

## **Precision Imaging Agents and Theranostics: Concept to Clinic**

*Presented by*

*Russell H. Morgan Department of Radiology and Radiological Science*

**November 8-10, 2019**

Tilghman Auditorium

Johns Hopkins School of Medicine

Baltimore, Maryland

### **Description**

Molecular targeting is the foundation of current therapies for a variety of diseases including cancer. Imaging is central to the assessment of those therapies, and the clinical use of imaging technologies for their assessment, specifically positron emission tomography (PET), single photon computed tomography (SPECT) and magnetic resonance imaging (MRI), continues to grow. The anatomical and functional information provided by those imaging technologies enables us to diagnose, stage, and monitor disease response to therapy. There also has been tremendous growth in (radio) synthetic methods, the development of new imaging agents and theranostics over the last few years, however, the number of agents evaluated in humans and receive FDA approval still remains a few.

Often, validation and clinical translation aspects of an imaging agent or a theranostic require a multi-disciplinary expertise. Despite the need for interdisciplinary collaboration, molecular imaging researchers often work in silos of chemistry, physics, and molecular biology pertaining to development and validation of imaging agents and theranostics.

Our goal in providing this course is to dismantle the silos in molecular imaging and theranostic agent development and clinical translation. We aim to provide a broad understanding of all aspects of an imaging or theranostic agent development with a specific emphasis on team science and translation.

### **Target Audience**

This activity is intended for radiologists, nuclear radiologists, researchers and radiologic technologists.

### **Objectives**

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

- Identify, validate and prioritize imaging targets for probe development.
- Choose the right in vitro and in vivo model systems for imaging agent characterization/validation.
- Practice appropriate image acquisition and analyses methods.
- Identify the right imaging application and contrast methods.
- Appraise the clinical potential and application of imaging agents.
- Describe the necessary steps for clinical translation.
- Formulate a strategy for clinical translation of an imaging agent.

### **Accreditation Statement**

The Johns Hopkins University School of Medicine is accredited by the Accreditation Council for Continuing Medical Education (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 18.75 *AMA PRA Category 1 Credits*™. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

**Policy on Presenter and Provider Disclosure**

It is the policy of the Johns Hopkins School of Medicine that the presenter and provider globally disclose conflicts of interest. The Johns Hopkins School of Medicine OCME has established policies that will identify and resolve conflicts of interest prior to this educational activity. Detailed disclosure will be made prior to presentation of the education.

**General Information**

**Registration**

Friday, November 8, 2019  
7:15am – 8:00am

**Location**

**Thomas B. Turner Building**  
Johns Hopkins School of Medicine  
720 Rutland Avenue  
Baltimore, Maryland 21205

The Turner Building is located on Rutland Avenue at Monument Street. Directions and campus parking information are available on our website under the Contact Us tab at <https://HopkinsCME.cloud-cme.com>  
Handicapped parking is available in the nearby Rutland Garage. Johns Hopkins is smoke-free.

**Fees**

**Register Online:**

<https://hopkinscme.cloud-cme.com/default.aspx?P=5&EID=19030>

**Methods of Payment:** We require full payment prior to the start of the activity. On-site payments by credit card only. The registration fee includes instructional materials, continental breakfasts, refreshment breaks and lunches.

Physician/Non-physician Faculty .....	\$ 425
Clinical Technicians/Clinical Fellows/Residents.....	\$ 300
Research Fellows/Graduate Students.....	\$ 175
Optional Hands-On Workshop (non-CME) .....	\$ 100

You will receive a confirmation by e-mail. If you have not received it by November 2, 2019, call (410) 502-9636 to confirm that you are registered. A transcript of attendance will be available upon attestation of your credit hours and submission of the post activity online evaluation.

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 **November 2, 2019**. 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 **November 2, 2019**. No refunds will be made thereafter. Transfer of registration to another Johns Hopkins activity in lieu of cancellation is not possible.

### **Syllabus**

The syllabus will be accessible online and via your mobile device in the CloudCME App prior to the activity.

### **Hotel and Travel Information**

Baltimore Marriott Waterfront Hotel (800) 228-9290  
700 Aliceanna Street (410) 385-3000  
Baltimore, Maryland FAX: (410) 385-0330  
21202

Website: [www.baltimoremarriottwaterfront.com](http://www.baltimoremarriottwaterfront.com)

### **Hotel Reservation Cut-Off Date: October 17, 2019**

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 Hotel is a full-service 32-story landmark located near all the Inner Harbor attractions. Make your reservation online at <https://book.passkey.com/e/49999236> or call the hotel directly and specify that you are attending the Johns Hopkins Precision Imaging Conference to receive the special group rate of \$160, single or double, plus tax. Transportation to Hopkins campus will not be provided. On-site parking is available at an additional charge. Check-in time is 4:00 p.m. Check-out time is 12:00 p.m.

### **Americans with Disabilities Act**

The Johns Hopkins 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/aph.aspx?P=5&EID=19030>

**Register by Fax** (866) 510-7088

**Register by Phone** (410) 502-9636

**Confirmation / Certificates** (410) 502-9636

**General Information** (410) 955-2959

**E-mail the Office of CME** [cmenet@jhmi.edu](mailto:cmenet@jhmi.edu)

## Program

### **Friday, November 8**

7:15	-	8:00	Registration and Continental Breakfast
8:00	-	8:15	<b>Introduction and Conference Goals</b> Sridhar Nimmagadda, PhD
8:15	-	9:00	<b>Translating New Imaging Agents: From Bench to Gantry</b> Peter Choyke, MD
9:00	-	9:45	<b>Overview of Genomics and Proteomics Databases</b> Sarah Wheelan, MD, PhD
9:45	-	10:30	<b>Is My Target Expressed Where I Think It Should Be?" Using Tissue-Based in situ Techniques To Get An Answer, While Keeping Peter Parker in Mind</b> Alan Meeker, PhD
10:30	-	10:45	Refreshment Break
10:45	-	11:30	<b>Principles and Applications of Multiplex Immunofluorescence in Immuno-Oncology</b> Nicolas Giraldo-Castillo, MD, PhD
11:30	-	12:15	<b>Cancer in Mice: Options and Challenges</b> Cory Brayton, DVM
12:15	-	1:30	Lunch
1:30	-	2:15	<b>Optimized Targeting</b> Julien Dimastromatteo, DVM, PhD
2:15	-	2:30	<b>Anesthesia Overview in Bioimaging of Animal Models</b> Jason Villano, DVM, MSc, MS, DACLAM
2:30	-	3:00	<b>Increasing the Reproducibility in Preclinical Models and Anesthesia Considerations During Image Acquisition</b> Kathleen Gabrielson, PhD
3:00	-	3:15	Refreshment Break
3:15	-	4:00	<b>The National Cancer Institute's Patient-Derived Models Repository (PDMR)</b> Yvonne Evrard, PhD
4:00	-	4:45	<b>Large Animal Models and Medical Imaging Research</b> Rebecca Krimins, DVM, MS
4:45	-	5:30	<b>Molecular Imaging Approaches for Infections</b> Sanjay Jain, MBBS

## November 9

### Track 1: Focus on Nuclear Imaging

7:45	-	8:30	Registration and Continental Breakfast
8:30	-	9:15	<b>Basics of PET Chemistry</b> Andrew Horti, PhD
9:15	-	10:00	<b>Noninvasive Molecular Imaging by Radiometal-based PET and SPECT Agents</b> Sangeeta Ray, PhD
10:00	-	10:45	<b>Radiometals: Cytotoxic Payloads for Cancer Therapy</b> Jessie Nedrow, PhD
10:45	-	11:00	Refreshment Break
11:00	-	11:45	<b>In vivo and Ex vivo Validation of Imaging Agents</b> Catherine Foss, PhD
11:45	-	12:30	<b>Applications of Multi-modality Imaging in Cancer</b> Zaver Bhujwalla, PhD
12:30	-	1:30	Lunch
1:30	-	2:15	<b>PET Acquisition and Quantitative Analysis</b> Martin Lodge, PhD
2:15	-	3:00	<b>Quantitative SPECT Imaging and Applications</b> Yong Du, PhD
3:00	-	3:45	<b>Dosimetry for Diagnostic vs Therapeutic Radiopharmaceuticals: The Ends do Justify the Means</b> George Sgouros, PhD
3:45	-	4:00	Refreshment Break
4:00	-	4:30	<b>Quantitative Molecular Imaging</b> Yuchuan Wang, PhD
4:30	-	5:15	<b>Applied Imaging Mass Spectrometry to Unravel Tumor Biology</b> Kristine Glunde, PhD

## Track 2: Focus on MR Imaging Agents

8:15	-	9:00	Registration and Continental Breakfast
9:00	-	10:00	<b>Basics of MRI Contrast Agents, MRI Pulse Sequences and Post-processing Methods for Detecting Contrast Agents</b> Stuart Berr, PhD
10:00	-	10:15	Refreshment Break
10:15	-	11:15	<b>MRI Reporter Genes: A New Route for Imaging of Therapeutic Cells and Viruses</b> Assaf Gilad, PhD
11:15	-	12:15	<b>Current Landscape of Relaxation and Heteronuclear Based MRI Exogenous Contrast Agents For Molecular Imaging of the Tumor Microenvironment and Cell Tracking</b> Dimitri Artemov, PhD
12:15	-	1:15	Lunch
1:15	-	2:15	<b>Hyperpolarized Contrast Media</b> Kayvan Keshari, PhD
2:15	-	3:15	<b>The Current Landscape of diaCEST and paraCEST Agents for Molecular Imaging</b> Michael McMahon, PhD
3:15	-	3:30	Refreshment Break
3:30	-	5:30	<b>Laboratory on F.M. Kirby Scanners: Acquiring CEST Data Tasks: Prepare phantoms, setup imaging sequences, acquire imaging datasets</b> Michael McMahon, PhD

**November 10**

7:45	-	8:30	Registration and Continental Breakfast
8:30	-	9:15	<b>Lessons Learned from Clinical Translation of Imaging Agents</b> Steven Rowe, MD, PhD
9:15	-	10:00	<b>Translation of MR Techniques to the Clinic</b> Peter van Zijl, PhD
10:00	-	10:15	Refreshment Break
10:15	-	11:00	<b>Clinical Trial Design for Radiopharmaceutical Therapies</b> Ana Kiess, MD, PhD
11:00	-	11:45	<b>IND and eIND Guidelines for Molecular Imaging Agents</b> Ravindra De Silva, PhD
11:45	-	12:30	<b>Lessons Learned from running Phase I/II Clinical Trials in Oncology</b> Adrian Murphy, MBBCh, PhD
		12:30	<b>Closing Remarks</b> Sridhar Nimmagadda, PhD

**Hands-on Workshop (non-CME)****Pre-registration Required**

1:30	-	5:00	
Station 1			<b>Hands-on training workshop for preclinical PET-MR</b>
Station 2			<b>Data Processing</b>

**Activity Director**

**Sridhar Nimmagadda, PhD**

Associate Professor of Radiology and Radiological Science

**Johns Hopkins Medicine**

**Dimitri Artemov, PhD**

Professor of Radiology and Radiological Science and Oncology

**Zaver Bhujwala, PhD**

William R. Brody Professor of Radiology and Radiological Science  
Professor of Oncology  
Vice-Chair, Radiology Research  
Director, Division of Cancer Imaging Research

**Cory Brayton, DVM**

Associate Professor of Molecular and Comparative Pathobiology  
Director, Phenotyping Core

**Ravindra De Silva, PhD**

Instructor in Radiology and Radiological Science

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Kennedy Krieger Institute

**Jason Villano, DVM, MSc, MS, DAACLAM**

Assistant Professor of Molecular and Comparative Pathobiology  
Director, Rodent Resources  
Research Animal Resources



**Guest**

**Stuart Berr, PhD**

Professor of Research, Radiology and Biomedical Engineering  
Director, Molecular Imaging Core Laboratory  
University of Virginia  
Charlottesville, Virginia

**Peter Choyke, MD**

Senior Investigator  
Molecular Imaging Program  
National Cancer Institute Center for Cancer Research  
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**Julien Dimastromatteo, PhD**

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