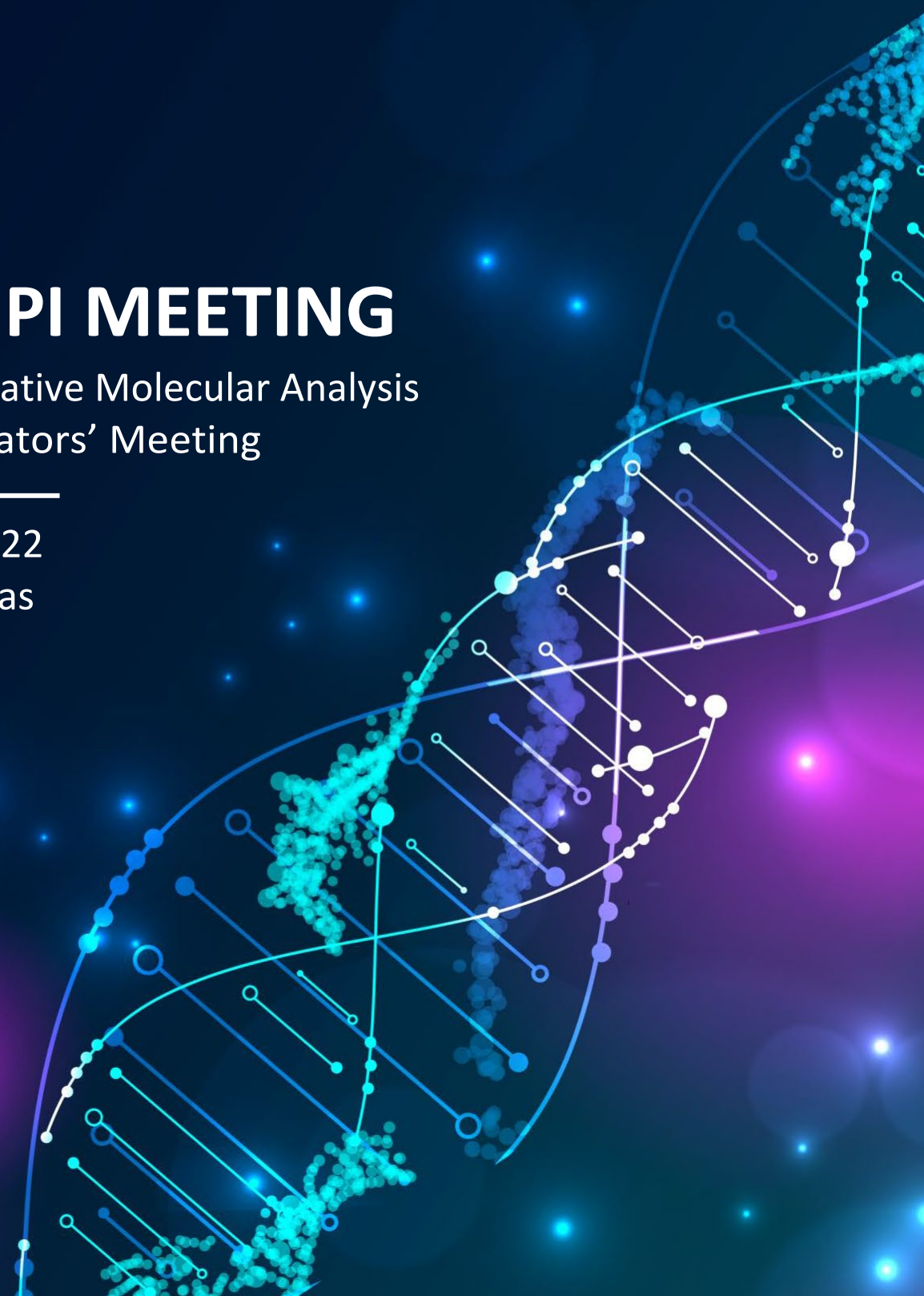
THE UNIVERSITY OF KANSAS

2022
NCI IMAT PI MEETING

23rd Annual Innovative Molecular Analysis Principal Investigators' Meeting

Nov 30 – Dec 2, 2022
University of Kansas
Lawrence, KS



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Meeting Sponsors

Agenda: Day 1, Wednesday Nov. 30, 2022

5th Floor of KU Memorial Union

8:30 – 9:00 am

Breakfast & Coffee, KU Memorial Union, Jayhawk and Big Twelve Room

9:00 – 9:40 am
KU Memorial Union, Woodruff Auditorium

Welcome

Steve Soper, *University of Kansas*
Tony Dickherber, *National Cancer Institute*

Opening Address – Resources from Cancer Centers to Support Research

Roy Jensen, *KU Comprehensive Cancer Center*

9:40 – 11:10 am

Drug Discovery & Development Technologies

9:40 **Impact of Genetic Diversity on Human Xenograft Growth**
Muneer Hasham, *Jackson Laboratory*

10:00 **Time-resolved FRET-based Allostery Sensors for Any Protein Kinase Drug Target**
Nick Levinson, *University of Minnesota*

10:20 **A Virion-display Oscillator Array and Detection Platform for Quantification of Transmembrane Protein Binding Kinetics**
Shaopeng Wang, *Arizona State University – Tempe Campus*
Heng Zhu, *Johns Hopkins University*

10:40 **High-throughput Screening Platform for cancer Drug Discovery**
Anne Plochowietz, *Palo Alto Research Center*
Laurie Parker, *University of Minnesota*

10:55 **A High-throughput Human Tumor Modeling Technology for Cancer Drug Discovery**
Hossein Tavana, *University of Akron*
Gary Luker, *University of Michigan*

11:10 – 11:40 am

Coffee Break, KU Memorial Union, Jayhawk and Big Twelve Room

11:40 am – 1:00 pm
KU Memorial Union, Woodruff Auditorium

Technology Commercialization Panel Discussion

Panelists:

- Laverne Epp, *KU Innovation Park*
- Yipeng Wang, *BioFluidica, Co.*
- Joel Greenberg, *Quadridox, Inc*
- Greg Faris, *Numentus Technologies, Inc*
- Shivani Nautiyal, *Prime Genomics, Inc*

1:00 – 2:30 pm	**Lunch – KU Memorial Union, Jayhawk and Big Twelve Room**	
2:30 – 4:00 pm	**Immuno-Oncology Tools**	
KU Memorial Union, Woodruff Auditorium	2:30	**Therapeutic Cell for Targeting Solid Tumors with Missing Biomarker** Parijat Bhatnagar, *SRI International*
	2:50	**Nanotechnology-enabled Selection of MHC-Peptide Ligands to Personalize Cancer Therapy** Georgios Alexandrakis, *University of Texas, Arlington*
	3:10	**Development of a Microfluidic Primary Cell Editing Platform (pCEP) for Personal Gene Therapy** Soojung Claire Hur, *Johns Hopkins University*
	3:30	**A Single Conical Tube Device for Precision CAR-T Cells Manufacturing** Yuguo Leo Lei, *Pennsylvania State University*
	3:45	**Secretion-responsive Hydrogels for Identification of Functional Single T Cells (SHIFT)** Rebecca Schulman, *Johns Hopkins University*
4:00 – 5:30 pm	**Poster Session I – KU Memorial Union, Ballroom**	
5:30 pm	**Adjourn to Reception (Oread Hotel; 1st Floor Ballroom); Drinks and Hors d'oeuvres.**	

Agenda, Day 2: Thursday Dec. 1, 2022

5th Floor of KU Memorial Union

8:00 – 8:30 am

Breakfast & Coffee – KU Memorial Union, Jayhawk and Big Twelve Room

8:30 – 9:00 am
KU Memorial Union
Woodruff Auditorium

IMAT Program Overview & Update
Tony Dickherber, *NCI*

Patient Research Advocacy in IMAT
Janet Freemen-Daily, *ROS1ders* &
NCI Technology Research Advocacy Partnership

9:00 – 10:30 am

Biospecimen Science Technologies

9:00 **Bio CaRGOS: Captureand Release Gels for Optimized Storage of Cancer Biospecimens**
Gautam Gupta, *University of Louisville*

9:20 **Device for Preservation of Cell Free RNA in Saliva**
Shivani Nautiyal, *Prime Genomics, Inc*

9:40 **High-content Functional Cancer Drug Testing on Micro-Cuboidal Tumor Dissections**
Albert Folch, *University of Washington*

10:00 **Novel Cryopreservation Method for Stabilization of Manufactured Therapeutic Cells**
Al Aksan, *University of Minnesota*

10:15 **Rapid Needle Biopsy Assessment at Point of Care to Advance Personalized Cancer Therapy**
Eric Seibel, *University of Washington*

10:30 – 11:00 am

Coffee Break, KU Memorial Union, Jayhawk and Big Twelve Room

11:00 am – 12:10 pm
KU Memorial Union,
Woodruff Auditorium

Novel Clinical Assays

11:00 **High-throughput Digital Droplet ELISA for Ultrasensitive Multiplexed Diagnostics**
David Issadore, *University of Pennsylvania*

11:20 **Development of a High-resolution Mapping Platform for HPV DNA Integration in Premalignant Lesions**
Cristina Montagna & Jack Lenz, *Albert Einstein College of Medicine*

11:40 **Advanced Development of Desorption Electrospray Ionization Mass Spectrometry for Intraoperative Molecular Diagnosis of Brain Cancer Using Pathology Biopsies**
Nicolas Morato, *Purdue University*

	11:55	**GESTALT Barcoding and Single-cell Transcriptomics of Tumor Cell Evolution in Personalized Tumor Models** Joshua Breunig, *Cedars Sinai Medical Center*
12:10 – 1:15 pm	**Sponsored Lunch – KU Memorial Union, Jayhawk and Big Twelve Room**	
1:15 – 2:45 pm ***KU Memorial Union, Woodruff Auditorium***	**Spatial -Omics**	
	1:15	**Spatially Resolved metagenomics to Explore Tumor-Microbiome Interactions in Human Colorectal Cancer** Warren Zipfel, *Cornell University*
	1:35	**Clinical Implementations of Spatial Transcriptomics in Tumors** Fei Chen, *Broad Institute*
	1:55	**Multiplexed Imaging of Chromatin Folding and RNA Profiles in Cancer** Siyuan Steven Wang & Mandar Muzumdar, *Yale University*
	2:15	**Multimodal Iterative Sequencing of Genomes and Single Tumor Cells** Hanlee Ji, *Stanford University*
	2:30	**High-throughput Single-cell Co-sequencing of small and large RNAs to Identify Molecular Circuitry in Cancer** Rong Fan & Jun Lu, *Yale University*
2:45 – 3:15 pm	**Coffee Break, KU Memorial Union, Jayhawk and Big Twelve Room**	
3:15 – 4:30 pm	***Panel Discussion on Engaging Early Adopters of Novel Technologies*** Panelists: • Linda Liau, *UCLA* & Josh Breunig, *Cedar Sinai* • Zach Hartman, *Duke* & Josh Snyder, *Duke* • Margarida Barroso, *Albany Medical College* & John Williams, *City of Hope*	
4:30 – 6:00 pm	**Poster Session II – KU Memorial Union, Ballroom**	
6:00 pm	**Adjourn to Group Dinner at the Jayhawk Country Club (Shuttle provided at KU Union)**	

Agenda, Day 3: Friday Dec. 2, 2022
5th Floor of KU Memorial Union

8:30 – 9:00 am

Breakfast & Coffee, KU Memorial Union, Jayhawk and Big Twelve Room

9:00 – 10:30 am
KU Memorial Union, Woodruff Auditorium

Advances in Imaging

9:00 **Label-free Cell-resolved Metabolomics for Tumor Microscopy**
Marcus Cicerone, *Georgia Institute of Technology*

9:20 **Phenotypic Assay for Drug Discovery and Personalized Medicine Based on Real-time Vibrational Spectroscopy Enhanced by Plasmonic Metasurfaces**
Gennady Shvets, *Cornell University*

9:40 **Mapping Cancer Metabolism by Mid-infrared Photothermal Microscopy**
Ji-Xin Cheng, *Boston University*

10:00 **Decoding Individual Exosomes in Cancer**
Greg Faris, *Numentus Technologies, Inc*

10:15 **Multimodality X-ray Transmission and Diffraction Scanner for Molecular Analysis of Cancer Specimens**
Joel Greenberg, *Quadridox, Inc.*

10:30 – 11:00 am

Coffee Break, KU Memorial Union, Jayhawk and Big Twelve Room

11:00 am – 12:10 pm
KU Memorial Union, Woodruff Auditorium

Research Assay Technologies

11:00 **Advancing Ultra Long-read Sequencing and Chromatin Interaction Analyses for Chromosomal and Extrachromosomal Structural Variation Characterization in Cancer**
Chia-Lin Wei and Roel Verhaak, *Jackson Laboratory*

11:20 **Rational Generation of High-performance Recombinant Antibodies to Post-translational Modifications**
Takamitsu Hattori, *New York University*

11:40 **Integrative Functional Profiling of Tumor-derived Extracellular Vesicles**
Liang Xu, *University of Kansas*
Yong Zeng, *University of Florida*

	11:55	**Comprehensive Breakpoint Analyses for Simultaneous Quantification of all DNA Double Strand Break Repair Pathways** Daniel Higginson, *Sloan-Kettering Institute for Cancer Research*
12:10 pm		**Meeting Close,** Steve Soper & Tony Dickherber

Poster Presentation Assignments

#	PI(s)	Institution	Project Title
1	N Jenny Jiang	University of Pennsylvania	An integrated therapeutic T cell receptor screening platform for adoptive cell therapy in cancer
2	Anders Hansen	Massachusetts Institute of Technology	Super-resolution microscopy for dynamic analysis of focal enhancer amplifications in cancer
3	N Jenny Jiang & Amy Brock	University of Pennsylvania	A streamlined, high-throughput platform for validation of cancer antigen presentation and isolation of cancer antigen reactive T cells
4	Maria Santore	University of Massachusetts Amherst	Paper-based Breastmilk Collection System for Facile, In-Home Use
5	Srikanth Singamaneni & Jeremiah Morrisey	Washington University	Metal-Organic Framework as Protective Coating for Cancer Biospecimen Preservation
6	Kai Chen & Charles McKenna	University of Southern California	Novel Bisphosphonate PET Probes for Myeloma Bone Disease
7	Jonathan Schneck	Johns Hopkins University	A high-throughput nanoparticle assay to characterize cancer neoepitope-specific T cells
8	Zev Gartner	University of California, San Francisco	Universal Sample Multiplexing for Single Cell Analysis
9	Arminja Kettenbach & Scott Gerber	Dartmouth College	Activity based profiling of Phosphoprotein phosphatases in cancer using mass spectrometry-based proteomics
10	Xuefeng Liu	Ohio State University	Validating Urine Derived Cancer Cells (UDCC) -- Non-Invasive and Living Liquid Biopsies -- in Bladder Cancer Clinics
11	Parijat Bhatnagar	SRI International	T-cell Biofactories for targeting extracellular matrix
12	Shuichi Hoshika	Foundation for Applied Molecular Evolution	High Quality Proteins with Multiple Post Translational Modifications
13	Jered Haun	University of California – Irvine	Microfluidic tumor tissue processing platform for single cell diagnostics
14	Rohit Bhargava	University of Illinois at Urbana-Champaign	Spectroscopy Assisted Laser Microdissection
15	Wei Li	Texas Tech University	Fractionation and Profiling of Heterogeneous Circulating Tumor Cells Using a Hyperuniform- Structured Microchip
16	Livia Schiavinato Eberlin	University of Texas, Austin	Advanced Development of the MasSpec Pen for Cancer Diagnosis and Surgical Margin Evaluation

17	Adam Hall	Wake Forest University	Detecting diverse nucleic acid biomarkers of cancer with solid-state nanopores
18	Wei Wei	Institute for Systems Biology	Liquid biopsy-based toolkits for neoantigen and cognate TCR discovery for cancer immunotherapy
19	Dino Di Carlo	University of California Los Angeles	Lab on a particle technology for functional screening of therapeutic cells
20	Chad Borges	Arizona State University	Aliquot-level visual indicators of biospecimen exposure to thawed conditions
21	Michael Deninger	Versiti Wisconsin, Inc	A Bioluminescent Assay for Direct Measurement of Sirtuin Activity in Cancer Cells
22	Hakho Lee	Massachusetts General Hospital	3D Fourier Imaging System for High Throughput Analyses of Cancer Organoids
23	Gerald Wilson	University of Maryland Baltimore	Suppressing oncogenic RNA regulons using engineered zinc finger ribonucleases
24	Rick Drake	Medical University of South Carolina	Targeted Isolation and Identification of Sialylated Glycoproteins in Cancer Tissues, Cells and Biofluids
25	Liron Bar-Peled	Massachusetts General Hospital	Chemical Proteomic Identification of Druggable Oncogenic Transcription Factors
26	Andrew Adey	Oregon Health & Science University	Accessible high-throughput single-cell genome sequencing
27	Fangliang Zhang	University of Miami School of Medicine	Targeted degradation of proteins by affinity peptide conjugated ubiquitin (APCU)
28	Joshua Snyder	Duke University	Mouse Paint: A massively combinatorial approach for illuminating tumor heterogeneity in True Color
29	Amanda Haymond Still	George Mason University	New Hybrid Molecular Modalities Comprised of DNA-Origami and Interfering Peptides as Inhibitors of Protein-Protein Interactions
30	Fu-Sen Liang	Case Western Reserve University	Spatiotemporal Epitranscriptome Editing Technology
31	Han Xiao & Jason Yustein	Rice University	Development of Bone-Targeting Antibodies for Ewing Sarcoma Using Genetic Code Expansion
32	Muneesh Tewari & Nils Walter	University of Michigan at Ann Arbor	Highly specific, amplification-free, single-molecule counting of rare, methylated DNA cancer biomarkers
33	Timothy Swager	Massachusetts Institute of Technology	Innovative Droplet Lenses for NextGen Light Sensors of Biomarkers of Inflammation
34	Sarah Hainer & Yi Shi	University of Pittsburgh	Using nanobodies to increase the sensitivity and resolution of chromatin profiling through uliCUT&RUN

35	Joel Greenberg & Anuj Kapadia	Duke University	Multimodality X-ray transmission and diffraction scanner for molecular analysis of cancer specimens
36	Al Aksan	University of Minnesota	Novel cryopreservation method for stabilization of manufactured therapeutic cells
37	Eric Seibel, Farzad Fereidouni & Richard Levenson	University of Washington	Rapid Needle Biopsy Assessment at Point of Care to advance personalized cancer therapy
38	Yuguo Leo Lei	Penn State University	A Single Conical Tube Device for Precision CAR-T Cells Manufacturing
39	Alexander Revzin	Mayo Clinic Rochester	A microfluidic cell culture platform for personalizing pancreatic cancer therapies
40	Anne Plochowietz & Laurie Parker	Palo Alto Research Center	High-Throughput Screening Platform for Cancer Drug Discovery
41	Chris Warren & Mary Ozers	Proteovista, LLC	SNAP-X: Development of a Mutagenesis Strategy and High Density Protein Array to Comprehensively Display Protein Variants
42	Harshani Wijerathne	University of Kansas	Liquid Biopsy Based Screening Test for Early Detection of Ovarian Cancer.
43	Mahdiyeh Shahi	Purdue University	Advanced Development of Desorption Electrospray Ionization Mass Spectrometry for Intraoperative Molecular Diagnosis of Brain Cancer using Pathology Biopsies
44	Zachary Hartman	Duke University	Enabling effective anti-tumor immunity from targeted antibodies through dual innate and adaptive immune checkpoint blockade in non-immunogenic cancers
45	Margarida Barroso	Albany Medical College	In vivo Macroscopic Fluorescence Lifetime Molecular Optical Imaging
46	Kristen Naegle	University of Virginia	A synthetic toolkit for the recombinant production of tyrosine phosphorylated proteins and peptides
47	Oluwadamilola Olasumbo Fateru	University of Kansas	Development of microfluidic-enabled therapeutic monitoring in clinical pancreatic cancer– examining disease progression and DNA mutational changes using circulating tumor cells,
48	Ian Freed	University of Kansas	Combined immunophenotyping & fluorescence *in situ* hybridization (FISH) on acute lymphoblastic leukemia (ALL) cells isolated from peripheral blood using an integrated microfluidic system
49	Nishantha Wijesriya	University of Kansas Medical Center	Liquid Biopsy Core: Enabling Tools for the Isolation of Liquid Biopsy Markers and their Molecular Analysis

50	Malgorzata Witek	University of Kansas	Extracellular Vesicles' mRNA for Assessing Breast Cancer Molecular Subtypes
51	Mengjija Hu	University of Kansas Medical Center	Minimal Residual Disease Monitoring in Pediatric Patients with T and B type Acute Lymphoblastic Leukemia
52	Alexej Abyzov	Mayo Clinic	Analysis of somatic mutations in 131 human brains reveals aging-associated hypermutability
53	Jenny Yang	Georgia State University	Multi-color Mapping of Cancer Molecular Signatures and Tumor microenvironment

Resources & Funding Opportunities

Resources

- The NCI Cancer Research Data Commons (CRDC) is a cloud-based data science infrastructure that connects data sets with analytics tools to allow users to share, integrate, analyze, and visualize cancer research data to drive scientific discovery. The CRDC provides access to data-type specific repositories (genomic, proteomic, comparative oncology, imaging, and others) and data from NCI programs such as The Cancer Genome Atlas (TCGA) and its pediatric counterpart, Therapeutically Applicable Research to Generate Effective Treatments (TARGET), and The Clinical Proteomics Tumor Analysis Consortium (CPTAC), among many other data resources.
- The Antibody Characterization Laboratory provides access to a large number of reagents and accompanying characterization data. Antigens and antibodies are expressed, purified, and characterized using standard operating procedures, with all accompanying protocols and data.
- The Nanotechnology Characterization Laboratory (NCL) within Frederick National Laboratory for Cancer Research performs preclinical characterization of nanomaterials using a comprehensive battery of assays. The operation of NCL relies on collaboration with the US FDA and the National Institute of Standards and Technology.
- The cancer Nanotechnology Laboratory (caNanoLab) data portal provides access to nanomaterial characterization data to expedite and validate the use of nanomaterials in biomedicine. Users can search and download cancer-relevant characterization data resulting from physico-chemical, *in vitro*, and *in vivo* assays, as well as associated protocols and publication information.
- The NCI SBIR Development Center oversees all NCI Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) support programs, which includes all grant and contract funding opportunities, as well as a broad variety of additional resources aimed at supporting the innovations and commercial interests of small business entities against cancer.
- The Alliance of Glycobiologists for Cancer Research – A consortium that investigates the molecular basis by which altered glycan expression leads to cancer progression and develop cancer biomarkers based on the aberrant expression of these glycans. Opportunities exist to collaborate in cancer relevant research with a number of experts in glycobiology.
- The Early Detection Research Network (EDRN) – A consortium that promotes discovery, development, and clinical validation of biomarkers for early detection of cancer. Investigators with promising biomarkers may request for core funds to validate their markers using reference sets and resources within the network.
- NCI Best Practices for Biospecimen Resources guiding principles that define state-of- the-science biospecimen resource practices, promote biospecimen and data quality, and support adherence to ethical and legal requirements. (https://biospecimens.cancer.gov)
- The Biospecimen Research Database (BRD) is a free and publicly accessible literature database that contains curated, peer-reviewed primary and review articles in the field of human biospecimen science. The database is searchable by various parameters including the biospecimen investigated (type and location, patient diagnosis), preservation method, analyte(s) of interest and technology platform(s) used for analysis. An original summary of relevant results is also provided for each article.

- Specimen Resource Locator (SRL) is a biospecimen resource database designed to help researchers locate resources that may have the samples needed for their investigational use. This publicly searchable database includes information about biospecimen banks and sample procurement services. The specimens and samples come from non-commercial, either NCI or non-NCI-funded resources. Investigators can search the database and gain access to thousands of specimens of various tumor, organ, and preservation methods.
- The Cooperative Human Tissue Network (CHTN) is a resource developed and supported by the NCI that provides human tissues and fluids from routine procedures open to the scientific community to facilitate basic, early translation research, and assay/technology validation. Unlike tissue banks, the CHTN works prospectively with each investigator to tailor specimen acquisition and processing to meet their specific project requirements.
- The NCI Comprehensive Data Resource (CDR) is a distributed web-based system that manages and maintains multi-dimensional data models on biospecimens. CDR was developed and is currently utilized to collect biospecimen and clinical data on biospecimens collected from cancer patient donors and post-mortem donors, for the NCI's Biospecimen Pre-analytical Variables (BPV) and NIH Genotype-tissue Expression (GTEx) programs.
- NCI has developed the Biobank Economic Modeling Tool (BEMT), a publicly available web-based financial planning tool for biobanks. BEMT is designed to enhance the understanding of the economic considerations involved in initiating, operating and maintaining a biobank to assist with long term financial planning and cost recovery.
- The NIH Library of Integrated Network-based Cellular Signatures (LINCS) Program aims to create a network-based understanding of biology using computational tools into a comprehensive view of normal and disease states that can be applied for the development of new biomarkers and therapeutics. By generating and making public data that indicates how cells respond to various genetic and environmental stressors, the LINCS project will help us gain a more detailed understanding of cell pathways and aid efforts to develop therapies that might restore perturbed pathways and networks to their normal states.

Active Research Funding Opportunities

Innovative Molecular Analysis Technology (IMAT) Program

Updates always available on the IMAT website. *(to be released in December 2023)*

- RFA-CA-23-002: (R61, Clinical Trials Not Allowed) Innovative Molecular & Cellular Analysis Technologies for Basic and Clinical Cancer Research.
- RFA-CA-23-003: (R33, Clinical Trials Not Allowed) Advanced Development and Validation of Molecular & Cellular Analysis Technologies for Basic and Clinical Cancer Research.
- RFA-CA-23-004: (R61, Clinical Trials Not Allowed) Innovative Biospecimen Science Technologies for Basic and Clinical Cancer Research.
- RFA-CA-23-005: (R33, Clinical Trials Not Allowed) Advanced Development and Validation of Biospecimen Science Technologies for Basic and Clinical Cancer Research.
- RFA-CA-23-006: (R01, Clinical Trials Optional) Revision Applications for Incorporation of Novel NCI-Supported Technology to Accelerate Cancer Research
- RFA-CA-23-007: (U01, Clinical Trials Optional) Revision Applications for Incorporation of Novel NCI-Supported Technology to Accelerate Cancer Research
- RFA-CA-23-008: (U54, Clinical Trials Optional) Revision Applications for Incorporation of Novel NCI-Supported Technology to Accelerate Cancer Research
- RFA-CA-23-009: (P01, Clinical Trials Optional) Revision Applications for Incorporation of Novel NCI-Supported Technology to Accelerate Cancer Research
- RFA-CA-23-010: (P50, Clinical Trials Optional) Revision Applications for Incorporation of Novel NCI-Supported Technology to Accelerate Cancer Research
- RFA-CA-23-011: (U2C, Clinical Trials Optional) Revision Applications for Incorporation of Novel NCI-Supported Technology to Accelerate Cancer Research
  Applications due March 1 and September 1, 2023; Expires Sept 2, 2023

Informatics Technologies for Cancer Research (ITCR) Program

Please visit https://itcr.cancer.gov for updates. Similar to IMAT, the ITCR program posts new RFAs every year soliciting the following work:

- R21 for Development of Innovative Informatics Methods and Algorithms for Cancer Research and Management (up to $275k for 2 years; e.g. RFA-CA-22-021)
- U01 for Early-Stage Development of Informatics Technologies for Cancer Research and Management (up to $300k/yr for 3 years; e.g. RFA-CA-22-022)
- U24 for Advanced Development of Informatics Technologies for Cancer Research and Management (up to $600k/yr for 5 years; e.g. RFA-CA-22-021)
- U24 for Sustained Support of Informatics Technologies for Cancer Research and Management (no budget cap; e.g. RFA-CA-22-021)

Oncology Models

- PAR-20-131: (R01) Research Projects to Enhance Applicability of Mouse Models for Translational Research. Standard due dates apply; Expires May 8, 2023
- PAR-22-099: (R01 Clinical Trial Optional) Cancer Tissue Engineering Collaborative: Enabling Biomimetic Tissue-Engineered Technologies for Cancer Research. Expires May 8, 2025
- PAR-23-046: Engineering Next-Generation Human Nervous System Microphysiological Systems (R01). Expires January 8, 2026

Alliance for Nanotechnology in Cancer

- PAR-20-284: Innovative Research in Cancer Nanotechnology (IRCN) (R01). 2 unique receipt dates per year. Expires May 4, 2023.
- PAR-22-071: (R01, Clinical Trials Not Allowed) Toward translation of Nanotechnology Cancer Interventions (TTNCI). Unique receipt dates. Expires Nov 18, 2024.

Assay Validation for High Quality Markers for NCI-Supported Clinical Trials

- PAR-20-313 (UH2/UH3 Clinical Trials Not Allowed)
- PAR-20-314 (UH3 Clinical Trials Not Allowed)
  3 unique receipt dates per year. Expires Oct. 11, 2023.

Other NCI Opportunities

- PAR-21-330: Utilizing the PLCO Biospecimens Resource to Bridge Gaps in Cancer Etiology and Early Cancer Detection Research (U01 Clinical Trial Not Allowed)
  Two unique receipt dates per year, expires October 12, 2024
- PAR-22-049**:** Integrating Biospecimen Science Approaches into Clinical Assay Development (U01 Clinical Trial Not Allowed)
  Three unique receipt dates per year, expires September 14, 2024
- PAR-21-343: Opportunities for Collaborative Research at the NIH Clinical Center (U01 Clinical Trial Optional)
  Applications due April 18 each year, expires April 19, 2024.
- PAR-22-216: NCI Clinical and Translational Exploratory/Developmental Studies (R21 Clinical Trial Optional)
  3 unique receipt dates per year. Expires July 2, 2025

General NIH Bioengineering Research Opportunities

- PAR-20-169: NIBIB Biomedical Technology Resource Center. (P41 Clinical Trials Optional)
  Standard due dates apply. Expires May 8, 2023
- PAR-22-126: Exploratory Research for Technology Development (R21 – Clinical Trial Not Allowed)
- PAR-22-127: Focused Technology Research and Development (R01 – Clinical Trial Not Allowed)
  Standard due dates for these two, expiring May 8, 2022
- PAR-22-090: Exploratory/Developmental Bioengineering Research Grants (EBRG) (R21 Clinical Trial Not Allowed)
- PAR-22-091: Exploratory/Developmental Bioengineering Research Grants (EBRG) (R21 Clinical Trial Optional)
- PAR-22-123: Bioengineering Research Partnerships with Industry (U01 Clinical Trial Optional)
- PAR-22-242: Bioengineering Research Grants (BRG) (R01 Clinical Trial Not Allowed)
- PAR-22-243: Bioengineering Research Grants (BRG) (R01 Clinical Trial Optional)
  Expires September 8, 2025

Brain Research through Advancing Innovative Neurotechnologies (BRAIN) Initiative

Various funding opportunities can be found at https://www.braininitiative.nih.gov

Page Break

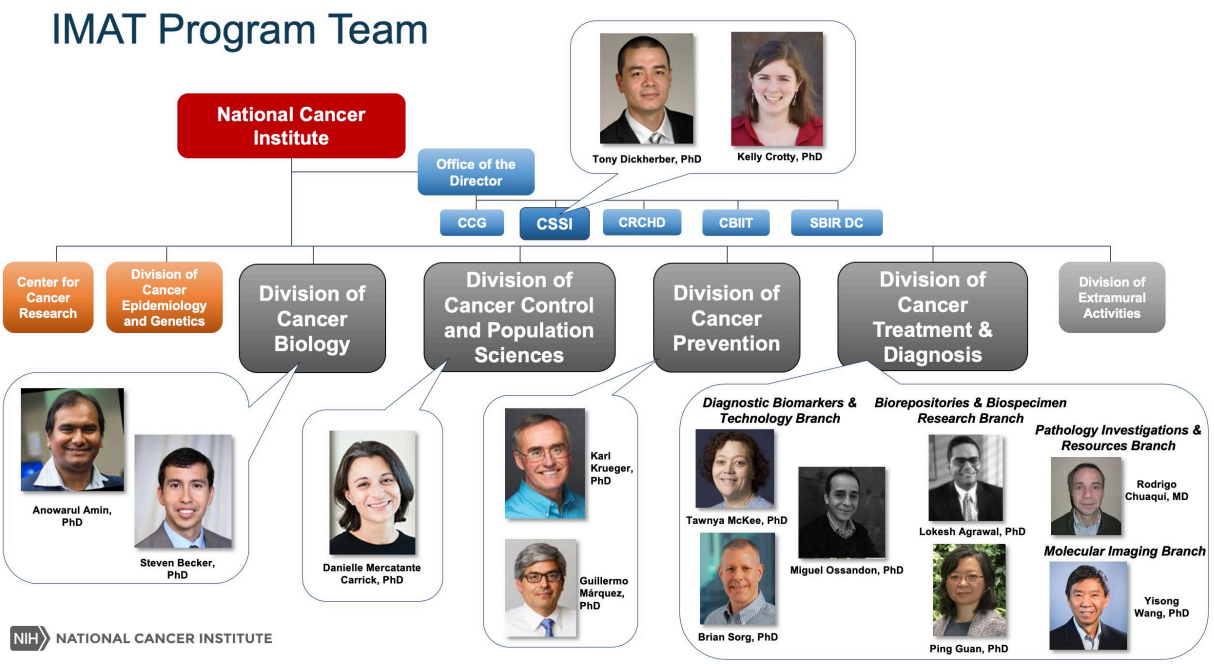
Training and Other Support

Ruth L. Kirschstein National Research Service Award (NRSA)

- PA-20-199: (K25) Mentored Quantitative Research Development Award
- PA-20-142: (T32) Institutional Research Training Grant
- PA-20-162: (T35) Short-Term Research Training Grant
- PA-21-052: (F31) Predoctoral Fellowship to Promote Diversity in Health-Related Research
- PA-21-049: (F30) Fellowship for Students at Institutions With NIH-Funded Institutional Predoctoral Dual-Doctoral Training Programs
- PA-21-048: (F32) Individual Postdoctoral Fellowship
- PA-21-051: (F31) Individual Predoctoral Fellowship
- PA-21-047: (F33) Individual Senior Fellowship.
- PA-21-050: (F30) Fellowship for Students at Institutions Without NIH-Funded Institutional Predoctoral Dual-Doctoral Training Programs
- PAR-21-128: (K22) The NCI Transition Career Development Award.

All training opportunities use standard receipt dates (3 per year) and expire in 2023 or 2024.

More information on NCI-specific training initiatives here and on NIH-supported training initiatives here.



Kelly Crotty, Ph.D. (link)
Role: *Co-Director of the IMAT Program*
Office: *Office of the NCI Director, Center for Strategic Scientific Initiatives*
Background & Portfolio
Kelly is part of the Center for Strategic Scientific Initiatives (CSSI) and is involved in the oversight of NCI programs whose scientific focus cross multiple divisions or offices. She co-directs the IMAT program and supports the Informatics Technology for Cancer Research (ITCR) program. Kelly also coordinates all communication activities for CSSI.

Tony Dickherber, PhD (link)
Role: *Co-Director of the IMAT Program*
Office: *Office of the NCI Director, Center for Strategic Scientific Initiatives*
Background & Portfolio
Tony is Co-Director of the IMAT program, co-chair of NCI's Cancer Moonshot New Technologies Implementation Team, co-director of the Cancer Grand Challenges program, and participates in a number of activities focused on new technology development, especially in the area of liquid biopsy technology. As Co-Director of the IMAT program, he has oversight responsibility for all projects in the program portfolio.

Anowarul Amin, PhD (link)
Role: *Program Director*
Office: *Division of Cancer Biology, Structural Biology and Molecular Applications Branch*
Background & Portfolio
Anowarul Amin is a Program Director in the Structural Biology and Molecular Application Branch (SBMAB) in NCI's Division of Cancer Biology (DCB). He is mainly a biophysicist, overseeing the structural biology, biophysics, and proteomics grants that address fundamental research questions of various cancers! He is also involved with

cellular imaging technologies that allow the detection and analysis of *cellular* organelles and macromolecules.

Steven Becker, PhD (link)
Role: *Program Director*
Office: *Division of Cancer Biology, Structural Biology and Molecular Applications Branch*
Background & Portfolio
Steve Becker is a Program Officer in the Structural Biology and Molecular Applications Branch (SBMAB) in the Division of Cancer Biology (DCB). Steve has a grant portfolio that includes advanced imaging and analysis technologies as well as tissue-engineered systems that study cancer phenomena.

Danielle Carrick, PhD (link)
Role: *Program Director*
Office: *Division of Cancer Control and Population Sciences, Genomics Epidemiology Branch*
Background & Portfolio
Danielle Mercatante Carrick is a Program Director in the Genomic Epidemiology Branch (GEB) of the Epidemiology and Genomics Research Program (EGRP) in NCI's Division of Cancer Control and Population Sciences (DCCPS). She is responsible for managing a research grant portfolio related to genetic and immunologic factors that influence personal susceptibility to cancer, including inflammation. She is the DCCPS biospecimen coordinator, and the DCCPS contact for IMAT.

Karl Krueger, PhD (link)
Role: *Program Director*
Office: *Division of Cancer Prevention, Cancer Biomarkers Research Group*
Background & Portfolio
Karl is a program director in the Cancer Biomarkers Research Group in the Division of Cancer Prevention. Beyond his responsibilities in IMAT his programmatic activities cover research in lung cancer biomarkers in the Early Detection Research Network, co-leader of the Alliance of Glycobiologists for Cancer Research, project team leader for the NIH Common Fund Glycoscience Program, and serves as a project scientist in the RADx-SCENT program to identify volatile metabolites diagnostic of Covid infection.

Guillermo Marquez, PhD (link)
Role: *Program Director*
Office: *Division of Cancer Prevention, Cancer Biomarkers Research Group*
Background & Portfolio
Guillermo Marquez works in the Cancer Biomarkers Research Group within the Division of Cancer Prevention. In addition to his work with IMAT, he is involved in the Early Detection Research Network (EDRN), which supports the discovery, development, and validation of biomarkers and imaging methods to detect early stage cancers and to assess risk for developing cancer.

Tawnya McKee, PhD (link)
Role: *Program Director*
Office: *Division of Cancer Treatment and Diagnosis, Diagnostic Biomarkers & Technology Branch*
Background & Portfolio
Tawnya is a Program Director in the Diagnostic Biomarkers and Technology Branch (DBTB) in the Cancer Diagnosis Program (CDP) of the Division of Cancer Diagnosis and Treatment (DCTD). Tawnya's grant portfolio covers biomarker studies focused on diagnosis and treatment of GU cancers (Bladder, Prostate, Renal, etc.) and Thyroid and other adrenal cancers. She is also an active member of the Biomarker Review Committee working with the NCI Clinical Trial Group (CTEP) to enable "Fit-for-Purpose" and validated biomarker assays are incorporated into early phase clinical trials.

Miguel Ossandon, PhD (link)
Role: *Program Director*
Office: *Division of Cancer Treatment and Diagnosis, Diagnostic Biomarkers & Technology Branch*
Background & Portfolio
Miguel Ossandon manages a broad technology portfolio, including microfluidics and liquid biopsy technologies such as ctDNA, exosomes, CTCs etc. In addition, he manages projects on in-vitro imaging technologies and computational modeling. He participates in the trans-NIH Bioengineering Partnership program, the Academic Industrial Partnership and the single cell, single molecule sequencing initiative. In addition to the trans-NCI IMAT, he participates in the Informatics Technology for Cancer Research (ITCR) and the Human Tumor Atlas Network (HTAN) programs.

Brian Sorg, PhD (link)
Role: *Program Director*
Office: *Division of Cancer Treatment and Diagnosis, Diagnostic Biomarkers & Technology Branch*
Background & Portfolio
Brian's portfolio in the Diagnostic Biomarkers & Technology Branch includes cellular and molecular biosensors, tissue chips, in vitro imaging technologies, omics assays/technologies, and cell and molecular capture technologies. Brian is involved in numerous initiatives, including NCI's Engineering Biology for Cancer Applications, the NCI Affordable Cancer Technologies Program, the NCATS Clinical Trials on a Chip initiative, and the NASA Extended Longevity of 3D Tissues initiative.

Lokesh Agrawal, PhD (link)
Role: *Program Director*
Office: *Division of Cancer Treatment and Diagnosis, Biorepositories & Biospecimen Research Branch*
Background & Portfolio
Dr. Agrawal leads the Branch's biospecimen science research program, "Integrating Biospecimen Science Approaches into Clinical Assay Development." He also leads the Cancer Moonshot Biobank that is collecting longitudinal biospecimens from ~1000 cancer patients. Dr. Agrawal manages grants in diagnostics and treatment for heme malignancies and is actively involved in designing biomarker plans for NCI clinical trials in collaboration with Clinical Trials and Evaluation Program (CTEP) of NCI. Dr. Agrawal is also engaged in several trans-NCI programs on cancer technology development, academic-industrial partnership program, low-cost technology global health programs and physical sciences and oncology.

Ping Guan, PhD (link)
Role: *Program Director*
Office: *Division of Cancer Treatment and Diagnosis, Biorepositories & Biospecimen Research Branch*
Background & Portfolio
Ping Guan is a Program Director in the Biorepositories and Biospecimen Research Branch of the Division of Cancer Treatment and Diagnosis. She manages projects related to pre-analytic impacts on downstream molecular profiling and analysis for the Biospecimen Preanalytical Variables program.

Rodrigo Chuaqui, MD (link)
Role: *Program Director*
Office: *Division of Cancer Treatment and Diagnosis, Pathology Investigation & Resources Branch*
Background & Portfolio
Rodrigo Chuagui is the Program Director leading the Cooperative Human Tissue Network (CHTN). The CHTN is a program constituted by 6 Divisions in the US with the goal to procure clinical tissue samples to support basic discovery and translational research and diagnostic assay development studies. He also participates in the

Biospecimen Technology arm of the IMAT Program, with the specific goal of developing new technologies for collection, storage, processing of human biospecimens for cancer research. He also participates in the Pathology slide review for the Clinical Assay Development Program and other Cancer Diagnosis/Frederick projects. He is a Member of the International Society for Biological and Environmental and Research (ISBER), being part of the Biospecimen Science Working Group.

Yisong Wang, PhD (link)
Role: *Program Director*
Office: *Division of Cancer Treatment and Diagnosis, Molecular Imaging Branch*
Background & Portfolio:
Yisong Wang is a program director in Molecular Imaging Branch, Cancer Imaging Program in the Division of Cancer Treatment and Diagnosis. He manages grant portfolios focusing on molecular imaging from basic discovery of methods and agents to their development as preclinical tools and into clinical use in the service of diagnosis and therapy of cancer patients and those at risk.