



Member-Initiated Symposium

MRI Advances Within the Co-Clinical Cancer Trials Network: Informing Cancer Clinical Trials Through Preclinical Imaging

[⤴ Back to Meeting Home](#) [⤵ Back to the Program-at-a-Glance](#)

MRI Advances Within the Co-Clinical Cancer Trials Network: Informing Cancer Clinical Trials Through Preclinical Imaging

Member-Initiated Symposium

Monday, 17 May 2021

Concurrent 8 17:00 - 17:30

Moderators: Joseph Ackerman & Rong Zhou

Session Number: MIS-16

Parent Session: MRI Advances Within the Co-Clinical Cancer Trials Network: Informing Cancer Clinical Trials Through Preclinical Imaging

Session Number: MIS-16

Organizers

Joseph Ackerman, Rong Zhou

Overview

This symposium was organized with the assistance of teams from the NCI Co-Clinical Imaging Research Program (CIRP) Network. The session will: (1) describe the unique technical challenges to achieving quantitative MRI (qMRI) biomarkers with small-animal models of cancer; (2) provide innovative solutions to address these challenges; and (3) show how preclinical qMRI findings can inform clinical cancer imaging trials. The initial presentation (20 min) will define challenges and potential solutions unique to preclinical qMRI. This will be followed by theme-specific presentations regarding six new qMRI advances (4 @ 1x15-minute, single-speaker; 2 @ 2x8-minute, dual-speaker): (1) achieving ultrahigh spatial resolution for murine tibia bone marrow imaging; (2) mitigating respiratory motion artifacts in DWI of mouse abdomen; (3) increasing rigor and reproducibility in hyperpolarized ¹³C metabolic MR; (4) leveraging complementary PET/MRI findings; (5) validating biomarkers using multimodal imaging; (6) predicting tumor growth and response by imaging-driven mechanistic models. A brief concluding presentation (8 min) will describe the CIRP initiative. Motivated by the increasing use of preclinical qMRI in translational cancer research, this session will complement and enhance the preclinical imaging offerings of the annual meeting. It will provide a timely perspective on the unique experimental challenges posed by small-animal MRI and on the technical innovations that

provide solutions.

Target Audience

Researchers engaged in quantitative small-animal MRI and entrepreneurs aiming to enhance preclinical MRI capability by hard/software innovations.

Educational Objectives

As a result of attending this course, participants should be able to:

Upon completion of this course, participants should be able to: - Explain the unique challenges to preclinical qMRI posed by small-animal models; - Describe innovative solutions to these challenges, leading to improvements in resolution, motion mitigation, rigor, and repeatability; - Appraise the value of integrating qMRI biomarkers with other data platforms for cancer research; and - Learn about an opportunity to join the NCI CIRP Network as a grantee or an associate member.

Solving Fundamental Challenges in Preclinical MRI to Improve Cancer Clinical Trials

Thomas Yankeelov

University of Texas at Austin

MR Imaging of Mice Tibia for Co-Clinical Studies of Myelofibrosis

Ghoncheh Amouzandeh

University of Michigan

Improving Murine Abdominal DWI by Radial k-Space Sampling & Deep Learning

Yong Fan¹, Steven Pickup²

University of Pennsylvania¹, University of Pennsylvania²

Increased Rigor & Reproducibility in Hyperpolarized ¹³C with Mouse Cancer Models

Renuka Sriram

University of California, San Francisco

Promises, Challenges & Real-World Experience with PET/MR Imaging of Small-Animal Models in Co-Clinical Cancer Research

Charles Manning¹, Kooresh Shoghi²

The University of Texas MD Anderson Cancer Center¹, Washington University in St. Louis²

Advances in Validation of Imaging Markers: Connecting 3D Multi-Modal MR Imaging & 2D Pathology in a Mouse Model of Sarcoma

Stephanie Blocker

Duke University

Predicting Therapeutic Response via Quantitative MRI

Anum Kazerouni

University of Washington

The NCI Co-Clinical Imaging Research Resource Program (CIRP)

Huiming Zhang

National Cancer Institute