 - 10:00	The Engineers Club at the Garrett-Jacobs Mansion. Transportation will be provided.
Saturday, Oct	
7:00 - 8:00	Breakfast Buffet
	ne and Soft Tissue Interventions itz, MD and Roberto Sequeiros, MD, PhD
8:00 - 8:10	MR-Guided Intervention in the Musculoskeletal System Kamran Ahrar, MD, MBA
8:10 - 8:20	Pediatric Musculoskeletal iMRI Roberto Sequeiros, MD, PhD

Interventional MR Neurography Jan Fritz, MD

8:20 - 8:30

8:30 -	8:40	Anesthesia for Interventional MRI Michael Phelps, MD	The Johns Hopkins University School of		
8:40 -	8:50	Vascular Malformation Daniel O'Mara, MD	Medicine takes responsibility for the content, quality and scientific integrity of this CME activity. This schedule is subject to change.		
8:50 -	10:00	Abstract Presentations	detivity. This schedule is subject to change.		
10:00 -	10:20	Refreshment Break			
Session	V – Fire	and Ice (Thermal Therapies)			
10:20 -		as Melzer, MD, DDS and Frank Wacker, MD MR-Guided Laser and Cryoablation of Low Fl	ow Vascular Malformations		
10.20	10.50	David Woodrum, MD, PhD	ow vascular Flanormations		
10:30 -	10:40	Clinical Evaluation of UTE-Based Temperature Mapping for MR-Guided Cryoablation Junichi Tokuda, PhD			
10:40 - 10:50 MR-HIFU Applications in Pediatrics: Early Experience at Children's National Medical Center Karun Sharma, MD, PhD					
10:50 -	11:00	Respiratory Compensation for MR-Guided For Andreas Melzer, MD, DDS	cused Ultrasound Therapy		
11:00 -	11:10	MRI Controlled Liver Ablation: A Compreher Frank Wacker, MD	nsive Approach		
11:10 -	12:20	Abstract Presentations			
12:20 -		Lunch Buffet			
Session Moderator	VI – Cr e rs: Dara l	eating an iMRI Service Kraitchman, VMD, PhD, FACC and Clifford Weiss, MD			
1:10 -	1:20	Creating an iMRI Service Sherif Nour, MD, FRCR			
1:20 -	1:30	How to Practice a Routine Cryoablation Under Afshin Gangi, MD, PhD	er MR Guidance		
1:30 -	1:40	How to Develop a Veterinary iMRI Service Dara Kraitchman, VMD, PhD, FACC			
1:40 -	2:10	Round Table Discussion Jan Fritz, MD; Afshin Gangi, MD, PhD; Alastair Martin, PhD; Sherif Nour, MD, FRCR; Professor Reza Razavi; Kemal Tuncali, MD			
Session Moderator	VII – N ers: Kim B	ew Biomarkers as Targets for Intervention utts Pauly, PhD and Stefan Schönberg, MD			
2:10 -	2:20	Closed-loop Concepts for Molecular Diagnosis a Stefan Schönberg, MD	and Minimally-Invasive Treatment		
2:20 -	2:30	Development and Validation of Intraoperative Tissue Biomarkers in the AMIGO Suite Alexandra Golby, MD			
2:30 -	- 2:40 The Trojan Horse Cancer Treatment: MRI-Assisted Delivery of Oncolytic Viruses to Tumors Munitta Muthana, PhD				
2:40 -	3:10	Abstract Presentations			
3:10 -	3:30	Refreshment Break			
Session Moderator	VIII – E rs: Matej	nhancement and Monitoring of Therapeutics Kranjc, PhD and Alastair Martin, PhD			
3:30 -	3:40	A Focused Ultrasound-Mediated Noninvasive Raag Airan, MD, PhD	Focal Version of the Wada Test		
3:40 -	3:50	MR Thermometry in the Essential Tremor Applic Kim Butts Pauly, PhD	ation: Skulls, Simulation and Slices		
3:50 -	4:00	MR Electrical Impedance Tomography for the Matej Kranjc, PhD	Monitoring of IRE		
4:00 -	4:10	Targeted Drug Delivery in the Brain: MR-Guided Convection Enhanced Delivery Alastair Martin, PhD			
4:10 -	5:00	Abstract Presentations			
5:00 -	5:20	Poster Awards The Poster Awards session is not approved for AMA PRA Category 1 Credits [™] .			
5:20 -	5:30	Summary and Adjourn	-		
		Jonathan Lewin, MD; Thomas Kahn, MD; Clare Tempan	y, MD		
			_		

^{*} Please complete and return the Evaluation and Credit Report Forms. The Registration Desk will remain open during conference hours.

Acknowledgment: Applications for commercial support from health care related industries are pending. A complete list of contributors will be provided in the syllabus. Please note that commercial support received is solely for the educational component of the activity and will not be used to provide food and beverage. Please note: The Physician Payments Sunshine Act was enacted by Congress to increase public awareness of financial relationships between drug and medical device manufacturers and physicians. In compliance with the requirements of this Act, the commercial supporter/s of this activity may require the Johns Hopkins University School of Medicine to report certain professional information (such as name, address, National Provider Identifier (NPI), and State License number) of physician attendees who receive complimentary food and beverage in conjunction with a CME activity. The commercial supporter is required to submit the collected data to the Centers for Medicare and Medicaid Services which will then publish the data on its website.

SYMPOSIUM CO-CHAIRS

Jonathan Lewin, MD, FACR

Executive Vice President for Health Affairs Emory University President, CEO and Chairman of the Board Emory Healthcare Atlanta, Georgia, USA

Thomas Kahn, MD

Professor and Chairman Department of Diagnostic and Interventional Radiology University of Leipzig Leipzig, Germany

Clare Tempany, MD

Professor of Radiology Harvard Medical School Vice Chair of Radiology Research Brigham & Women's Hospital Boston, Massachusetts, USA

SYMPOSIUM DIRECTOR

Clifford Weiss, MD, FSIR

Associate Professor of Radiology and Radiological Science, Surgery and Biomedical Engineering Johns Hopkins University School of Medicine Baltimore, Maryland, USA

LOCAL ORGANIZING COMMITTEE

Johns Hopkins University School of Medicine Baltimore, Maryland, USA

Paul Bottomley, PhD

Professor of Radiology and Radiological Science Director, Division of MR Research

Dara Kraitchman, VMD, PhD, FACC

Professor of Radiology and Radiological Science Division of MR Research

Jan Fritz, MD

Assistant Professor of Radiology and Radiological Science

FACULTY

Kamran Ahrar, MD, MBA

Professor of Interventional Radiology University of Texas MD Anderson Cancer Center Houston, Texas, USA

Raag Airan, MD, PhD

Assistant Professor of Neuroradiology Stanford University School of Medicine Stanford, California, USA

William Anderson, MD, PhD

Associate Professor of Neurosurgery Johns Hopkins University School of Medicine Baltimore, Maryland, USA

Harald Busse, PhD

Department of Diagnostic and Interventional Radiology University of Leipzig Leipzig, Germany

Afshin Gangi, MD, PhD

Professor University Hospital of Strasbourg Strasbourg, France

Alexandra Golby, MD

Associate Professor of Neurosurgery and Radiology Harvard Medical School Brigham and Women's Hospital Boston, Massachusetts, USA

Matthias Gutberlet, MD, PhD, EBCR

Radiology and Nuclear Medicine Chair, Department of Diagnostic and Interventional Radiology Heart Center Leipzig University of Leipzig Leipzig, Germany

Nobuhiko Hata, PhD

Associate Professor of Radiology Harvard Medical School Brigham and Women's Hospital Boston, Massachusetts, USA

Matej Kranjc, PhD

Faculty of Electrical Engineering University of Ljubljana Ljubljana, Slovenia

Robert Lederman, MD

Senior Investigator, NHLBI Division of Intramural Research National Institutes of Health Bethesda, Maryland, USA

Alastair Martin, PhD

Professor of Radiology and Biomedical Imaging UCSF School of Medicine San Francisco, California, USA

Nathan McDannold, PhD

Harvard Medical School Brigham and Women's Hospital Boston, Massachusetts, USA

Andreas Melzer, MD, DDS

Professor and Chair of Medical Technology,
Foundation Director of IMSaT Institute for Medical Science and Technology,
University of Dundee
Dundee, United Kingdom
Professor of Computer-Assisted
Surgery and Director of ICCAS
Innovation Center for Computer
Assisted Surgery,
University of Leipzig,
Leipzig, Germany

Munitta Muthana, PhD

Non-Clinical Lecturer Department of Oncology and Metabolism The University of Sheffield Sheffield, United Kingdom

Sherif Nour, MD, FRCR

Associate Professor of Radiology and Imaging Sciences Director, Interventional MRI Program Emory University Hospitals and School of Medicine Atlanta, Georgia, USA

Daniel O'Mara, MD

Assistant Resident, Radiology and Radiologic Science Johns Hopkins University School of Medicine Baltimore, Maryland, USA

Kim Butts Pauly, PhD

Professor of Radiology, BioEngineering and Electrical Engineering Co-Director, Radiological Sciences Laboratory Director, Center for Biomedical Imaging at Stanford Stanford University Stanford, California, USA

Roderic Pettigrew, MD, PhD

Director, National Institute of Biomedical Imaging and Bioengineering National Institutes of Health Bethesda, Maryland, USA

Michael Phelps, MD

Clinical Instructor, Anesthesiology and Critical Care Medicine Johns Hopkins University School of Medicine Baltimore, Maryland, USA

Professor Reza Razavi

Assistant Principal,
Research and Innovation
Head of Division, Imaging Sciences
and Biomedical Engineering
Director of Research,
King's Health Partners
Professor of Pediatric
Cardiovascular Science
Director of the KCL Centre of
Excellence for Medical Engineering
King's College
London, United Kingdom

Ehud Schmidt, PhD

Associate Professor Harvard Medical School Brigham and Women's Hospital Boston, Massachusetts, USA

Stefan Schönberg, MD

Professor and Chairman,
Department of Clinical Radiology
and Nuclear Medicine
University Medical Center
Mannheim
Medical Faculty,
Universities of Manheim
and Heidelberg
Mannheim, Germany

Roberto Sequeiros, MD, PhD

Chairman, Adjunct Professor Turku University Hospital Turku, Finland

Karun Sharma, MD, PhD

Director of Interventional Radiology Principal Investigator, Bioengineering Initiative Department of Diagnostic Imaging and Radiology Children's National Medical Center Washington, DC, USA

Junichi Tokuda, PhD

Assistant Professor of Radiology Harvard Medical School Brigham and Women's Hospital Boston, Massachusetts, USA

Kemal Tuncali, MD

Clinical Director of Interventional MRI Associate Director of Advanced Multimodality Image-Guided Operating (AMIGO) Suite Harvard Medical School Brigham and Women's Hospital Boston, Massachusetts, USA

Tamas Ungi, MD, PhD

Senior Research Scientist, Adjunct Assistant Professor School of Computing and Department of Surgery Queen's University Kingston, Canada

Frank Wacker, MD

Professor and Chairman of Radiology Hannover Medical School Hannover, Germany

David Woodrum, MD, PhD

Associate Professor of Radiology Mayo Clinic College of Medicine Rochester, Minnesota, USA

11th Interventional MRI Symposium • October 7-8, 2016

To Register: Online (credit card and eCheck): https://HopkinsCME.cloud-cme.com By fax: (866) 510-7088 By phone: (credit card only): (410) 502-9634

Or mail this form to the Johns Hopkins University, Office of Continuing Medical Education, P.O. Box 64128, Baltimore, Maryland 21264-4128. Include check payable to **HOPKINS/80038447**, or include credit card information below.

PAYMENT MUST ACCOMPANY FORM TO CONFIRM YOUR REGISTRATION. S. Hopkins speaker for this activity.

I am a Johns Hopkins speaker for this activity. Please	type or print clearly:		
last name	first name	m	ı.i.
highest degree primary specialty		Hopkins faculty/staff only JHED	ID
For Physicians Only: NPI – 10 digits	State License #	St	cate of License
mailing address			
	Laur	710	
city	state	ZIP	ountry
daytime telephone	fax number		
e-mail e-mail			
You will receive a confirmation notice and your atte Check here if you wish to receive e-mail notices	•	, , ,	e-mail address.
What do you hope to learn by attending this activity	y?		
Please notify us if you have any special needs		· · · · · · · · · · · · · · · · · · ·	
Social Event:			
\square I plan to attend the social event at The Engineer:			
☐ I plan to bring a guest to the social event			\$120
Registration Fees:		On or bef 8/19/16	•
Physicians		\$550	
Allied Health Professionals/Nurses/Scientists			I
Residents*, Fellows*, Students*			
*with verification of status Printed Syllabus			\$50
The registration fee includes instructional materi 5:00 p.m. ET on October 1, 2016 , include a \$5		9	
	Total amou	nt enclosed \$	
Payment Type:			
☐ JHU Faculty/Staff Only: If you are using your this registration form and return with appropria Forms can be found on-line at http://www.hopk	te payment processin	g form to OCME, Turner 2	
☐ Check (See instructions on top of form.)☐ Credit Card: ☐ VISA ☐ MASTERCARD	☐ DISCOVER ☐	AMEX	

Name on Card Signature and Date