

NCI Virtual Meeting via Webex Event | June 22-23, 2020

June 22, 2020, Day 1

- 8:30 am** **Introduction**
Huiming Zhang, PhD, DCTD, NCI
- 8:35 am** **Welcome**
Janet Eary, MD, Associate Director, DCTD, NCI

Part I **CIRP Program**

Moderator: Huiming Zhang, PhD

- 8:40 am** **Session I CIRP program and individual teams**
CIRP Status Update
Huiming Zhang, PhD, DCTD, NCI
- 9:00 am** **New CIRP Team presentations**
UNIVERSITY OF MICHIGAN QUANTITATIVE CO-CLINICAL IMAGING RESEARCH RESOURCE
Brian Ross, PhD, University of Michigan
- 9:30 am** **INTEGRATING OMICS AND QUANTITATIVE IMAGING DATA IN CO-CLINICAL TRIALS TO PREDICT TREATMENT RESPONSE IN TRIPLE NEGATIVE BREAST CANCER**
Mike Lewis, PhD, Baylor College of Medicine

10:00 am **Break**

- 10:15 am** **CIRP team progress**
VU Predict
Charles Manning, PhD, Vanderbilt University
- 10:45 am** **PENN QUANTITATIVE MRI RESOURCE FOR PANCREATIC CANCER**
Rong Zhou, PhD, University of Pennsylvania
- 11:15 am** **THE DUKE PRECLINICAL RESEARCH RESOURCES FOR QUANTITATIVE IMAGING BIOMARKERS**
Cristian Badea, PhD, Duke University
- 11:45 am** **WASHINGTON UNIVERSITY CO-CLINICAL IMAGING RESEARCH RESOURCE**
Kooresh Shoghi, PhD, Washington University at St Louis

12:15 pm Lunch Break

1:15 pm Session II Demonstration of Web-accessible Research Resources

Moderator: Huiming Zhang, PhD

1:15 pm Development of the Co-Clinical Database (CCDB) based on XNAT

Jenny Gurney, Washington University at St Louis

1:30 pm Duke VoxPort: A Web Accessible Repository

Cristian Badea, PhD, Duke University

1:45 pm Open Source Web Browser PET Data Visualization Tool Demonstration

Charles Dupont, PhD, Vanderbilt University

2:00 pm An integrated Platform for Analysis and Visualization of Omic and Imaging Data

Mike Lewis, PhD, Heidi Dowst, Bing Zhang, PhD, Baylor College of Medicine,
Daniel Rubin, MD, Stanford University

2:20 pm Break

Part II CIRP Network and Working Groups

2:30 pm Session III CIRP Network, status and progress

Moderator: Charles Manning, PhD

CIRP Network Update

Cristian Badea, PhD

3:00 pm Session IV AMCT WG: progress, directions and challenges

Moderator: Charles Manning, PhD

Working group updates

Ann Richmond, PhD, Vanderbilt University

3:30 pm Presentations:

Using genetically engineered mouse models of cancer for imaging and co-clinical trials

David Kirsch, MD/PhD, Duke University

3:45 pm Fidelity of Patient-derived Xenografts in Pre-clinical Trials

Mike Lewis, PhD, Baylor College of Medicine

4:00 pm Humanized PDX mouse models –Useful for co-clinical trials?

Ann Richmond, PhD, Vanderbilt University

4:15 pm Michigan CIRP: Bone Marrow Transplant Model of Myelofibrosis

Gary Luker, MD, University of Michigan

4:30 pm Relevancy of preclinical studies to clinical trials

Peter O'Dwyer, MD, University of Pennsylvania

4:45 pm Role of co-clinical trials in improved outcomes for patients: Is there one?

Jordon Berlin, MD, Vanderbilt University

5:00 pm Panel discussions:

Moderator: Charles Manning, PhD

Panel Members: David Kirsch, MD/PhD, Michael Lewis, PhD, Ann Richmond, PhD,
Gary Luker, MD, Peter O'Dwyer, MD, Jordon Berlin, MD, Shunqiang Li, PhD

5:30 pm End of the 1st day

June 23, 2020, Day 2

8:30 am **Session V IADP WG: progress, directions and challenges**

Moderator: Rong Zhou, PhD

Working group updates

Stephen Pickup, PhD, University of Pennsylvania

9:00 am **Presentations**

Role of Phantoms in Co-Clinical Trials

Tom Chenevert, PhD, University of Michigan

9:18 am **Pre-clinical Abdominal Imaging in the Presence of Respiratory Motion**

Stephen Pickup, PhD, University of Pennsylvania

9:36 am **Dynamic Contrast Enhanced MRI: Challenges and Promise**

Joseph Ackerman, PhD, Washington University at St Louis

9:54 am **Pharmacokinetic analysis of glutamine-centric PET tracers in CRC**

Gary Smith, MD, Vanderbilt University

10:12 am **Deep learning approaches to improve preclinical imaging**

Cristian Badea, PhD, Duke University

10:30 am **Panel discussions**

Moderator: Rong Zhou, PhD

Panel Members: Tom Chenevert, PhD, Stephen Pickup PhD, Cristian Badea, PhD, Gary Smith, PhD, Joe Ackerman, PhD, Julie DiCarlo, PhD

11:00 am Break

11:15 am **Session VI Invited Briefing from Other Programs**

Moderator: Huiming Zhang, PhD

11:17 am **Generation of a novel organoid based murine platform for co-clinical development of personalized medicine in cancer**

Dr. Sean Clohessy, PhD, BIDMC

11:24am **NCI's Patient Derived Models Repository (PDMR)**

Yvonne Evrard, PhD, NCI

11:31 am **Patient Derived Orthotopic Xenograft (PDOX) Mouse Models of Pediatric Brain Tumors**

XiaoNan Li, MD/PhD, Northwestern University

11:38 am **Imaging of Children with Cancer with 18F-FDG PET/MRI**

Lucia Baratto, PhD, Stanford

11:45 am **Phantoms for Clinical, Preclinical and Micro MRI**

Stephen Russek, PhD, NIST

11:52 am **The Cancer Imaging Archive (TCIA): FAIR Data Sharing for Cancer Imaging**

Justin Kirby, PhD, NCI

11:59 am **National Cancer Institute Imaging Data Commons**

Andriy Fedorov, PhD, BWH

12:06 pm **The Cancer Research Data Commons (CRDC)**

Keyvan Farahani, PhD, NCI

12:13 pm **Questions**

12:15 pm Lunch break

1:00 pm **Session VII IMOR WG, Progress, Directions and Challenges**
Moderator: Cristian Badea, PhD

WG Updates

Dan Ayers, Vanderbilt University

1:30 pm **Metadata needs to support co-clinical imaging research**
Kooresh Shoghi, PhD, Washington University at St Louis

2:00 pm **Presentations**
Co-Clinical radiomics to interrogate tumor heterogeneity
Kooresh Shoghi, PhD, Washington University at St Louis

2:15 pm **Integrating Biomarkers Across Scales**
Anum Syed, UT Austin

2:30 pm **Big (image) data and the tumor microenvironment**
Al Johnson, PhD, Duke University

2:45 pm **Correlation of imaging and pathology to further the understanding of tumor microenvironment in pancreatic cancer**
Emma Furth, MD, University of Pennsylvania

3:00 pm **Panel discussions**
Moderator: Cristian Badea, PhD
Panel Members: Kooresh Shoghi, PhD, Anum Syed, Al Johnson, PhD, Emma Furth, MD, Dariya Malyarenko, PhD, Daniel Ayers, Daniel Rubin, MD

3:20 pm Break

3:30 pm **Session VIII CIRP Power Pitch (Poster Briefing)**
Moderator: Huiming Zhang, PhD

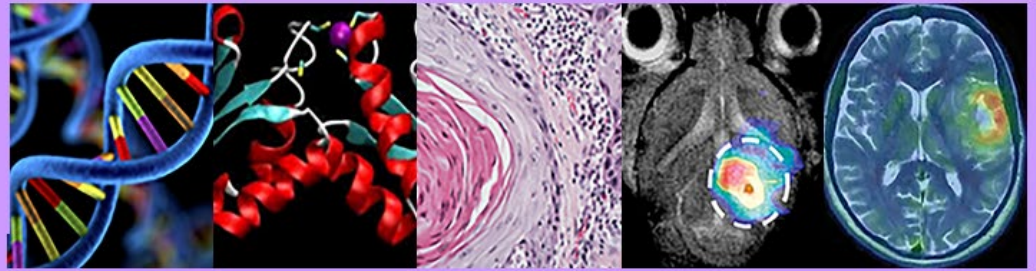
4:30 pm **Session IX CIRP Network: integration issues from WGs**
Chair & Moderator: Cristian Badea, PhD, Charles Manning, PhD

- AMCT WG Briefing, Charles Manning, PhD
- IADP WG Briefing, Rong Zhou, PhD
- IMOR WG Briefing, Cristian Badea, PhD
- Emerging ideas and methods
- Issues from CIRP network prospective
- Recommendations

Part III CIRP Management and Business

5:00 pm **Session X Business Meeting**
All SC members and NCI PDs
Chair/moderator: Huiming Zhang, PhD, Cristian Badea, PhD, Charles Manning, PhD

5:30 pm End of the 2nd day.



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Power Pitch for CIRP Posters, 3:30 - 4:30 pm, June 23, 2020

1. **MRI Assessment of a Mouse Myelofibrosis Model**
Tanner Robison, Ghoncheh Amouzandeh, et al., U Michigan
2. **Development of MRI Bone Marrow Biomarkers for Assessment of Treatment Response in a Mouse Myelofibrosis Model**
Kevin Heist, Ghoncheh Amouzandeh, et al., U Michigan
3. **Novel Glutamine Transport Inhibitor V-9302 Inhibits Melanoma Growth in Pre-Clinical Models**
Caroline Nebhan, Adria Payne, Vanderbilt University
4. **PET Imaging of Glutamine Metabolism in a Colorectal Cancer Co-Clinical Trial**
Allison S. Cohen, Adria Payne, et al., Vanderbilt University
5. **Bringing PET image analysis to average researchers**
Charles Dupont, Dan Ayers, et al., Vanderbilt University
6. **Co-clinical trial of mouse model of soft tissue sarcoma suggests a beneficial outcome of adding anti-PD1 antibody to the standard of care regimen of radiation followed by surgical resection**
R. Patel, Y. M. Mowery, et al., Duke University
7. **Decoding heterogeneous tumor MR signals: MR histology and cytometric feature mapping connects 2D pathology and *in vivo* MRI of sarcomas**
S.J. Blocker¹, J. Cook, et al., Duke University
8. **Automatic Segmentation with Radiomic Analysis of Sarcoma in Mice**
M. D. Holbrook, S. J. Blocker, et al., Duke University
9. **How the choice of PK model and AIF affect DCE-MRI detection of pancreatic cancer responses to stroma-directed drug?**
Jianbo Cao, Stephen Pickup, et al., University of Pennsylvania
10. **Radial sampling and KWIC-reconstruction reduce motion artifacts for DCE-MRI of mouse pancreatic cancer**
Stephen Pickup, PhD, Hee Kwon Song, et al., University of Pennsylvania
11. **Fast magnetic resonance imaging using adaptive convolutional neural networks for k-space data interpolation**
Yong Fan, PhD, Steven Pickup, et al., University of Pennsylvania
12. **Reproducibility of Diffusion-Weighted Radial vs. Conventional EPI Protocols in GEM Model of Pancreatic Cancer**
Hee Kwon Song, Jianbo Cao, et al., University of Pennsylvania
13. **Validation of quantitative imaging biomarkers with histopathological analyses**
Emma Furth, Yong Fan, et al., University of Pennsylvania
14. **Precision Imaging of Response to Therapy in Co-Clinical FDG-PET Imaging of Triple Negative Breast Cancer (TNBC) Patient-Derived Tumor Xenografts (PDX)**
Madhusudan A. Savaikar, Timothy Whitehead, et al., Washington University at St Louis

- 15. Intratumoral heterogeneity of radioisotopic FDG and pathology H&E images using earth mover distance and radiomics in TNBC PDX**
Sudipta Roy, Timothy Whitehead, et al., Washington University at St Louis
- 16. Precision and prediction of response to docetaxel/carboplatin therapy using machine-learning optimized radiomic features in preclinical FDG-PET imaging of TNBC Patient-Derived Tumor Xenografts**
Sudipta Roy, Timothy Whitehead, et al., Washington University at St Louis
- 17. Deep Learning based Segmentation of TNBC PDX MR Images and Sensitivity of Radiomics Features based on Segmentation Probability Boundaries**
Kaushik Dutta, Sudipta Roy, et al., Washington University at St Louis
- 18. Quantitative imaging for personalized mathematical models in oncology**
David A. Hormuth II, Angela M. Jarrett, et al., UT Austin
- 19. Biopsy Clips: Challenges to Quantitative Breast MRI**
Julie C. DiCarlo^{1,2}, Hayden Lydick, et al., UT Austin
- 20. PDXPORTAL as an integration tool for identifying image features indicative of treatment response in PDX models and Patients**
Heidi Dowst, Apollo McOwiti, et al., Stanford University, UT Austin, Baylor College of Medicine
- 21. Integrating Omics and Quantitative Imaging Data in Co-Clinical Trials: ePAD Platform for Extracting Image Features**
Daniel Rubin¹, Mete Akdogan, et al., Stanford University, UT Austin, Baylor College of Medicine