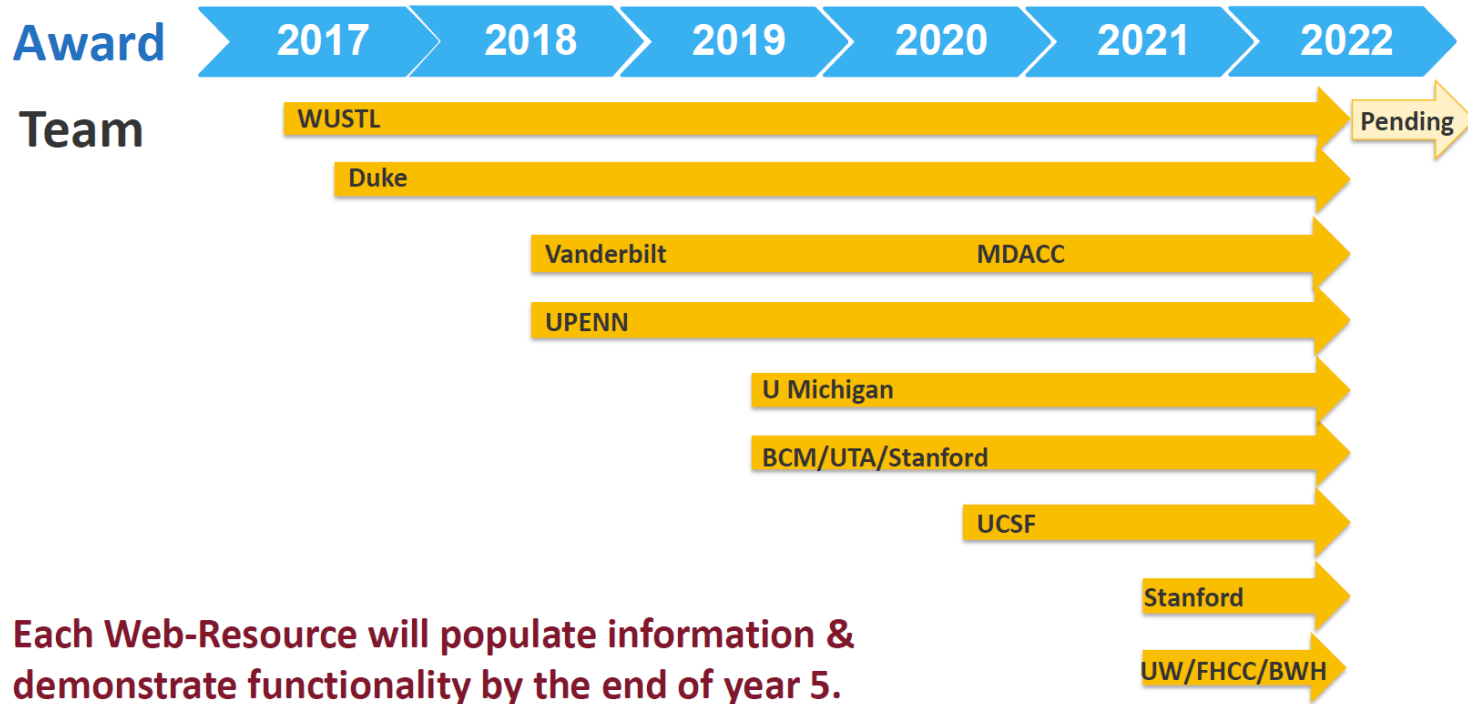


CIRP Network Update

Rong Zhou, PhD
Chair, CIRP Steering committee

*Department of Radiology
Abramson Cancer Center
University of Pennsylvania*

June 23, 2022



Each Web-Resource will populate information & demonstrate functionality by the end of year 5.

- 9 teams (13 sites)
- 8 cancers and co-clinical trials
- Co-clinical trials: treatments
 - Chemotherapy
 - Immunotherapy
 - Cancer -targeted
 - Stroma –targeted
 - Radiation
- Co-clinical trials: Imaging
 - MRI/S (DW, DCE, MTR, T1/T2/T2*, HP-¹³C)
 - PET (¹⁸F, ¹¹C)
 - CT

Cancer Type	Diseases	CIRP Team and sites
Hematology	Myelofibrosis	U Michigan
Bone	Osteosarcoma	Stanford
Breast	Triple negative breast cancer	WUSTL
	Triple negative breast cancer	Baylor/UT Austin/Stanford
Colon	Colorectal Cancer	MD Anderson Cancer Center
Lung	Non small cell lung carcinoma (NSCLC)	UW/FHCRC/BWH
Muscle	Soft tissue sarcoma	Duke
Pancreas	Pancreatic ductal adenocarcinoma (PDA)	University of Pennsylvania
Prostate	Prostate cancer /SCNC	UCSF



Special issue:
Advances in Co-clinical Quantitative Imaging Research



CIRP Steering committee consists of NCI Program director, site PIs and team investigators

Chair: Rong Zhou

Cochair: Michael Lewis

Image acquisition &
data processing (IADP)

Chair: Seth Gammon
Cochair: Renuka Sriram

Animal model and co-
clinical trial (AMCT)

Chair: Gary Luker
Cochair: Allison Cohen

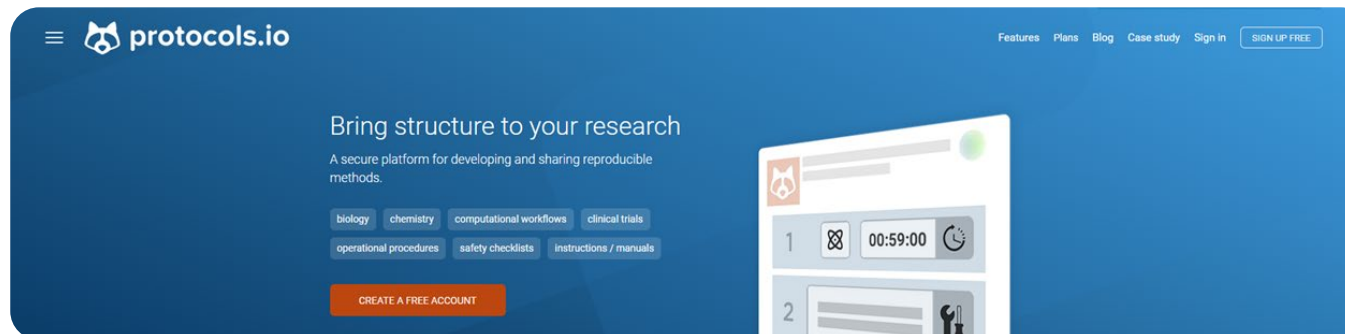
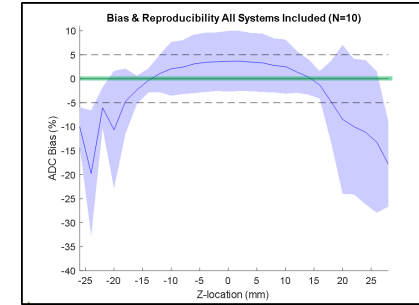
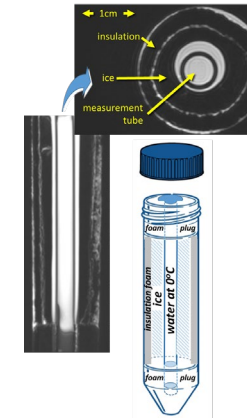
Informatic and
outreach (IMOR)

Chair Daniel Rubin
Cochair: Dariya Malyarenko

- ❑ **Collaboration:** Network-wide collaborative projects
 - Ten (10) sites ADC phantom study
 - Small Animal DICOM & Metadata
- ❑ **Integration:**
 - With Seven teams ready to demo their web-resource, WGs aim to collect and integrate specific resources across network:
 - Online Repository for Pre-clinical Imaging Protocols (PIPs)
 - Survey of CIRP teams for practices, challenges, and strengths of animal models used for co-clinical trials versus actual human clinical trials.

IADP Work Group Achievements

- Multi-site ADC phantom study completed including 10 MRI scanners -accuracy and precision will be reported at this meeting and published.
- To establish an Online Repository for Pre-clinical Imaging Protocols (PIPs):
 - One key root cause for lack of reproductivity: **Complexity of methods relative to methods space in journals**
 - template has been developed for preclinical PET/MRI/CT
 - dedicated web portal has been debated and identified



AMCT Work Group Achievements

- Survey of CIRP teams for practices, challenges, and strengths of animal models used for co-clinical trials versus actual human clinical trials
 - Survey will form basis for summary paper on CIRP website to serve as resource to the community
 - Parts of survey to be used for contribution to Tomography manuscript
- Recognition of challenges of using animal models (PDX, GEM, transplantable) in co-clinical trial setting.

Institute	Disease Site/Animal Models	Therapy	Imaging
WUSTL	Breast TNBC orthotopic PDXs	Chemotherapy	PET/MRI, FDG PET T1, T2, DW, DCE MRI
Duke	Soft Tissue Sarcoma GEMMs	Immunotherapy Radiation therapy	T1, T2, DW micro-MRI Micro-CT
MD Anderson (transferred from Vanderbilt)	RAS CRC, Subcutaneous, Orthotopic PDXs, Immuno-competent	Targeted therapy	Dual tracer dynamic PET 18F-FSPG, 11C-Acetate
UPENN	PDAC KPC GEMMs	Targeted therapy	Radial sampling MRI DCE, DW, MTC MRI
U Michigan	Myelofibrosis, bone marrow transplant GEMMs	Targeted therapy	Cryoprobe MRI DFPP, DW, MTC, Spleen MRI
Baylor/UT Austin/Stanford	Breast TNBC orthotopic PDX	Chemotherapy	DW, DCE MRI
UCSF	Prostate Metastatic PDXs	Chemotherapy	Hyperpolarized 13C MRI, T2, DW, DCE MRI
Stanford	Osteosarcoma Orthotopic tumors	Immunotherapy	T2*-weighted MRI
U Washington (Seattle)	Non-small cell lung cancer GEMMs	Immunotherapy	PET imaging

IMOR Work Group Achievements

- Collect descriptions of CIRP research projects and disseminate them in a public resource
 - Defined list of data collection items that describe CIRP studies and the types of resources the researchers are producing. Compiled these data in Excel spreadsheet available in NCIhub.
 - **Next steps:** Define and implement process for continued updates of CIRP study information to the web resource.

- Small Animal DICOM & Metadata
 - Enhance reproducibility of preclinical imaging
 - Promote open science
 - Enable search and query of database to support data mining and analytic pipelines

Data collection Items and Resources

- Disease studied
- Co-clinical study design: Animal model and number of animals
- Co-clinical study design: Human subjects eligibility criteria and number of subjects
- Co-clinical study design: Treatments given, regimen
- Co-clinical study design: Imaging performed (modality/modalities)
- Co-clinical study design: Imaging parameters
- Co-clinical study design: Imaging frequency
- Types of non-radiology imaging data collected (e.g., clinical, omics, other)
- Analyses performed on radiology imaging data
- Analyses performed on clinical data
- Analyses performed on omics data
- Data formats
- Tools used to analyze the data
- Data being made publicly available

TCIA Simple Search / Text Search (PET)

TCIA Simple Search / Text Search (PET)

▼ Anatomical Site Sort: alpha ○ num ●

36 More...

- NOT SPECIFIED 635
- BREAST 129
- CHEST 125
- EXTREMITY 55
- LUNG 40

36 More...

▼ Species

- Homo sapiens 1040
- Mus musculus 0
- Canis lupus familiaris 0

> Phantoms

Simple Search Text Search

Text Search

FDG

Text Search X

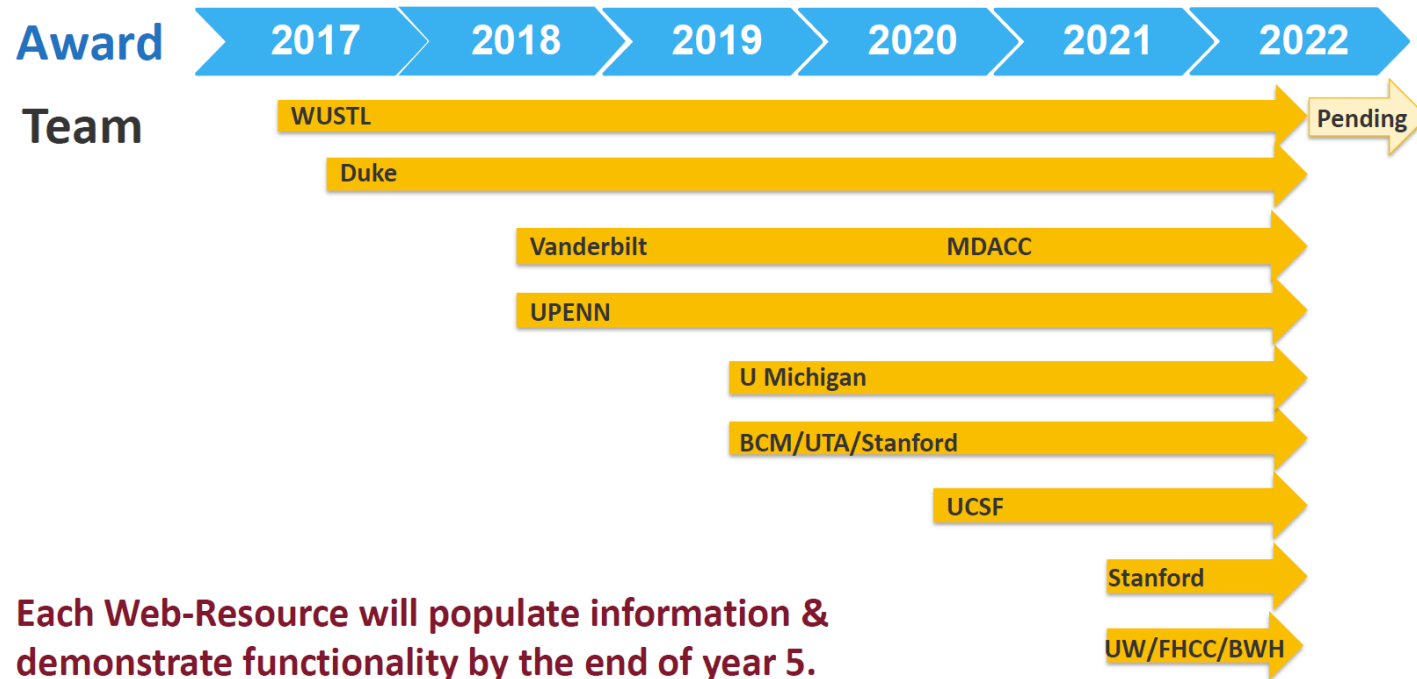
Text search enables users to query all available DICOM metadata, or you can use the field:searchTerm technique to focus on a specific DICOM element.

Example:
Body Part Examined:pancreas or 0018,0015:pancreas, which is the DICOM code for Body Part Examined, will only look in that element for the term pancreas.

See our [documentation](#) for further explanation.

CIRP Network: next step

□ CIRP network → **CIRP consortium**



Each Web-Resource will populate information & demonstrate functionality by the end of year 5.