## Program at a Glance

### Educational Workshop

<table>
<thead>
<tr>
<th>Time</th>
<th>Tuesday, September 15th, 2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>08:30 - 08:45</td>
<td>Introduction</td>
</tr>
<tr>
<td>08:45 - 10:45</td>
<td>Session 1: Basics</td>
</tr>
<tr>
<td>10:45 - 11:05</td>
<td>Coffee Break</td>
</tr>
<tr>
<td>11:05 - 12:35</td>
<td>Session 2: Contrast Enhanced MRA</td>
</tr>
<tr>
<td>12:35 - 14:00</td>
<td>Lunch</td>
</tr>
<tr>
<td>14:00 - 15:45</td>
<td>Session 3: Head, Neck and Heart</td>
</tr>
<tr>
<td>15:45 - 16:05</td>
<td>Coffee Break</td>
</tr>
<tr>
<td>16:05 - 18:05</td>
<td>Session 4: Body and Peripheral</td>
</tr>
<tr>
<td>18:05</td>
<td>Welcome Reception</td>
</tr>
</tbody>
</table>

### Scientific Sessions

<table>
<thead>
<tr>
<th>Time</th>
<th>Wednesday, September 16th, 2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>08:30 - 09:15</td>
<td>Welcome and Plenary Talk</td>
</tr>
<tr>
<td>09:15 - 10:30</td>
<td>Session 1: Contrast Enhanced MRA, Part 1</td>
</tr>
<tr>
<td>10:30 - 11:00</td>
<td>Coffee Break</td>
</tr>
<tr>
<td>11:00 - 12:15</td>
<td>Session 2: New Techniques Part 1</td>
</tr>
<tr>
<td>12:15 - 13:45</td>
<td>Lunch</td>
</tr>
<tr>
<td>13:45 - 15:15</td>
<td>Session 3: Cardiac, Part 1</td>
</tr>
<tr>
<td>15:15 - 15:45</td>
<td>Coffee Break</td>
</tr>
<tr>
<td>15:45 - 17:30</td>
<td>Session 4: Quantitative Flow</td>
</tr>
<tr>
<td>17:50</td>
<td>Trolley leaves for Zoo</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Time</th>
<th>Thursday, September 17th, 2015</th>
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</thead>
<tbody>
<tr>
<td>08:45 - 10:30</td>
<td>Session 5: Contrast Enhanced MRA, Part 2</td>
</tr>
<tr>
<td>10:30 - 11:00</td>
<td>Coffee Break</td>
</tr>
<tr>
<td>11:00 - 12:10</td>
<td>Session 6: Poster Blitz!</td>
</tr>
<tr>
<td>12:10 - 13:30</td>
<td>Lunch</td>
</tr>
<tr>
<td>13:30 - 15:00</td>
<td>Poster Sessions 1 &amp; 2</td>
</tr>
<tr>
<td>15:00 - 16:30</td>
<td>Session 7a: Ferumoxytol</td>
</tr>
<tr>
<td>16:30 - 16:50</td>
<td>Coffee Break</td>
</tr>
<tr>
<td>16:50 - 18:00</td>
<td>Session 7b: Ferumoxytol</td>
</tr>
<tr>
<td>18:10</td>
<td>Buses Board for Ballpark</td>
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<table>
<thead>
<tr>
<th>Time</th>
<th>Friday, September 18th, 2015</th>
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</thead>
<tbody>
<tr>
<td>08:45 - 10:30</td>
<td>Session 8: New Techniques, Part 2</td>
</tr>
<tr>
<td>10:30 - 11:00</td>
<td>Coffee Break</td>
</tr>
<tr>
<td>11:00 - 12:15</td>
<td>Session 9: Non-Contrast MRA</td>
</tr>
<tr>
<td>12:15 - 13:45</td>
<td>Lunch</td>
</tr>
<tr>
<td>13:45 - 15:00</td>
<td>Session 10: Cardiac, Part 2</td>
</tr>
<tr>
<td>15:00 - 15:30</td>
<td>Coffee Break</td>
</tr>
<tr>
<td>15:30 - 17:15</td>
<td>Session 11: Vessel Wall</td>
</tr>
<tr>
<td>17:15 - 17:55</td>
<td>Closing Remarks</td>
</tr>
<tr>
<td>18:00</td>
<td>Buses Board for Hofbräuhaus</td>
</tr>
</tbody>
</table>
Welcome colleagues and companions to the 27th annual meeting of the MR Angiography Working Group!!

It is my pleasure to welcome you to the historic American city of Cincinnati, where under the direction of the local organizer and president-elect Chuck Dumoulin, we have prepared what we believe will be a most enjoyable, hospitable, and intellectually stimulating several days for you.

While the sights outside the door may not quite compare to those of Rome last year, I am particularly pleased with our choice of venue at the Kingsgate Marriott, where our group can continue in the tradition of the MRAWG to comfortably mingle during breaks and meals and beyond, visit with our generously supportive vendors (please do!), and of course listen to our associates’ presentations and engage them in lively discussion.

Once again this year we are pleased to be holding a pre-conference workshop (Tuesday) where attendees can learn basics and beyond from the experts, and receive CME credit. The workshop itself officially kicks off Wednesday morning, lasting 3 full days and ending Friday afternoon. I am very pleased with the number and caliber of talks planned, including a session dedicated entirely to ferumoxytol, and a good number of students and early trainees who will be vying for the coveted Potchen and Passariello awards. The 4 minute poster presentations should not be missed.

And of course, no MRAWG would be complete without a vibrant social program. Following the pre-conference on Tuesday will be an opening reception right outside at the Kingsgate - easy. Wednesday evening we can walk (it’s not far) or take a shuttle to the Cincinnati Zoo for animal viewing and food and drink “in the wild”. Perhaps this can whet our appetite for South Africa in 2017! Thursday we head to the beautiful Cincinnati Reds baseball stadium and a fabulous luxury venue overlooking the field and city – kind of an American “castle” of sorts. While there unfortunately won’t be a baseball game (Chuck didn’t have that kind of pull), I am sure there will be some fun baseball-related activities, not to mention a lofty atmosphere for socializing and intellectual kibitzing (oh yeah, + food and drink!). Finally, on Friday night we head over to the Hofbräuhaus across the Ohio River in Newport, Kentucky, for an evening of German food and beer in the garden ... this on the opening night of Oktoberfest in Cincinnati, which I am told is the largest outside of Germany. Following dinner, for those of you brave enough, the streets of downtown Cincinnati (a short walk back over the river) will be roped off as the whole town takes to the streets to pretend they are in Munich. I plan to be there – hope you will too.

On behalf of myself and our host who did most of the work, Chuck Dumoulin and his hard-working team, I wish you all a rewarding and productive time here in Cincinnati.

Jeffrey Maki, MD, PhD
President MRAWG
Leveraging unique IP and the power of cloud computation, Arterys has created the first technology capable of visualizing anatomy and accurately quantifying blood flow with 4D Flow on MRI data acquired in less than 10 minutes. 
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Bayer HealthCare’s Radiology unit is a global leader in developing and manufacturing contrast agents used in X-ray, computed tomography (CT) and magnetic resonance imaging (MRI), as well as injection systems for diagnostic and therapeutic medical procedures in CT, MRI and cardiovascular and peripheral vascular disease. 
http://www.radiology.bayer.com 
www.bayer.com

Bracco Imaging S.p.A., part of the Bracco Group, is a world leader within the diagnostic imaging business. Headquartered in Milan, Italy, Bracco Imaging develops, manufactures and markets diagnostic imaging agents and solutions that meet medical needs. 
www.braccoimaging.com
Established in 1883, Cincinnati Children’s Hospital Medical Center is one of the oldest and most distinguished pediatric hospitals in the US. With more than 600 registered beds, 15,000 employees, and patients from all over the world, the institution is a leader in pediatric healthcare and research. [www.cchmc.org](http://www.cchmc.org)

GE Healthcare provides transformational medical technologies and services that are shaping a new age of patient care. Our broad expertise in medical imaging and information technologies, medical diagnostics, patient monitoring systems, drug discovery, biopharmaceutical manufacturing technologies, performance improvement and performance solutions services help our customers to deliver better care to more people around the world at a lower cost. [http://www3.gehealthcare.com/en/global_gateway](http://www3.gehealthcare.com/en/global_gateway)

A pioneer in the field of contrast agents with more than 80 years of experience, Guerbet is the only pharmaceutical group fully dedicated to medical imaging worldwide. As such it has complete offering of contrast products for X-ray, MRI, Interventional Radiology, along with a range of injectors and medical equipment to improve diagnosis and treatment of patients. [www.guerbet.com](http://www.guerbet.com)
Heart Imaging Technologies leverages zero footprint technology to enhance clinical workflows and help facilitate research. Utilizing Precession and CloudCMR, colleagues at separate institutions can collaborate with a simple mouse click. [http://www.heartit.com/](http://www.heartit.com/)

As a worldwide leader in diagnostic medicine for more than 55 years, Lantheus Medical Imaging is dedicated to creating and providing pioneering medical imaging solutions to improve the treatment of human disease. [www.lantheus.com](http://www.lantheus.com)

Medis Medical Imaging Systems is leading provider of innovative software solutions that enable clinicians, technicians and researchers to accurately quantify medical images. Medis products are focused on the cardiovascular imaging market and cover the modalities MRI, CT, X-ray angiography and intravascular ultrasound. Since its foundation in 1989, Medis has introduced a range of quantification software solutions that have proven their value in clinical practices and research. [http://www.medis.nl](http://www.medis.nl)

Philips is one of the world’s leading healthcare technology companies. We are committed to understanding patients’ and caregivers’ needs and improving the experience of care. [www.philips.com/healthcare](http://www.philips.com/healthcare)
Corporate Sponsors

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www.siemens.com/cmr

Topspins Inc. is dedicated to helping MR imaging centers implement safe, accurate, state-of-the-art contrast-enhanced MR Angiography and dynamic contrast-enhanced MR imaging studies for the benefit of their patients.

www.topspins.com

The University of Cincinnati is a public research university with an enrollment of more than 43,000 students. In 2013, UC was named best “overall” university for economic engagement by the Association of Public and Land Grant Universities’ Commission on Innovation, Competitiveness and Economic Prosperity. www.uc.edu
# Educational Schedule

**Educational Workshop**
*Tuesday, September 15th, 2015*

## Session 1: Basics
*Chairs: Steve Riederer and Michael Markl*

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Presenter(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:30 – 8:45</td>
<td>Introduction and Welcome</td>
<td>Chuck Dumoulin, Rob Fleck</td>
</tr>
<tr>
<td>8:45 – 9:15</td>
<td>The essential ingredients for creating MRA image contrast</td>
<td>Tom Grist</td>
</tr>
<tr>
<td>9:15 – 9:30</td>
<td>Basics of Physiologic flow</td>
<td>Denis Doorly</td>
</tr>
<tr>
<td>9:30 – 9:45</td>
<td>MRA basics (TOF, CE-MRA and PC-MRA)</td>
<td>Michael Markl</td>
</tr>
<tr>
<td>9:45 – 10:00</td>
<td>Introduction to K-space</td>
<td>Frank Korosec</td>
</tr>
<tr>
<td>10:00 – 10:15</td>
<td>Characterization of Physiology with T1, T2 and T2*</td>
<td>Graham Wright</td>
</tr>
<tr>
<td>10:15 – 10:30</td>
<td>Phase Contrast MRI</td>
<td>Oliver Wieben</td>
</tr>
<tr>
<td>10:30 – 10:45</td>
<td>Discussion</td>
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<tr>
<td>10:45 – 11:05</td>
<td>Break</td>
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</tbody>
</table>

## Session 2: Contrast Enhanced MRA
*Chairs: Martin Prince and Tom Grist*

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Presenter(s)</th>
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</thead>
<tbody>
<tr>
<td>11:05 – 11:20</td>
<td>Contrast Agents</td>
<td>Greg Wilson</td>
</tr>
<tr>
<td>11:20 – 11:35</td>
<td>Dynamic Contrast-Enhanced (CE) MRA</td>
<td>Steve Riederer</td>
</tr>
<tr>
<td>11:35 – 11:50</td>
<td>Contrast injection strategies for CE MRA</td>
<td>Jeff Maki</td>
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<tr>
<td>11:50 – 12:05</td>
<td>mDixon CE MRA</td>
<td>Eric Stinson</td>
</tr>
<tr>
<td>12:05 – 12:20</td>
<td>MRA with Ferumoxytol</td>
<td>Paul Finn</td>
</tr>
<tr>
<td>12:20 – 12:35</td>
<td>Discussion</td>
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</tr>
<tr>
<td>12:35 – 14:00</td>
<td>Lunch</td>
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**CME and ARRT CEU Credits will be available to those attending the Educational Session.**
Educational Workshop
Tuesday, September 15th, 2015

**Session 3: Head, Neck and Heart**
*Chairs: Scott Reeder and Kevin DeMarco*

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Speaker</th>
</tr>
</thead>
<tbody>
<tr>
<td>14:00</td>
<td>Vascular imaging/angiography in stroke and other vascular dementias</td>
<td>Richard Frayne</td>
</tr>
<tr>
<td>14:15</td>
<td>&quot;Clinical&quot; carotid plaque MR imaging</td>
<td>Kevin DeMarco</td>
</tr>
<tr>
<td>14:30</td>
<td>MRI of atherosclerotic vessel walls</td>
<td>Niranjan Balu</td>
</tr>
<tr>
<td>14:45</td>
<td>Coronary MRA and coronary plaque imaging</td>
<td>Debiao Li</td>
</tr>
<tr>
<td>15:00</td>
<td>Blood oxygenation</td>
<td>Pascal Spincemaille</td>
</tr>
<tr>
<td>15:15</td>
<td>MRA and future neuro interventions</td>
<td>Wally Block</td>
</tr>
<tr>
<td>15:30</td>
<td>Discussion</td>
<td></td>
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<tr>
<td>15:45</td>
<td>Break</td>
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</tbody>
</table>

**Session 4: Body and Peripheral**
*Chairs: Graham Wright and James Meaney*

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Speaker</th>
</tr>
</thead>
<tbody>
<tr>
<td>16:05</td>
<td>Pulmonary MRA</td>
<td>Robert Fleck</td>
</tr>
<tr>
<td>16:20</td>
<td>Renal and Skin MRA</td>
<td>Martin Prince</td>
</tr>
<tr>
<td>16:35</td>
<td>AVMs, Trauma and Veins</td>
<td>Giles Roditi</td>
</tr>
<tr>
<td>16:50</td>
<td>4D flow MRA in the abdomen</td>
<td>Scott Reeder</td>
</tr>
<tr>
<td>17:05</td>
<td>Lower extremity contrast enhanced MRA</td>
<td>James Meaney</td>
</tr>
<tr>
<td>17:20</td>
<td>Advances in QISS Non-Enhanced MR Angiography</td>
<td>Robert Edelman</td>
</tr>
<tr>
<td>17:35</td>
<td>Peripheral MRA - going beyond the lumen</td>
<td>James Carr</td>
</tr>
<tr>
<td>17:50</td>
<td>Discussion</td>
<td></td>
</tr>
<tr>
<td>18:05</td>
<td>Welcome Reception at the Marriott</td>
<td></td>
</tr>
</tbody>
</table>

CME and ARRT CEU Credits will be available to those attending the Educational Session.
Welcome and Plenary Talk

8:30 – 8:45 Introduction and Welcome
Chuck Dumoulin, Jeff Maki

8:45 – 9:15 Plenary talk: Disruptive Opportunities in Vascular MRI
Bob Edelman

Session 1: Contrast Enhanced MRA, Part 1

9:15 – 9:30 Bracco Gold Sponsor Talk: Optimizing Bolus Injection of Gd-Based Contrast Agents for MR Angiography
Jeff Maki

9:30 – 9:45 The Safety and Efficacy of Pediatric Contrast Enhanced Magnetic Resonance Angiography using Multihance (Gadobenate Dimeglumine)
Sarah Khan

9:45 – 10:00 Combined low-dose time-resolved and single-phase high resolution spinal CE MRA: evaluation of spinal vascular malformation
Bum-Soo Kim

10:00 – 10:15 The impact of intensive training in inexperienced observers on analysis of stenosis and global atheroma burden in whole-body magnetic resonance angiography
Jonathan Weir-McCall

10:15 – 10:30 Guerbet Gold Sponsor Talk: Current Understanding of Gd Deposition
Alex Towbin

10:30 – 11:00 Break

Session 2: New Techniques, Part 1

11:00 – 11:15 Robust and Efficient Estimation of Optimum Perfusion Parameters in Dynamic Contrast-Enhanced MRI of the Prostate
Soudabeh Kargar

11:15 – 11:30 3D black-blood thrombus imaging (BTI) for the diagnosis of deep vein thrombosis
Guoxi Xie

11:30 – 11:45 3D Black-blood Thrombus Imaging (BTI) for the Diagnosis of Cerebral Venous Thrombosis
Zhaoyang Fan

11:45 – 12:00 Characterization of Atherosclerotic Disease in the Thoracic Aorta: A 3D Multicontrast Vessel Wall Imaging Study
Changwu Zhou

12:00 – 12:15 GE Gold Sponsor Talk: Advances in MR Angiography
James Holmes

12:15 – 13:45 Lunch

Potchen Award Competitor
Session 3: Cardiac, Part 1

13:45 – 14:00 Use of T1 map in acute myocardial infarction: can it distinguish between infarct area and area-at-risk? Iacopo Carbone

14:00 – 14:15 T1 estimation from 3D late gadolinium enhancement: Application to left atrial LGE Dana Peters

14:15 – 14:30 Relationship between Ventricular Diastolic Dysfunction and Atrial Fibrosis: a study of phasic left ventricular and atrial volumes, and atrial late gadolinium enhancement Karl Grunseich ★

14:30 – 14:45 Free-Breathing 3D Whole-Heart Coronary MRA Using Respiratory Motion-Resolved Sparse Reconstruction Davide Piccini ★

14:45 – 15:00 Coronary Vein Imaging by MRI vs Intra-Procedural X-Ray Venography for Targeted Left Ventricular Lead Placement in Cardiac Resynchronization Therapy Adrian Lam ★

15:00 – 15:15 Greater non-compacted myocardial mass index in patients with clinically significant LVNC Jeremy Collins

15:15 – 15:45 Break
### Session 4: Quantitative Flow

<table>
<thead>
<tr>
<th>Time</th>
<th>Topic</th>
<th>Presenter</th>
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<tbody>
<tr>
<td>15:45 – 16:00</td>
<td>4D flow MRI for intracranial hemodynamic assessment in Alzheimer’s disease</td>
<td>Leonardo Rivera</td>
</tr>
<tr>
<td>16:00 – 16:15</td>
<td>PC-MRI based simulation of contrast-injection in cerebral aneurysms</td>
<td>Vitaliy Rayz</td>
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<tr>
<td>16:15 – 16:30</td>
<td>Absolute Local Normalized Helicity in Patients with Bicuspid Valve and Aortic Dilatation</td>
<td>Julio Garcia</td>
</tr>
<tr>
<td>16:30 – 16:45</td>
<td>Left Atrial 4D Flow MRI: Stasis and Velocity Mapping in Patients with Atrial Fibrillation</td>
<td>Michael Markl</td>
</tr>
<tr>
<td>16:45 – 17:00</td>
<td>Differences between 4D flow, 2D One-directional and 2D Three-directional Velocity-encoded MRI Sequences for the Estimation of Aortic Flow and Velocity</td>
<td>Emilie Bollache</td>
</tr>
<tr>
<td>17:00 – 17:15</td>
<td>Turbulence tensor quantification using ICOSA6 flow encoding</td>
<td>Henrik Haraldsson</td>
</tr>
<tr>
<td>17:15 – 17:30</td>
<td>High Resolution 4D Flow and CE-MRA utilizing Ultrashort Echo Times: Feasibility of linking Vessel Wall Enhancement, Morphology, and Hemodynamics</td>
<td>Kevin Johnson</td>
</tr>
<tr>
<td>17:30</td>
<td>Announcements</td>
<td></td>
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<tr>
<td>17:50 – 22:00</td>
<td>An evening at the Cincinnati Zoo</td>
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</table>
**Session 5: Contrast Enhanced MRA, Part 2**

<table>
<thead>
<tr>
<th>Time</th>
<th>Title</th>
<th>Presenter</th>
</tr>
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<tbody>
<tr>
<td>8:45 – 9:00</td>
<td>Identifying Motion Corruption in DCE Radial Stack of Stars Data</td>
<td>Jason Mendes</td>
</tr>
<tr>
<td>9:00 – 9:15</td>
<td>Very Short Blood T2* with Gd-based Contrast Reagents: Investigating BMS Shift</td>
<td>Gregory Wilson</td>
</tr>
<tr>
<td>9:15 – 9:30</td>
<td>DESIRE: Efficient MRI reconstruction with Split Bregman initialization and sparse regularization based on pre-learned dictionary</td>
<td>Artem Migukin</td>
</tr>
<tr>
<td>9:30 – 9:45</td>
<td>Vessel- and Dose-specific Differences in Contrast-enhanced Time-resolved 4D-MRA: An Intra-individual Quantitative and Qualitative Comparison of Gadopentetate Dimeglumine and Gadobutrol in Minipig</td>
<td>Vera Keil</td>
</tr>
<tr>
<td>9:45 – 10:00</td>
<td>Accelerated Time Resolved Contrast Enhanced MRA of Dural Arteriovenous Fistulas using Highly Constrained Reconstruction of Sparse Cerebrovascular Datasets</td>
<td>Zachary Clark</td>
</tr>
<tr>
<td>10:00 – 10:15</td>
<td>Bayer Gold Sponsor Talk: Two International, Multicenter Phase 3 Studies Evaluating both the Assessability and Quantitative Accuracy of Contrast Enhanced MRA using Gadobutrol compared to ToF MRA in Supra-Aortic and Renal Arteries</td>
<td>Jacob Agris</td>
</tr>
<tr>
<td>10:15 – 10:30</td>
<td>Philips Gold Sponsor Talk: Advances in DIXON Contrast Enhanced MRA</td>
<td>Marc Kouwenhoven</td>
</tr>
<tr>
<td>10:30 – 11:00</td>
<td>Break</td>
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Session 6: Poster Blitz!

11:00 – 11:05  Introduction and Ground Rules

11:05 – 11:10  Classification of human peripheral arterial atherosclerotic plaques with T2 and Ultra-short echo time MRI  Trisha Roy ★

11:10 – 11:15  Global measures of myocardial strain predict infiltrative cardiomyopathy at heart deformation analysis: A feasibility study at 1.5T  Marcos Ferreira Botelho ★

11:15 – 11:20  Dynamic MR Imaging of Carotid Webs  Mari E. Boesen ★


11:25 – 11:30  High Resolution Whole Heart Coronary Plaque Characterization with Integrated Anatomical Reference  Yibin Xie ★

11:30 – 11:35  Patient-specific 3D printed models of the aorta for pre-procedural planning in transcatheter aortic valve replacement: A proof of concept study  Beth Ripley ★

11:35 – 11:40  Application of Full Turbulent Tensor in Estimation of MR-Based Relative Pressure  Sarah Kefayati ★

11:40 – 11:45  Feasibility of time-of-flight MR angiography in human pregnancy for imaging the fetal and placental vasculature  Uday Krishnamurthy ★

11:45 – 11:50  A 9 Channel Carotid Coil Designed for Integration with Clinical Head coils  Michael J. Beck ★

11:50 – 11:55  Fusion of Ferumoxytol MRA and Non-Contrast CT in TAVR Planning  Takegawa Yoshida ★

11:55 – 12:00  Estimating brain distensibility with quantitative magnetic resonance cerebrospinal fluid flow measurements  Annamarie T. Helpling ★

12:00 - 12:05  Arm position alters the geometry of Brachial artery and Basilic vein  Connor Macdonald ★

12:05 - 13:30  Lunch
## Poster Session 1

**13:30 – 14:15**

<table>
<thead>
<tr>
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<tr>
<td>Dynamic MR Imaging of Carotid Webs</td>
<td>Mari E. Boesen</td>
</tr>
<tr>
<td>In vivo Cardiac Blood Oxygen Saturation Mapping using Quantitative Susceptibility Mapping</td>
<td>Yan Wen</td>
</tr>
<tr>
<td>High Resolution Whole Heart Coronary Plaque Characterization with Integrated Anatomical Reference</td>
<td>Yibin Xie</td>
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<tr>
<td>Patient-specific 3D printed models of the aorta for pre-procedural planning in transcatheter aortic valve replacement: A proof of concept study</td>
<td>Beth Ripley</td>
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<tr>
<td>MR Evaluation of the Cerebrovasculature in the Neonatal ICU</td>
<td>Jean Tkach</td>
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<td>Ferumoxytol across the Age Spectrum: a Single Center Experience of Safety</td>
<td>Kim-Lien Nguyen</td>
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<td>Black-Blood Late Gadolinium-Enhancement MR Imaging of Myocardium</td>
<td>Gregory Wilson</td>
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<tr>
<td>Assessment of tortuosity and flow in abdominal aortic aneurysms with ferumoxytol-enhanced magnetic resonance imaging</td>
<td>Farshid Faraji</td>
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<tr>
<td>Signal intensity measurement of the liver vessels in patients suffering from liver lesions with Gd-Eob-DTPA and Gd-BOPTA enhanced MRI/ MRA</td>
<td>Manuela Aschauer</td>
</tr>
</tbody>
</table>

*Passariello Award Competitor*
Poster Session 2

14:15 – 15:00

Diffuse myocardial fibrosis in diabetes mellitus type-II (DM-II) assessed by Cardiac Magnetic Resonance T1 mapping technique: preliminary results.  
Federica Ciolina

Application of Full Turbulent Tensor in Estimation of MR-Based Relative Pressure  
Sarah Kefayati ★

Feasibility of time-of-flight MR angiography in human pregnancy for imaging the fetal and placental vasculature  
Uday Krishnamurthy ★

A 9 Channel Carotid Coil Designed for Integration with Clinical Head coils  
Michael J. Beck ★

Fusion of Ferumoxytol MRA and Non-Contrast CT in TAVR Planning  
Takegawa Yoshida ★

Estimating brain distensibility with quantitative magnetic resonance cerebrospinal fluid flow measurements  
Annamarie T. Helpling ★

Arm position alters the geometry of Brachial artery and Basilic vein  
Conor Macdonald ★

Free-Breathing Non-Contrast Pulmonary MRA in the Neonatal ICU  
Jean Takch

Quantification of myocardial motion patterns in patients with hypertrophic- and dilated-cardiomyopathy using heart deformation analysis  
Kai Lin

Linear sign in cystic brain lesions ≥ 5mm on T2-weighted images and time-of-flight MR angiography: A suggestive feature of enlarged perivascular space on 3.0-T MR imaging  
Bum-Soo Kim

Single Breath-Hold Real-Time Cardiac Cine MR for Evaluation of Left Ventricular Function  
Tomoyuki Kido

Carotidynia MRI imaging findings  
George Bolotin

★ Passariello Award Competitor
### Session 7a: Ferumoxytol

<table>
<thead>
<tr>
<th>Time</th>
<th>Title</th>
<th>Presenter</th>
</tr>
</thead>
<tbody>
<tr>
<td>15:00 – 15:10</td>
<td>Steady-state ferumoxytol enhanced magnetic resonance angiography of the lower extremities provides optimal characterization of vascular lesions for peripheral arterial disease patients with renal failure</td>
<td>Evan Lehrman</td>
</tr>
<tr>
<td>15:10 – 15:20</td>
<td>Ferumoxytol enhanced Magnetic Resonance Angiography in stage 4 and 5 Chronic Kidney Disease</td>
<td>Alex Vesey</td>
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<tr>
<td>15:20 – 15:30</td>
<td>Ferumoxytol in TAVR Workup</td>
<td>Paul Finn</td>
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<tr>
<td>15:30 – 15:40</td>
<td>Ferumoxytol MRA as an Alternative to CTA for Common Chest Indications: TAVR and Pulmonary Embolism</td>
<td>Michael Hope</td>
</tr>
<tr>
<td>15:40 – 15:50</td>
<td>DARC-MR Lymphangiography Using a Combination of Gadolinium and USPIO Contrast: an Update</td>
<td>Jeffrey H. Maki</td>
</tr>
<tr>
<td>15:50 – 16:00</td>
<td>Ferumoxytol in Pediatric Congenital Heart Disease: Early Results with 4D Multiphase Steady State Imaging with Contrast (MUSIC) Enhancement</td>
<td>Kim-Lien Nguyen</td>
</tr>
<tr>
<td>16:00 – 16:10</td>
<td>Adverse reactions to intravenous administration of ferumoxytol intended for use as magnetic resonance imaging contrast</td>
<td>Alex Vesey</td>
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<tr>
<td>16:10 – 16:30</td>
<td>Discussion</td>
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<tr>
<td>16:30 – 16:50</td>
<td>Coffee Break</td>
<td></td>
</tr>
</tbody>
</table>
Session 7b: Ferumoxytol

16:50 – 17:00  Ferumoxytol MRA: Minimizing Table Time in Claustrophobic Patients  Paul Finn

17:00 – 17:10  Ferumoxytol-Enhanced Motion-Corrected Accelerated 4D Flow MRI as a Single Sequence Congenital Heart Disease Exam: Validation of Functional and Segmental Analysis  Joseph Cheng

17:10 – 17:20  Accelerated Four-dimensional, Multi-phase, Steady-state Imaging with Contrast Enhancement using Parallel Imaging and Compressed Sensing  Ziwu Zhou

17:20 – 17:30  Cardiac and Respiratory Self-Gated 4D Multi-phase Steady-state Imaging with Ferumoxytol Contrast (MUSIC)  Fei Han

17:30 – 17:40  Quantitative myocardial perfusion with dynamic ferumoxytol enhanced MRI  Aleksandra Radjenovic

17:40 – 17:50  Flip-Angle optimization in Ferumoxytol-MRA: Preliminary results using different dose schemes and comparison with Gadobenate-MRA  Tilman B. Schubert

17:50 – 18:00  Discussion

18:00  Announcements

18:10  Board busses for the banquet at the ballpark
**Scientific Sessions**

**Friday, September 18th, 2015**

**Session 8: New Techniques, Part 2**

8:45 – 9:00  
**Time of Arrival Parametric Mapping derived from Fast High Resolution Whole Brain Contrast Enhanced 4D MRA improves the anatomic display of contrast kinetics in patients with brain vascular malformations.**  
Tilman B. Schubert

9:00 – 9:15  
**Intracranial Dual-Venc 4D flow MRI at 7T**  
Susanne Schnell

9:15 – 9:30  
**Comprehensive Cerebrospinal Venous Assessment in Patients and Healthy Controls – Results from CCSVI Study**  
Eric M Schrauben

9:30 – 9:45  
**Evaluation of the renal arterial wall with High Resolution MR imaging after endovascular renal denervation**  
Salim Si-mohamed

9:45 – 10:00  
**Flow induced artifacts in two-point Dixon fat-water separation: Incidence and potential diagnostic pitfalls**  
Tilman B. Schubert

10:00 – 10:15  
**Compact 3T Scanner: Initial Experience with 80 mT/m, 700 T/m/s Gradients**  
Matt A. Bernstein

10:15 – 10:30  
**Contrast-Enhanced Perianal Fistula Imaging with Dixon-Based Fat Suppression**  
Eric Stinson

10:30 – 11:00  
**Break**

**Session 9: Non-contrast MRA**

11:00 – 11:15  
**Revisit of Non-Contrast Aortic Arch FBI at 3T**  
Mitsue Miyazaki

11:15 – 11:30  
**7-Minutes Fresh Blood Imaging using Variable TR and Variable Refocusing Flip Angle for Non-Contrast Peripheral MR Angiography at 3T**  
Xiangzhi Zhou

11:30 – 11:45  
**Breath-hold Inner-Volume Radial Quiescent-Interval Slice-Selective (QISS) of the Heart, Aorta and Renal Arteries**  
Robert R. Edelman

11:45 – 12:00  
**Quiescent-Interval Slice-Selective Fast Low-Angle Shot Magnetic Resonance Angiography of the Extracranial Carotid Arteries**  
Ioannis Koktzoglou

12:00 – 12:15  
**Siemens Gold Sponsor Talk: Trends in MRA**  
Shiv Giri

12:15 – 13:45  
**Lunch**

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*Potchen Award Competitor*
### Session 10: Cardiac, Part 2

<table>
<thead>
<tr>
<th>Time</th>
<th>Title</th>
<th>Presenter</th>
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<tbody>
<tr>
<td>13:45 – 14:00</td>
<td><strong>Non-Contrast Myocardium Perfusion: Technical Differences between 4D Time-SLIP with Tagging Aortic Root and FAIR</strong></td>
<td>Mitsue Miyazaki</td>
</tr>
<tr>
<td>14:00 – 14:15</td>
<td><strong>Characteristic Streak Frequency Filtering with Modulo-Prime Spokes (MoPS) Cine-CMR</strong></td>
<td>Keigo Kawaji</td>
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<tr>
<td>14:15 – 14:30</td>
<td><strong>A qualitative assessment of first-pass perfusion bolus timings in the assessment of myocardial ischemia: A magnetic resonance study</strong></td>
<td>Jonathan Weir McCall</td>
</tr>
<tr>
<td>14:30 – 14:45</td>
<td><strong>Longitudinal assessment of renal perfusion and oxygenation in transplant donor-recipient pairs using ASL and BOLD MRI</strong></td>
<td>Sean Fain</td>
</tr>
<tr>
<td>14:45 – 15:00</td>
<td><strong>A Paradigm Shift in Cardiac MRI? Motion Reconstruction Rather Than Motion Correction</strong></td>
<td>Matthias Stuber</td>
</tr>
<tr>
<td>15:00 – 15:30</td>
<td><strong>Break</strong></td>
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</tr>
</tbody>
</table>
Session 11: Vessel Wall

15:30 – 15:45  High resolution MRI for characterization of inflammation within abdominal aortic aneurysm
               Chengcheng Zhu

15:45 – 16:00  Motion insensitive Carotid Artery Wall Imaging Using Stack of Stars technique and Inversion Recovery preparation (3D IR-Prep-SOS)
               Seong-Eun Kim

16:00 – 16:15  3D Black Blood VISTA Magnetic Resonance Vessel Wall Imaging of the Thoracic Aorta in Young, Healthy Adults: Reproducibility and Implications for Efficacy Trial Sample Sizes
               Tim Leiner

16:15 – 16:30  Intracranial Vessel Wall MR Registry
               Qi Yang

16:30 – 16:45  Intracranial Vessel Wall Imaging at 3T and 7T
               David Saloner

16:45 – 17:00  Evaluation of Dissecting Aneurysm Wall of Vertebral Artery Using 3T MRI
               Keiji Igase

17:00 – 17:15  Carotid plaque permeability measured by high and low molecular weight contrast
               Jason Mendes

17:15 – 17:55  Closing Remarks
               - Meeting wrap up
               - Announcement of the Potchen Award and runners up
               - Announcement of the Passariello Award and runners up
               - An invitation to attend the 28th annual meeting in Chicago
               - Thanks and recognition

18:00  Evening Event  --  Dinner at the Hofbräuhaus, Newport, Kentucky

Potchen Award Competitor
Oral Presentations

Oral Presentations will be 12 minutes long. Each talk will be followed by a 3 minute question/answer period. Presentations should be prepared using PowerPoint and be formatted using a 16x9 aspect ratio to ensure maximum use of projectors. Presentations with a 4x3 aspect ratio will be acceptable, but the projectors will leave margins on either side of the slide. Both PC and Mac computers will be available for presentations.

Important note:

Sessions 7a and 7b on Thursday afternoon will be dedicated to Ferumoxytol (September 17, 3:00PM – 6:00PM). If your presentation is during Session 7a or 7b then please know that your talk must be 10 minutes long. Questions for talks in the Ferumoxytol sessions will be deferred to a discussion period at the end of each session.

Poster Presentations

Posters must fit within a 4 foot x 4 foot (i.e. 122cm x 122 cm) area for mounting (tacks will be provided). Posters will be put up at the beginning of the conference (Tuesday or Wednesday), and should be on display through Friday. Poster presenters are requested to stand in front of their posters during one of two poster presentation sessions on Thursday afternoon (1:30 – 2:15PM, or 2:15 – 3:00PM). Please consult the program to see which session you will be presenting.

Students/Trainees making a poster presentation are eligible for the Passariello Award for best poster. Student/Trainees are requested to prepare a 4 minute PowerPoint presentation to be given at the Poster Blitz on Thursday morning to entice viewers to their poster.
Walk from Hampton Inn Suites to Kingsgate Marriott
Distance: 0.2 Miles Time: 4 Minutes
The Pre-Function Room will be where you can find the Corporate Sponsors Exhibit tables and the break areas.

The downstairs lobby area is where the posters will be located.
Top Rated Taxi Services:

Towne Taxi  
(513) 761-7700

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Airport Phone: +1 859 586 0166

Kingsgate Marriott direction: 15 miles NE

• Bus service, fee: $15 USD (one way)
• Estimated taxi fare: $32 USD (one way)

Cincinnati Weather

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<th>Average High</th>
<th>Average Low</th>
<th>Average Precipitation</th>
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<tr>
<td>SEPT.</td>
<td>78</td>
<td>56</td>
<td>2.8</td>
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</table>

NOTE: All of the social events are partially outdoors. Be prepared!
Social Events

Tuesday, September 15th

Welcome Reception at the Kingsgate Marriott – the conference venue. The event will start at 6:05 p.m., at the end of the Educational Session. This casual gathering will feature tastes of Cincinnati including Cincinnati style chili, Goetta (a sausage invented in Cincinnati), Graeter’s Ice Cream and some great local beers.

Wednesday, September 16th

Trolleys will take us from Kingsgate Marriott Conference Center to the Cincinnati Zoo & Botanical Garden, located at 3400 Vine Street, beginning at 5:50 p.m. where we will enjoy an evening on the Africa Deck & Patio overlooking the Africa savanna.

Harapan, a Sumatran rhino, was born at the Cincinnati Zoo in 2007. Ipuh, Harapan’s father, was believed to be one of the oldest Sumatran rhinos in captivity when he died. His body was preserved and is on display at the Cincinnati Museum Center.

The wild Sumatran rhino population has decreased by more than 50% in the past decade, which now makes them the most endangered large mammals on the planet. Risks include: poaching, encroachment, roads being built through habitats, and deforestation due to the palm oil industry.

There are no more than 100 Sumatran rhinos left in the world and Harapan is the only Sumatran rhino in North America.

Arrangements are being made for Harapan to be transported to Indonesia in spring or fall of 2015 because it’s his only chance to contribute to the survival of his species.

http://cincinnatizoo.org/conservation/crew/rhino-signature-project/sumatran-rhino/
Thursday, September 17th

Buses will take us from Kingsgate Marriott Conference Center to the Great American Ball Park, home of the Cincinnati Reds, located at 100 Joe Nuxhall Way, beginning promptly at 6:05 p.m. We will start out the evening on the warning track behind home plate with some hors d’oeuvres. While there won’t be a game on the field, there might be some baseballs nearby!

For dinner, we will head up to the Handlebar at the Riverfront Club for an upscale buffet and enjoy the beautiful view, second to none in the tri-state area.
MRA Conference attendees will end the week at the first Hofbräuhaus outside of Germany, located at 200 East 3rd Street, Newport, KY. Buses will leave Kingsgate Marriott at 6:15 p.m. Our event will take place in a private section of the biergarten. Friday evening will be the first night of Oktoberfest in Cincinnati, and for those who want to join the festivities, it is only a short walk across the Ohio River on the “Purple People Bridge” to the heart of downtown.

The Hofbräuhaus Newport was modeled after the renowned 400+ year old Hofbräuhaus in Munich, Germany. Hofbräuhaus beer is brewed using original recipes handed down by the Duke of Bavaria, over 400 years ago.

A Brew Master oversees the brewing of four, all year round beer varieties, plus seasonal specialties like Oktoberfest, Maibock, Pilsner and Hefe Weizen Dunkel.

For more than a decade, Americans have enjoyed these fine beers in the Munich tradition. They are easy on the palate, yet tasty and refreshing.
Spousal Program

Day 1

9:15 Pickup at Kingsgate Marriott

Drive through quaint MainStrasse Village in Covington, KY. Learn about the German heritage of the Greater Cincinnati area. Hear famous folk tales of the Pied Piper and the Goose Girl.

Next stop is the Cathedral Basilica of the Assumption. The design of this church was inspired by the Notre Dame Cathedral in Paris. The north transept contains the world’s largest handmade church stained glass window.

Next stop is the Roebling Flood Wall Murals. These 16 beautiful murals depict scenes from Covington’s history from the 1800s to 2003. The site also offers beautiful views of the Roebling Suspension Bridge and Downtown Cincinnati.

Next we visit Riverside Drive, where gorgeous old mansions built by riverboat captains are located. Hear stories of the Underground Railroad, as well as the tragic story of the Garner’s escape. We again see magnificent views of the Cincinnati skyline. Hear trivia and amazing tales about “Sin City” and its gambling past of bygone days in Newport, KY.

After a short drive crossing the much-navigated Ohio River, we re-enter Cincinnati. A drive up to Mt. Adams takes us to the Cincinnati Art Museum, where we have time for lunch in the award-winning café and briefly look around the museum.

After lunch, take a lovely drive around Mt. Adams, often referred to as a mini San Francisco, with a stop at the Vietnam Memorial next to President’s Grove. Then it’s on to downtown Cincinnati, Fountain Square, P & G Corporate Headquarters, the Taft Museum, the Mural of Cincinnatus, Music Hall.

3:15 Drop off at Kingsgate Marriott

Day 2

9:15 Pickup at Kingsgate Marriott

Take a walking tour of Findlay Market, Cincinnati’s destination for fresh foods and interesting gifts.

From there, continue to newly redesigned Washington Park and the Over-the-Rhine neighborhood. Hear stories of the area and admire the fabulous architectural details. Eat lunch at your choice of OTR’s many wonderful restaurants, several of which have been featured on Guy Fieri’s Diners, Drive-ins and Dives on the Food Network.

After lunch, we take a drive to Spring Grove Cemetery and Arboretum, which took its inspiration from cemeteries such as Père Lachaise Cemetery in Paris and Mount Auburn Cemetery in Cambridge, MA. Tour the beautiful grounds, which include 12 ponds, many fine tombstones and memorials, and various examples of Gothic Revival architecture. Many species of National Champion trees are found here, as well.

3:15 Drop off at Kingsgate Marriott
Executive Committee
Jeffrey (Jeff) Maki – President, MRA Working Group, University of Washington
Matthias Stuber – Past-President, MRA Working Group, CIBM/CHUV/UNIL
Charles (Chuck) Dumoulin – Chair, MRA Working Group, Cincinnati Children’s Hospital Medical Center
Robert Fleck – Co-Chair, MRA Working Group, Cincinnati Children’s Hospital Medical Center

Organizing Committee
Donna Lyons – Conference Manager, Cincinnati Children’s Hospital Medical Center
Janette Wallace – Senior Conference Consultant, Robarts Research Institute
Shaina Turgeon – Conference Coordinator, Robarts Research Institute

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Robert Edelman
Richard Frayne
Tom Grist
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Bum-soo Kim
Tim Leiner
Debiao Li
Michael Markl
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Martin Prince
Steve Riederer
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Contrast for Life

GE Healthcare
Other Sponsors
MRA
Rising to New Heights
Chicago 2016

September 21st - 23rd
Chicago, Illinois, USA

Pre-conference Educational Workshop
September 20th

President: Charles (Chuck) Dumoulin
Organizers: James Carr, Michael Markl