



AT THE FOREFRONT
UChicago
Medicine

The University of Chicago Section of Hematology/Oncology

Updated May 2026

Welcome to the Section of Hematology/Oncology at the University of Chicago. Our Section boasts a long-standing tradition of excellence in research-based patient care, clinical and scientific discovery, and outstanding education of residents and fellows. Consistently ranked as one of the top cancer programs in the country, our Section includes nationally and internationally recognized faculty with expertise in all major types of malignancies, blood disorders, and experimental therapeutics.

The Section of Hematology/Oncology is among the largest subspecialty sections in the University of Chicago's Department of Medicine. We are composed of more than 70 faculty members, 29+ network physicians, 21 fellows, and a professional staff of over 250 employees, all of whom are devoted to growing our tripartite mission of excellence in research, patient care, and education. Our faculty are experts in their fields, and frequently publish and present prominently about their areas of research and clinical care. We take tremendous pride in training the next generation of leaders in Hematology/Oncology. Our fellowship has 7 positions per year, with an opportunity for fellows to develop research and clinical skills in a variety of fields. We hold two T32 Training Grants (Medical Oncology and Clinical Pharmacology), as well as a K12 Paul Calabresi grant.

Our Section maintains an active research agenda, reflected in numerous clinical trials of all phases and a strong grant portfolio. We take pride in focusing on both basic



science and translational research, ensuring that clinical trials are available to our patients. We have many “bench to bedside and back to bench” trials leading to new treatments. This enables our clinicians to provide care that is truly at the forefront of hematological and oncological knowledge. These trials are available to patients with blood malignancies, such as leukemias and lymphomas, as well as those with solid tumors in the lung, head and neck, breast, gastrointestinal tract, and genitourinary tract, among others.

Our research is supported by an extensive portfolio of both federally and privately funded grants. While the positive impacts of our research initiatives are too numerous to list, several key initiatives stand out. These include: our use of artificial intelligence to enhance precision medicine; advances in immunotherapies and cellular therapies, including CAR-T and TIL therapy; computational oncology; and precision-based identification of patient populations that may benefit from these and other novel therapies. Our laboratory-based faculty have developed programs of excellence in cancer metabolism, genetics of cancer risk in both solid tumor and hematologic settings, understanding and exploiting the tumor microenvironment, and mechanisms of drug resistance.

Our institution has a long tradition of excellence in cancer research, clinical care, and the interdisciplinary training of the next generation of oncology leaders. This tradition includes significant accomplishments such as:

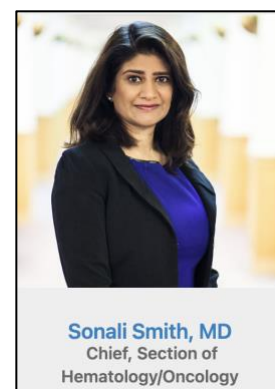
- the 1941 discovery of the remarkable effects of hormone therapy on prostate and breast cancer culminating in the 1966 Nobel Prize to Dr. Charles Huggins;
- the 1942 discovery of the effectiveness of nitrogen mustard as treatment for Hodgkin Disease by Dr. Leon Jacobson, former Dean of the Biological Science Division;
- Dr. Janet Rowley’s 1971 discovery of the *t(9;22)* translocation in CML, culminating in the awarding of a National Medal of Science, the Lasker Award, and the National Medal of Freedom;
- the 2004 Lasker Award for Basic Medical Research presented to Dr. Elwood V. Jensen, for discovery of the estrogen receptor which had a rapid, direct, and lasting impact on treatment and prevention of breast cancer;
- and Dr. John Ultmann’s practice-changing contributions to the precise staging of Hodgkin Lymphoma.

Select other important contributions by our Section faculty and leaders include the following

- the development of organ-sparing combined modality therapy for cancers of the head and neck by Dr. Everett Vokes;
- the first observation that the gut microbiome informs response to immunotherapy, by Dr. Tom Gajewski;
- a robust clinical trials program leading to multiple new treatments for patients with acute and chronic myeloid neoplasms, led by Dr. Richard Larson;
- the creation of a holistic Adolescent and Young Adult program by Dr. Wendy Stock;
- the deep investigation of genetics of breast cancer amongst the African diaspora by Dr. Funmi Olopade;
- global expertise in the field of mesothelioma by Dr. Hedy Kindler;
- the discovery of numerous cytogenetic abnormalities in treatment-related leukemias by Dr. Michelle Le Beau;
- leadership of CALGB/Alliance for 15 years and service as the first CMO of ASCO by Dr. Richard Schilsky;
- and advocacy and research in the space of pharmacogenetics, pharmacoeconomics, and rational drug development by Dr. Mark Ratain.

Our dedication to both basic and translational research continues, with our Section faculty frequently publishing their work in the highest-impact journals in our field. By collaborating with cooperative research groups, like the Alliance for Clinical Trials in Oncology, our cancer program provides patients with access to leading research teams across the U.S. and the world. We have had 4 ASCO Presidents come from our Section: Drs. John Ultmann, Harvey Golomb, Richard Schilsky, and Everett Vokes.

The innovations from our Section have made significant, practice-changing impacts on the diagnosis and treatment of many types of cancer, benefiting the patients who come through our doors and those receiving care globally.



Our History

1972: Stanley Yachnin becomes the first Section Chief of the combined Section of Hematology/Oncology

1942: Leon Jacobson works on the Manhattan Project and helps to identify the hematopoietic stem cell

1968: John Ultmann founds the Cancer Center and is its first Director

1972: Janet Rowley identifies the first chromosomal translocation in leukemia, *t(9;22)*. This establishes cancer as a genetic disease

1975: Multidisciplinary tumor boards are started on campus, a first for lung cancer. This sets the standard for collaborative care here and beyond campus

1975: Harvey Golomb performs one of the first clinical trials with alpha-interferon, leading to FDA approval to treat hairy cell leukemia

1985: Allogenic transplant program begins, first for pediatric patients and then for adult patients

1988: Phase I Clinical Trials Program begins & establishes UChicago as a leader for early phase clinical trials

1985: UChicago joins and becomes national leaders in the Cancer & Leukemia Group B (now Alliance)

1992: The first cancer risk & prevention clinic in Chicago is established

1994: UChicago establishes a multidisciplinary head & neck cancer program focused on organ preservation

2000: UChicago becomes an early member of the Pharmacogenomics Research Network and provide leadership nationally; first trial to show that risk for chemotoxicity can have a genetic basis

2008-2010: UChicago establishes one of the first Adolescent & Young Adult (AYA) cancer care clinics in the country, based on ALL research conducted at UChicago.

2001: The WHO releases the first international classification of hematological malignancies with leadership from many in the Section

2017: First site to offer CAR T-cell therapy in Chicago & in Illinois

2027: First freestanding cancer center in the Chicagoland area, the AbbVie Foundation Cancer Center, will open in April 2027

Fellowship Program & Training

The Section of Hematology/Oncology is dedicated to educating the next generation of cancer experts and takes pride in its comprehensive educational efforts. Our initiatives include training and providing support for medical students, interns, residents, and fellows. For decades, our Fellowship Program has nurtured some of the brightest and most innovative physicians in the country, many of whom have achieved national and international recognition. The University of Chicago Medicine's state-of-the-art inpatient and outpatient facilities offer a broad and deep clinical experience, while the University's extensive research facilities promote the development and pursuit of foundational science skills.

The Hematology and Medical Oncology training program at the University of Chicago aims to prepare exceptional postdoctoral trainees for research-intensive careers in academia, government, industry, or private health systems. Since the program's inception in 1987, the integration of training in basic research and clinical oncology has continued to evolve and improve. We have training in cancer genomics, immunology, bioinformatics, and population health/health services research. Additionally, we offer a range of training grants that accommodate various levels of trainees, including the R25 SOAR grant (PI: Funmi Olopade), T32 in Basic Medical Oncology (PI: Funmi Olopade), T32 in Clinical Pharmacology (PI: O'Donnell), and the K12 Paul Calabresi Award (PI: Olopade).

For more information on all of our training programs, please review the information on [our Hematology/Oncology Fellowship website](#).

Hematology and Medical Oncology Fellowship Program (ACGME-accredited)

Our ACGME-accredited Hematology/Oncology Fellowship Training Program, directed by Dr. Kenneth Cohen, is a vital part of the Section of Hematology/Oncology. This Section is the largest subspecialty within the Department of Medicine and is an integral component of the [University of Chicago Comprehensive Cancer Center \(UCCCC\)](#). Both the Section and the UCCCC provide the foundation for the training program's robust research environment and our faculty provide mentorship across a wide range of research topics. Fellows are offered

numerous continuing education opportunities, from seminars to workshops and retreats.

To foster new interdisciplinary research programs, the University of Chicago has expanded its infrastructure to support "team science" and translational research. A key example of this vision for collaborative research is the construction of several new buildings:

- The innovatively organized Gordon Center for Integrative Science (GCIS), which houses the [Ben May Cancer Research Institute](#);
- The Knapp Center for Biomedical Discovery (KCBD), which is home to physician scientists in Hematology/Oncology;
- [The Pritzker School of Engineering](#), which integrates science and engineering at a molecular level up to an organismal level

Additionally, the University has made significant investments in genomics, bioinformatics, and computational biology with the establishment of the [NCI's Genomic Data Commons](#) on our campus, led by Dr. Sam Volchenbaum.

In addition to enhanced training in genomics, immunology, public health sciences, health services research, two new Master's degree programs have been started: the MSc in Public Health Sciences for Clinical Professionals (MSCP) and the MSc in Biomedical Informatics within the ITM. These programs are designed to prepare postdoctoral trainees for careers as independent and collaborative researchers, with a focus on clinical research and medical informatics. Such training opportunities are critical for building a strong and enduring pipeline for the next generation of leaders in clinical and translational research. Our joint training program in Clinical Therapeutics in Oncology offers a unique fellowship that combines comprehensive training in oncology with clinical pharmacology and pharmacogenomics.

For more information, please visit our [Fellowship website](#) or contact us directly with any additional inquiries:

Kenneth Cohen, MD

Associate Professor of Medicine
Director, Fellowship Training Program
Section of Hematology/Oncology

Jennifer Coopperrider, MD

Assistant Professor of Medicine
Associate Program Director of the
Hematology/Oncology Fellowship

Anand Patel, MD

Assistant Professor of Medicine
Associate Program Director for
Hematology Training

Lisa Montecinos

Education Coordinator
lisa.montecinos@bsd.uchicago.edu

Post-doctoral Research Training Program

The postdoctoral training program in Hematology/Oncology at The University of Chicago offers advanced, multidisciplinary training for qualified applicants in the expansive field of cancer research. Funded primarily by an NIH Institutional Research Service Award, the program equips postdoctoral fellows with the skills necessary for successful academic research careers. This is done by emphasizing both foundational and cutting-edge approaches to cancer biology, including training in emerging areas such as artificial intelligence (AI) and computational oncology. Weekly lectures and seminars, delivered by leading national and international experts, keep researchers informed of the latest advances in the field.

Trainees benefit from close collaboration with faculty in the Section of Hematology/Oncology, as well as investigators across the broader University of Chicago research community. This integrated environment provides comprehensive, laboratory-based experience in state-of-the-art molecular and cellular techniques. Additionally, trainees have access to the [Polsky Center for Entrepreneurship and Innovation](#), offering resources and mentorship for those interested in translating their discoveries into biotech startups.

Mentorship is a cornerstone of the postdoctoral training program, with individualized guidance provided by experienced faculty who support the development of each trainee's trajectory and career goals. In addition to lab-based training, trainees are encouraged to present their work at national conferences and participate in on-campus seminars and research talks. These opportunities foster professional development, academic networking, and deeper engagement with the broader scientific community.

You can learn more through our [Committee on Cancer Biology website](#).

Hematology/Oncology Clinical Programs

The Section of Hematology/Oncology at The University of Chicago is dedicated to providing comprehensive, multidisciplinary care and advanced research in the treatment of adult hematologic and oncologic diseases. Each year, our experts care for approximately 5,000 new patients who seek our help for various blood disorders and cancers.

Our dedicated faculty manage four inpatient services and a general consultation service, working alongside an exceptional team of nurses, advanced practice providers (APPs), medical assistants (MAs), technicians, mental health professionals, and colleagues from other Sections and Departments. The Section consistently receives national recognition as one of the top cancer programs in the country, with many of our physicians earning accolades for their outstanding patient care year after year. This includes having more physicians consistently recognized as top doctors in the Chicagoland area than any other institution.

The hallmark of our Section is the compassionate, high-quality and expert clinical care our physicians deliver to patients. Many of our programs seamlessly incorporate clinical trials into their treatment offerings, ensuring that our patients have access to cutting-edge therapies. Led by our highly focused faculty, clinical trials research efforts are supported by a dedicated team of research nurses, data analysts, research coordinators, technicians, and regulatory specialists. Currently, we offer over 200 investigator-initiated and industry-sponsored clinical trials for patients with:

- Leukemia, lymphoma, myeloma, and other hematologic malignancies
- Lung cancer
- Head and neck cancer
- Breast cancer
- Gastrointestinal cancer
- Genitourinary cancer
- Mesothelioma
- Melanoma/sarcoma
- Other solid tumors

For more information about the clinical services we offer, please visit [The University of Chicago Medicine](#) website.

Adolescent & Young Adult (AYA) Program



Focus: comprehensive and holistic approach to the care of the adolescent/young adult with cancer, continuum of cancer care, supportive oncology services for young adults

Section Faculty: Wendy Stock, MD (Lead), Austin Wesevich, MD, MPH, Rafael Madero Marroquín, MD

When facing cancer, adolescents and young adults (AYA) often confront different personal, psychosocial, and medical challenges than younger children and older adults with the same diagnosis. That's why the University of Chicago Medicine created the Adolescent and Young Adult (AYA) Oncology Program — a collaborative program offering coordinated cancer care for young adults ages 15-39 through a large multidisciplinary team. Our program aims to deliver state-of-the-art, clinical science-driven care with a holistic approach to the many issues that are unique to cancer care for young adults, including fertility support, psychological care that spans the inpatient and outpatient continuum, physical therapy, social work, pharmacy support, nursing, and a comprehensive [community health worker program](#). We've created a community of care to foster trust, adherence, and a sense of well-being throughout the continuum of cancer care. Our holistic care encompasses a wide range of [supportive oncology services](#), geared specifically towards the needs of our AYA patient population and delivered at the bedside during infusion and other clinical appointments.

Major Accomplishments:

- Nationally unique joint pediatric-adult clinic that focuses exclusively on AYA cancer care. This integrated clinic ensures that all care needs are met within the program, reducing the need for referrals across the system and avoiding fragmented care.
- Pioneered the current standard of care for young adults with acute lymphoblastic leukemia (ALL), published in [Blood](#) and [Blood Advances](#), which are the basis for the current AYA ALL guidelines under development by the American Society of Hematology.
- Leadership in NCTN cooperative groups, fostering the development of interventional clinical trials and evaluation of patient outcomes, including current national leadership of a joint pediatric/adult trial for patients with Hodgkin Lymphoma.
- Embedded survivorship clinic is a fundamental part of the continuum of care for our patients, to ensure that any long-term side effects of treatment are addressed and managed, published in a variety of high impact publications such as the [Journal of Clinical Oncology](#), [Lancet Oncology](#), and [Nature Medicine](#). This includes a partnership with the [Childhood Cancer Survivor's Center](#) to ensure continuity of care for our youngest patients and those who had a previous cancer diagnosis in childhood.
- Advocacy and public education, including on topics like [increasing rates of certain cancers](#) in young and middle-aged adults.
- Lead psychosocial interventional trials designed to improve the quality of life of patients.

What's next?

- Providing consultation for supportive care services for young adults receiving treatment outside of the AYA clinic who are within the UCMC system or at other sites.
- Expansion of supportive care services, including: in-house support groups; in-house activities like yoga and massage therapy; and coordination/integration with national AYA advocacy groups.

Classical Hematology Program



Focus: thrombotic & bleeding disorders, microangiopathies, Hereditary Hemorrhagic Telangiectasia (HHT), cytopenia, pancytopenia, non-malignant disorders of elevated blood counts, ITP, autoimmune hemolytic anemia, hemochromatosis, PNH, M-GUS, CHiP, genetic diseases like bone marrow failure states and WHIM syndrome, Sickle Cell Disease, a full diversity of hematologic disorders

Section Faculty: Kenneth Cohen, MD (Lead), Michael Drazer, MD, PhD, Chris Daugherty, MD, Michael Thirman, MD

Our team— comprising 4 faculty physicians, 2 APNs, and 3 nurses—sees a large panel of patients with a wide variety of hematologic conditions and diseases. Our expertise is both broad and deep, with the majority our work falling into the following disease groups:

- Thrombotic and hemostatic disorders
- Microangiopathies
- Sickle Cell Disease
- Hereditary Hemorrhagic Telangiectasia ([HHT](#))
- Cytopenia and non-malignant disorders of elevated blood counts
- Genetic diseases, such as bone marrow failure states and WHIM

We work closely with our colleagues in interventional radiology, cardiology/pulmonary hypertension, and vascular surgery to meet the holistic healthcare needs of those in our care for thrombotic disorders. For our patients diagnosed with Sickle Cell Disease, we partner with collaborating providers in emergency medicine, pediatrics, internal medicine, and transfusion medicine. Our patients with HHT are cared for by a large multidisciplinary group of adult and pediatric physicians. We are proud of our ability to see patients across the spectrum of hematologic disorders and throughout a patient's disease experience.

Major accomplishments:

- The team has incorporated the HHT Center of Excellence (the only such center in Illinois) into the Classical Hematology Program, consisting of a multidisciplinary team that provides multifaceted longitudinal care
- We approach the care of sickle cell disease patients through standardizing comprehensive pain management, incorporating the newest therapeutics, and working with transplant colleagues to bring cell-based therapy to patients.

What's next?

- Expansion of the adult sickle cell program including cellular therapies
- Continue to build out the clinical research infrastructure to support future clinical investigation and translational research in classical hematology.

Cutaneous Oncology Program



Focus: melanoma and non-melanoma skin cancers, TIL-therapy, neoadjuvant immunotherapies, biobank to study mechanisms of resistance, refractory melanomas, uveal melanoma

Section Faculty: Dan Olson, MD (Co-Lead), Thomas Gajewski, MD, PhD (Co-Lead)

Our Cutaneous Oncology Program focuses on the treatment melanoma and all other skin cancers, with a particular focus on immunotherapy-based approaches. Our program, both through translational and clinical investigation, seeks to improve the treatment of patients with resistance to standard immunotherapy. We do this through a robust portfolio of novel early-phase immunotherapy studies targeting mechanisms of resistance to standard immunotherapy. We also have a large biobank that helps us to study mechanisms of resistance, as well as running quite a few early-phase trials focused on patients with refractory melanomas. In coordination with the Cell Therapy program, our Cutaneous Oncology program is a national leader in the field of Tumor Infiltrating Lymphocyte Therapy (TIL-therapy), establishing the highest volume TIL center in the Midwest and #2 nationwide.

Major accomplishments:

- Led a clinical trial of PD1+CTLA4 antibodies and after PD1 antibody failure showing improved clinical outcomes over standard treatment, leading to NCCN-endorsement in clinical practice guidelines. These results originally appeared in the [*Journal of Clinical Oncology*](#) in 2021.
- Multiple fundamental discoveries in cancer immunotherapy including the definition of the T cell-inflamed/non-T cell inflamed tumor microenvironment and germline polymorphisms and composition of the gut microbiome on immunotherapy efficacy. This translational discovery and others have contributed to the testing of novel immunotherapy approaches such as IDO inhibitors, STING agonists, DGK-zeta inhibitors and others.
- Reported on Phase II trial findings and tumor mutational spectrum analysis from Cabozantinib versus chemotherapy in metastatic uveal melanoma in [*Clinical Cancer Research*](#).

What's next?

- Expansion of TIL and TCR-based next generation cell therapy approaches to advanced melanoma.
- Adoption of neoadjuvant immunotherapies as a new paradigm for high-risk, resectable melanoma.
- Launch of investigator-initiated trials targeting specific mechanisms of resistance to standard immunotherapy based in foundational translational discoveries.

Developmental Therapeutics Program



Focus: development of new therapeutics, development and testing of new drug and radiotherapy combinations, research trials, CAR T-cell therapy, tumor-infiltrating lymphocyte (TIL) therapies

Section Faculty: Gini Fleming, MD (Co-lead), Russell Szmulewitz, MD (Co-lead), Dan Olson,

MD (Co-lead), Mark Ratain, MD, Randy Sweis MD (GU), Christina Bestvina MD (lung), Manik Amin, MD (GI), Ari Rosenberg, MD (Head and Neck)

Our Developmental Therapeutics Clinic focuses on offering treatments to patients with all tumor types for whom standard of care therapy is no longer effective and who are interested in participating in clinical research. We are exceedingly multidisciplinary work closely with our tumor type programs, and have lead investigators from the multiple tumor types (see above) with a particular interest in developmental therapeutics. Our research trials encompass a wide variety of agents, including those which are injected, those which are given with radiotherapy, targeted agents, theranostics, and immunotherapy. We also work very closely with the cell therapy program to offer novel adoptive cell therapies, such as CAR and TCR T-cell and tumor-infiltrating lymphocyte (TIL) therapies for solid tumors. Through this work, we are able to offer treatment options that are cutting edge and often unavailable elsewhere. Our work with TIL, for example, has made us one of the first in the country to offer this [treatment option](#) for advanced melanoma.

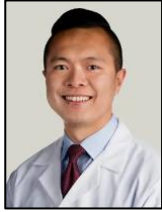
Major accomplishments:

- Trials combining immunotherapy with radiotherapy have been published in a variety journals, including [Journal of Clinical Investigation](#), [Journal of Clinical Oncology](#), and [Clinical Cancer Research](#)
- Major participant in a trial of tumor infiltrating lymphocytes (TILS) for the treatment of cervical cancer.
- Ongoing collaboration on major grant projects to address disparities in research by increasing recruitment of minority patients to early phase clinical trials.
- Yearly [developmental therapeutics symposium](#) which highlights the expertise of the team while also inviting in colleague clinicians to advance learning in the developmental therapeutics space.
- Quarterly newsletter highlighting select new trials.

What's next?

- A continuing pipeline of trials testing antibody drug conjugates, bispecific T-cell engagers, theranostic agents and additional novel immunotherapies.

Gastrointestinal Cancer Program



Focus: multidisciplinary team approach to treatment of GI cancers (neuroendocrine tumor program, liver tumor program, colorectal cancer program), innovative clinical trials (targeted therapies, immunotherapies), team science (translational research collaborations)

Section Faculty: Chih-Yi (Andy) Liao, MD (Interim Director), Joseph Franses, MD, PhD (Director of Translational GI Cancer Research), Blase Polite, MD, Ardaman Shergill, MD, Manik Amin, MD (Phase I Lead), Janet Chin, MD, Anu Neerukonda, MD, Wei Zhao MD, PhD

The Gastrointestinal Oncology Program's unique approach includes a multidisciplinary-team based approach to treatment of these cancers, wherein patients may see a variety of specialists within the same clinic visit (for example, in our Liver Tumor Clinic, patients will see an oncologist, transplant hepatologist, surgeon and interventional radiologist in the same visit; in our Neuroendocrine Tumor Clinic, patients will see an oncologist and surgeon at the same visit). This multidisciplinary approach streamlines patient care and improves outcomes. Our program has a rich clinical trial portfolio, including investigator-initiated trials, multidisciplinary disease team trials, and high-impact trials that change the clinical practice. This includes potentially paradigm-shifting clinical trials investigating laparoscopic HIPEC for metastatic gastric cancer with peritoneal disease, and ct-DNA guided treatment strategies for colorectal cancers. We also emphasize translational research collaborations, with exciting work in progress to better understand the tumor microenvironment in hepatocellular carcinoma.

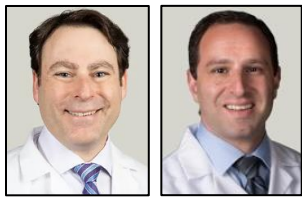
Major accomplishments:

- The development and growth of a multidisciplinary neuroendocrine tumor program and liver tumor program. The neuroendocrine program is ranked #1 in the region.
- Phase III clinical trial results published in [*New England Journal of Medicine*](#) on the newest FDA-approved treatment option for neuroendocrine tumors.
- Publication of phase III clinical trial results for adjuvant therapy for mismatch-repair-deficient colon cancer in the [*New England Journal of Medicine*](#).

What's next?

- Development of new multidisciplinary programs, including the Theranostics Program (capitalizing on our cyclotron facility and collaborating with Argonne National Laboratory), and a Comprehensive Colorectal Cancer Program to capture all facets of care for these patients.
- Developing and bringing in clinical trials of new treatment modalities, including theranostics and cellular therapies.
- Bolstering translational research in liver cancer, neuroendocrine tumors, and pancreatic cancer, and colorectal cancer.

Genitourinary Multidisciplinary Disease Team



Focus: New GU therapies, biomarkers in: Prostate Cancer, Urothelial Cancer, Renal Cancer, Testicular Cancer

Section Faculty: Russell Szmulewitz, MD (MDT co-lead), Randy Sweis, MD (MDT co-lead), Peter O'Donnell, MD, Akash Patnaik, MD, PhD, Jonathan Trujillo, MD, Mohammad Atiq, MD, Nabil Mir, MBBS

Multidisciplinary Team leaders: Jacob Tallman MD (Urology), Piyush Agarwal, MD (Urology), Stan Liauw, MD (Radiation Oncology), Sean Pitroda, MD (Urology), Glad Paner, MD (Pathology)

The Genitourinary Multidisciplinary Disease Team (GU MDT) is a multidisciplinary team dedicated to the treatment and prevention of a variety of GU cancers, with a special focus on prostate, urothelial, renal, and testicular cancers. Our unique approach to the clinical management of these malignancies includes a multi-modal team approach with physicians specializing in medical oncology, urology, radiation oncology, and pathology collaborating on the care of every patient regardless of the stage of their cancer diagnosis. Our goal is to provide every patient with the best options to manage their cancer, whether that means minimally invasive and/or nerve-sparing surgical procedures, cutting edge [focal therapy](#) for early state prostate cancer, high resolution imaging for diagnostics, or chemotherapies and immunotherapies. In addition we focus on anti-cancer treatment options to prevent the occurrence of malignancies before they begin.

Major Accomplishments:

- Co-leadership of the development of the first tyrosine kinase inhibitor for metastatic renal cell carcinoma, as shared in the [New England Journal of Medicine](#).
- The team demonstrated, in an article in the [Journal of Clinical Oncology](#) the noninferiority of reduced dose abiraterone acetate with low-fat diet for metastatic prostate cancer, leading to a change in NCCN guidelines.
- The team co-led clinical trials in urothelial cancer, the results of which led to the FDA approval of enfortumab vedotin as the first line treatment for cisplatin-ineligible patients, as was shared in the [Journal of Clinical Oncology](#) and recently in the peri-operative space as published in [NEJM](#).
- The team has led or been a key participant in many practice-changing clinical trials in prostate, urothelial, and renal cancers.

What's next?

- Investigator-initiated clinical trial of afatinib in genomically altered urothelial cancer.
- Investigator-initiated clinical trial of neoadjuvant dual AR and GR antagonism with enzalutamide/relacorilant in high risk localized prostate cancer.
- Co-leading a translational clinical trial of cabozantinib-nivolumab in prostate cancer.
- Incorporation of wearable biomarkers in new hormone-based clinical trials in medically vulnerable, geriatric patients with metastatic prostate cancer.
- Collection of patient-derived tumor material for translational research in prostate and urothelial cancers.

Leukemia Program



Focus: Leukemia, [high-risk myeloid malignancies](#), [adolescent and young adult population](#), [hematologic malignancies cancer risk and prevention](#), [clonal hematopoiesis](#)

Section Faculty: Olatoyosi Odenike, MD (Program Director), Anand Patel, MD (Medical Director, Inpatient Leukemia Service), Christopher Daugherty, MD, Michael Drazer, MD, PhD, Satyajit Kosuri, MD, Richard Larson, MD, Rafael Madero Marroquín, MD, Mariam Nawas, MD, Caner Saygin, MD, Wendy Stock, MD, Michael Thirman, MD, Greg Roloff, MD, Austin Wesevich, MD, MPH

The Leukemia Program is at the forefront of the development of novel clinical and molecularly oriented trials for individuals with leukemia, myeloid malignancies, and other bone marrow disorders. These range from early-phase studies to large Phase III studies that have changed the standard of care. There is close collaboration and interdigitation with the [transplant](#) and [cellular therapy program](#) and the AYA program. Our team is also focused on the characterization hereditary genetic features that may predispose patients to developing leukemia and myelodysplasia. We participated in the [2024 European Leukemia Net expert panel](#), the [2026 Classification Advancement meeting](#), and the NCCN, as well as holding leadership roles in the Alliance Cooperative Group Leukemia Committee.

Major accomplishments:

- An early-phase study of the menin inhibitor revumenib in patients with NPM1-mutated or KMT2A-re-arranged relapsed/refractory acute leukemia published in [Blood](#) and [Journal of Clinical Oncology](#) respectively. This work served as the basis of FDA approval of revumenib in some subgroups of acute myeloid leukemia (AML).
- Conducted an NCI-sponsored multicenter phase II trial that investigated low dose subcutaneous decitabine in myelofibrosis, published in [Blood Advances](#).
- A multicenter trial conducted through the Alliance Cooperative Group established a chemotherapy-free, targeted regimen of inotuzumab, followed by blinatumomab as an effective regimen in older adults with B cell ALL, published in [Journal of Clinical Oncology](#).
- A published in [Blood Cancer Discovery](#) demonstrating that ALL associated with myeloid mutations is a high-risk disease arising from antecedent clonal hematopoiesis and is enriched with T cells that respond to immunotherapeutic approaches.
- A Phase III trial published in [NEJM](#) and led to the FDA approval of asciminib for this indication.
- A multicenter study published in [Haematologica](#) showing the impact of time from diagnosis to treatment start in newly diagnosed AML treated with hypomethylating agent plus venetoclax therapy.

What's next?

- An ongoing [Phase II IIT](#) focused on the use of a chemotherapy-free induction regimen incorporating dasatinib and inotuzumab in Philadelphia-Chromosome Positive acute lymphoblastic leukemia.
- [NCI-sponsored myeloMATCH precision medicine trials](#) focused on specific molecular subsets of AML and MDS.
- An NCI-sponsored investigator initiated multicenter randomized [Phase II trial of oral decitabine-cedazuridine](#) with or without the LSD-1 inhibitor iadademstat, a first of its kind randomized trial in this patient population,
- An [IIT](#) focused on a novel combination of a BCL2/BCLxL inhibitor with the tyrosine kinase inhibitor ponatinib in T-cell ALL [based on prior translational work](#).
- An IIT focused on a combination of JAK inhibition and IDH inhibition in IDH-mutated advanced-phase myeloproliferative neoplasms based on [previous work](#).

Lymphoma Program



Focus: Lymphoma, high-risk lymphoma, adolescent and young adult population

Section Faculty: Justin Kline, MD (Program Director), Michael Bishop, MD, Peter Riedell, MD, Sonali Smith, MD, Ken Cohen, MD

The Lymphoma Program is at the forefront offering breakthrough care as the first medical center in IL to offer CAR-T cell therapy and providing care for a variety of fast-grown lymphoma subtypes through the [High-Risk Lymphoma Clinic](#). Additionally, our team is focusing on prevention, diagnosing and treating lymphoma through the collection and storing donated biospecimens at the [Hoogland Lymphoma Biobank](#). By examining these specimens, the lymphoma team is evaluating how lifestyle, occupation, environment and genes affect lymphoma. The clinical lymphoma program also works very closely with our expert hematopathologists in identifying lymphoma and pinpointing its different subtypes which are difficult to diagnose. Our hematopathologists also review pathology on complex lymphoma cases and other blood disorders to ensure a proper diagnosis is confirmed and refined.

Major accomplishments:

- We published in [Journal of Clinical Oncology](#) about our work creating a gene signature that predicted response among diffuse large B cell lymphoma patients to Bruton's tyrosine kinase inhibitors.
- Our faculty have been involved in numerous CAR-T cell therapy clinical trials in lymphoma with practice changing implications. This includes institutional efforts on a phase II study of tisagenlecleucel for the treatment of follicular lymphoma which led to FDA approval of this agent. Our work in this study has been published in [Nature Medicine](#).
- We have led the University of Chicago's efforts evaluating lisocabtagene maraleucel in the treatment of diffuse large B-cell lymphoma in patients ineligible for stem cell transplant due to co-morbidities or advanced age. Based on the results of this trial, lisocabtagene maraleucel was granted second-line FDA approval in diffuse large B-cell lymphoma. The results of this work were published in [Lancet Oncology](#).
- An international, randomized, phase III study of tisagenlecleucel versus standard of care in relapsed/refractory diffuse large B cell lymphoma, with results published in [NEJM](#).
- Dr. Smith continues to play a major role in national lymphoma societies and cooperative groups. She is immediate past chair of the Lymphoma Research Foundation Scientific Advisory Committee and is co-chair of the Southwestern Oncology Group (SWOG) lymphoma committee

What's next?

- ZUMA-23 which is a trial comparing standard of care chemoimmunotherapy to axicabtagene ciloleucel CAR T-cell therapy in the front-line setting for diffuse large B-cell lymphoma

Mesothelioma Program

Updated May 2025



Focus: Multidisciplinary care of pleural, peritoneal, tunica vaginalis and pericardial mesothelioma, innovative clinical trials, cancer genetics

Section faculty: Hedy Lee Kindler, MD (Program Director), Michael Drazer, MD, PhD (Cancer Genetics)

Collaborating faculty: Darren Bryan, MD (Associate Director, Thoracic Surgery), Mecker Möller, MD (Peritoneal Surgery), Scott Eggner, MD (Genitourinary Surgery), Aditya Juloori, MD (Radiation), Aliya Husain, MD (Pathology), Monica Malec, MD (Supportive Oncology), Samuel Armato, PhD (Medical Physica), Christopher Straus, MD (Radiology)

Our Mesothelioma Program is internationally recognized as a center for clinical excellence in this rare and heterogenous disease, attracting patients from across the country and around the globe for our expert multidisciplinary care and innovative clinical trials. We are international leaders in defining standards in treatment, staging, tumor measurement, germline testing, and pathologic diagnosis. Our highly collaborative multidisciplinary team includes experts from medical, surgical, and radiation oncology, radiology, pathology, supportive care and cancer genetics who focus on patients with pleural, peritoneal, tunica vaginalis and pericardial mesothelioma. Our significant expertise in this rare disease enables us to tailor our treatments to the unique characteristics of the individual patient. Our robust biobank includes clinical, imaging, and genomic data which informs our clinical and translational research.

Major accomplishments:

- This program is the international leader in defining diagnostic and treatment standards, including leading the [ASCO guideline](#) on the treatment of pleural mesothelioma, and developing the modified [RECIST 1.1](#) criteria for the precise measurement of this irregularly shaped tumor.
- This program has built an innovative clinical trials program that is one of the largest in the world for this disease. This ensures that the mesothelioma program has been a leader in the evaluation of now standard agents such as pemetrexed and immunotherapies, and are now at the cutting edge of evaluating novel targeted therapies for this disease.
- The identification that 12% of mesothelioma patients have a germline mutation that increases the risk of mesothelioma in patients with asbestos exposure. This was published in the [Journal of Clinical Oncology](#).

What's next?

- Leading the update of the ASCO guidelines on pleural mesothelioma, focusing on immunotherapy, surgery, and germline genetics.
- Innovative clinical trials, including:
 - Precision medicine trials against targets such as BAP1, NF2 and MTAP.
 - Cellular therapy trials for mesothelioma.
 - Multimodality surgical trials for peritoneal mesothelioma, incorporating normothermic intraperitoneal chemotherapy (NIPEC) and pressurized intraperitoneal aerosolized chemotherapy (PIPAC).

Multidisciplinary Breast Cancer Program



Focus: multidisciplinary and holistic cancer care, personalized medicine, health disparities & reducing inequities, collaboration with local partners, AI & machine learning

Section Faculty: Rita Nanda, MD (Director of Breast Oncology), Nan Chen MD, Janet Chin, MD, Olwen Hahn MD, Frederick Howard MD

Collaborating Faculty: Breast Surgical Oncology: Cristina O'Donoghue (Surgical Director, Breast Center), Betty Fan, DO, Nora Jaskowiak, MD, Sarah Shubeck, MD; Radiation Oncology: Steven Chmura, MD, PhD, Yasmin Hasan MD; Reconstructive Surgery: David Chang, MD (Chief of Plastic and Reconstructive Surgery), Maureen Beederman, MD, Summer Hanson, MD, PhD, Mark Tan, MD

The University of Chicago Multidisciplinary Breast Cancer Program is a nationally recognized team of physicians dedicated to breast cancer care and research. This program brings together experts from medical oncology, surgical oncology, radiation oncology, radiology, plastic and reconstructive surgery, supportive oncology, and pathology to provide comprehensive and personalized care from diagnosis to survivorship. The program's approach is rooted in leading-edge research and innovative treatments, ensuring that patients receive the most advanced and tailored interventions available. With a focus on clinical excellence, the University of Chicago Multidisciplinary Breast Cancer Program is at the forefront of advancing our understanding of breast cancer and improving outcomes for those affected by this challenging disease. This program focuses on a holistic and collaborative approach to breast cancer care, where every aspect of a patient's journey is considered and addressed with the utmost expertise and compassion.

Major Accomplishments:

- Led one of the first randomized studies demonstrating the effectiveness of immunotherapy for early-stage, high-risk breast cancer, published in [JAMA Oncology](#).
- Led the first study demonstrating the effectiveness of immunotherapy for metastatic triple-negative breast cancer, published in [Journal of Clinical Oncology](#).
- Co-led the randomized phase III trial that demonstrated the effectiveness of ovarian suppression in premenopausal women with aggressive, hormone receptor-positive breast cancer, published in the [New England Journal of Medicine](#).
- Conducted one of the largest scale analyses of the prognostic implications and chemotherapy sensitivity in HER2-low breast cancer, published in [JAMA Oncology](#).

What's next?

- A trial comparing androgen receptor blockade with enzalutamide or enzalutamide plus mifepristone to chemotherapy in metastatic androgen receptor-positive, triple-negative breast cancer.
- Evaluation of the most promising novel therapies for early-stage breast cancer through the I-SPY2 clinical trial.
- A study evaluating blood-based methylation biomarkers to better predict response to therapy in both early stage and metastatic breast cancer.
- Evaluating the role of the microbiome in predicting toxicity to abemaciclib-based therapy in those with hormone-receptor positive breast cancer
- Mitigating capivasertib-induced hyperglycemia in those with hormone receptor-positive, AKT pathway altered metastatic breast cancer and (pre)diabetes through a comprehensive multimodal management plan.
- Founding the Chicago Breast Cancer Research Consortium, a network focused on eradicating breast cancer disparities in the Chicagoland area.

Multidisciplinary Head and Neck Program



Focus: personalized medicine, treatment optimization, artificial intelligence applications, novel therapeutics, tissue- & blood-based biomarkers

Section Faculty: Alexander Pearson, MD, PhD (Program Director), Ari Rosenberg, MD (Associate Program Director), Everett Vokes, MD, Noura Choudhury, MD

The Multidisciplinary Head & Neck Program is unique in its comprehensive approach to cancer care, with a team that includes experts in medical oncology, radiation oncology, and head/neck surgery. Our medical and surgical care is complemented by an experienced team of supportive oncology professionals who provide state-of-the-art care to patients in our high-volume clinic. In addition to clinical care, our program has a substantial national impact in the development of improved treatment strategies for head and neck cancer. This includes multiple trials evaluating response-adapted treatment, in which an individual patient's response to systemic therapies drives personalized care planning, including the incorporation of novel and biomarker-driven therapeutic approaches. Our program continues to investigate innovative multidisciplinary treatments, such as organ-preservation “non-surgical” treatment for advanced tongue cancer. We are continually investigating novel drugs in the treatment of recurrent and metastatic head and neck cancer, in addition to advanced salivary, thyroid, and non-melanoma cutaneous malignancies; our treatment options include novel immunotherapies, targeted treatments, antibody-drug conjugates, and novel radiosensitizers, among others. Our portfolio of high-impact prospective clinical trials is paired with robust translational research collaboration with many Section-led lab groups, focusing on projects such as cancer genomics, tissue- and blood-based biomarkers, machine learning applications, and radiomics.

Major Accomplishments:

- A paper about neoadjuvant nivolumab/chemotherapy and response-adapted de-escalation in HPV-associated disease published in *JAMA Oncology* on 2024.
- An impactful manuscript on our “DEPEND” trial which tested induction nivolumab/chemotherapy with adapted chemo-radiation in locally advanced HPV negative head and neck cancer published in 2025.
- A paper evaluating the utility of circulating tumor HPV-DNA in the context of a de-escalation trial in viral-mediated head and neck cancer, published in the [Clinical Cancer Research](#).
- A publication in *New England Journal of Medicine* discussing the recent FDA approval and new standard of care of perioperative immunotherapy in surgical head and neck cancer.

What's next?

Ongoing, investigator-initiated clinical trials, including:

- A novel de-escalation clinical trial, “TARGET HPV,” for HPV+ oropharyngeal cancer, in which patients receive neoadjuvant treatment with a novel HPV-specific viral immunotherapy and chemotherapy followed by response-adaptive de-escalated minimally-invasive surgery or de-escalated radiation.
- The “SYNERGY” trial for patients with recurrent and/or metastatic head and neck cancer in which circulating tumor DNA is used to guide the best and personalized treatment for a given patient.
- A new trial testing immunotherapy alone or in combination as adjuvant treatment in MRD positive head and neck cancer.
- The “PaRTTi” study, an innovative multi-modal reirradiation for recurrent head and neck cancer and incorporating immunotherapy and PARP inhibition.

Myeloma Program



Focus: improving treatment outcomes in newly diagnosed myeloma, using measurable residual disease to guide decision making and identify cures, incorporating immunotherapies (i.e.: CAR T-cell therapy, bispecific antibodies), and novel strategies for high-risk multiple myeloma

Section Faculty: Benjamin Derman, MD (lead), Jennifer Cooperrider, MD, Adam Stepanovic, MD, Michael Bishop, MD

Our Myeloma Program focuses on improving the treatment outcomes of patients with newly diagnosed myeloma, particularly those with high-risk multiple myeloma. We have a strong portfolio of sponsored and investigator-initiated trial for patients at every stage of the disease process. These trials include: the incorporation of CAR T-cell therapy and bispecific antibodies into frontline therapy; trials that use MRD to inform treatment intensity and duration; and novel therapies in relapsed/refractory myeloma, including post-CAR T or bispecific antibody therapy. We also focus on identifying innovative strategies for the measurement of measurable residual disease (MRD) using bone marrow-based measurement of MRD by next generation sequencing; and blood-based liquid biopsies using mass spectrometry and next generation sequencing. Our research efforts have yielded important changes in clinical practice, including early access to all approved CAR-Ts and bispecific antibody treatments.

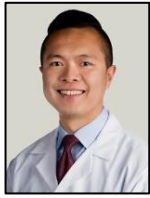
Major accomplishments:

- Our work highlighting quadruplet therapies in [JAMA Oncology](#), [Blood Cancer Journal](#), and [Blood Advances](#).
- The publication of our Phase III ATLAS trial data in [Lancet Oncology](#) and [Lancet Haematology](#) (publication forthcoming).
- Forthcoming topline results of our Phase III COBRA trial comparing KRd to VRd in newly diagnosed multiple myeloma.
- Publication of the CARTITUDE-1 study in [Lancet](#) on cilta-cel and of the phase I trial with anito-cel CAR T-cell in [Blood Advances](#). in relapsed/refractory multiple myeloma.
- Publication on blood-based MRD assessment using mass spectrometry in [Blood](#).
- Identification of intrathecal chemotherapy as a treatment for cilta-cel-associated parkinsonism in [Blood Advances](#).

What's next?

- Further investigation of CAR T-cell therapy and bispecific antibodies in patients with newly diagnosed multiple myeloma
- Further development of measurement of MRD, including blood-based MRD and their potential use in guiding decision-making.
- Developing new treatment strategies for patients who have relapsed after CAR-T therapy including an investigator-initiated trial of Belantamab mafodotin and KPd, as well as new CAR-T constructs for alternate targets.
- Identifying markers that may predict risk of secondary hematologic malignancies.

Neuroendocrine Tumor (NETs) Program



Focus: NETs of the GI tract, pancreas, lung and thymus, pituitary gland; medullary thyroid cancer; pheochromocytomas and paragangliomas; some rare genetic disorders such as Von Hippel-Lindau and Multiple Neoplasia Type 1 and 2

Section Faculty: Chih-Yi Liao, MD (Lead)

Collaborating Faculty: Xavier M. Keutgen, MD, FACS; Daniel Appelbaum, MD; Nicholas Feinberg, MD; Chin-Tu Chen PhD; Abdul Khan, MD; Namrata Setia, MD; John Hart MD; Rohan Katipally MD

The multidisciplinary Neuroendocrine Tumor (NETs) Program is a leader in NET patient care with dedicated specialists across surgery, oncology, interventional radiology, nuclear medicine, and pathology. Our program offers the only fully integrated multidisciplinary NET clinic (patients are seen in the same visit by surgery and oncology) and the only NET-specific tumor board in the Chicagoland region. We offer unique and advanced surgical techniques (debulking of liver metastases) and use leading-edge technology (intra-operative 3D microwave ablation) to successfully treat these tumors. As a leader in Peptide Receptor Radionuclide Therapy (PRRT), we have the only medical cyclotron in the region for creating novel radiotracers for NETs, with the aim of developing a program that will help create next-generation PRRT treatments in-house. We utilize molecular profiling of NETs to allow for a personalized approach using therapies that work best on each specific patient's tumor. We have researchers conducting the latest studies on NETs both in the laboratory and clinic.

Major accomplishments:

- Tremendous growth continues, cementing our lead as the top NET program in the region (>1100 visits per year, +219% in annual patient volume since inception in 2019)
- Phase III clinical trial results published in [*New England Journal of Medicine*](#) on the newest FDA-approved treatment option for neuroendocrine tumors
- Development of an investigator initiated trial of PRRT + fulvestrant for pancreatic neuroendocrine tumors (NCT06663072), based on translational research findings
- With our strong relationship with patient advocacy groups, UChicago is the only hospital in the region to host the annual Neuroendocrine Tumor Research Foundation (NETRF) patient symposium and the North American Neuroendocrine Tumor Society (NANETS) regional conference.

What's next?

- Establishing a dedicated Theranostics program that encompasses all aspects of clinical care, clinical trial and translational research.
- Translational research collaborations with aspirations for a SPORE grant.

Preventive Oncology Program

Updated May 2025



Focus: personalized medicine, imaging/ screening, shared-decision making

Section Faculty: Olufunmilayo Olopade, MD, FACP (Program Director)

Collaborating Faculty: Lorraine Canham, MD, Sonia Kupfer, MD, Hiroyuke Abe, MD, PhD, Kirti Kulkarni, MD

The Preventive Oncology Program is forward-thinking in its approach to patient care, centering on a paradigm shift from the one-size-fits-all method of screening to personalized care. Our clinic emphasizes the importance of shared decision-making, focusing on medical decisions that best suit our patients' lifestyle and needs. We offer a clinical trial highlighting intensive radiologic screening for early detection of breast cancer for patients who are at high hereditary risk, as an alternative to prophylactic mastectomy. We seek to investigate the clinical effectiveness of a biannual abbreviated MRI protocol with ultrafast DCE technique and establish a patient database of serial images to develop image markers integrated with biomarkers for breast cancer risk for future studies. Likewise, as we aim to improve risk-stratified recommendations for breast cancer prevention and early detection, we are a proud study partner of the national trial Women Informed to Screen Depending on Measures of Risk (WISDOM) study. As part of our efforts in global oncology, we are partnering with oncologists in Nigeria to support research of the efficacy and safety of optimal neoadjuvant to adjuvant anti-HER2-based therapy in Nigerian women with HER2 positive breast cancer and the potential of using -omic markers as a surrogate of chemotherapy resistance in triple negative breast cancer among Nigerian women.

Major Accomplishments:

- Publication of an article in [Radiology: Artificial Intelligence](#) about the external evaluation of a mammography-based deep learning tool for breast cancer prediction in a dataset from a high-risk population.
- Cohort study of patients with breast cancer, published in [JAMA Network Open](#), that showed racial disparities in response to NACT were associated with disparities in survival and varied across different breast cancer subtypes. Another [JAMA Network Open](#) article demonstrated a comprehensive breast cancer risk estimation model by integrating a polygenic risk score, pathogenic variants in high- or moderate-penetrance genes, and a questionnaire-based risk calculator.
- A [Human Molecular Genetics](#) paper talked about the use of polygenic risk scores for the prediction of breast cancer risk in women of African ancestry.
- Work on the relationship between physical activity during adolescence and early-adulthood and ovarian cancer among women with a *BRCA1* or *BRCA2* mutation was published in [Breast Cancer Research and Treatment](#).

What's next?

- Expand MRI study (CAPS) nationally to test whether it is clinically effective, adaptable, and can scale to optimize intensive surveillance for high-risk women.
- Partner with primary care to use liquid biopsy to better understand markers for risk and early detection.
- Join an Alliance study offering Denosumab to *BRCA1* carriers as a form of chemoprevention.

Sarcoma Program



Section Faculty: Dan Olson, MD (Lead), Janet Chin, MD

Collaborating Faculty: Rex Haydon, MD (Ortho Surgery Co-Lead), Tessa Balach, MD (Ortho Surgery Co-lead), Mecker Moller, MD (Surgical Oncology), Phil Connell, MD (Radiation Oncology), Peter Pytel, MD (Pathology), Nicole Cipriani, MD (Pathology)

Our Sarcoma Program is a multidisciplinary program, focused on the treatment of patients with advanced musculoskeletal, bone, and other sarcomas. We focus on the multidisciplinary management of patients with these diagnoses, based on the unique need for multi-specialty healthcare for our diverse patient panel. Our team includes medical oncology, orthopedic surgery, surgical oncology, interventional radiology, and radiation oncology, all working together to ensure the best outcomes for those with this often-aggressive form of cancer. In our labs, our scientists are examining new approaches to bone regeneration and in honing in on the genetic bases for these cancers, while in our clinic our team's robust portfolio of treatment options are often used in tandem to ensure the best clinical results for our patients; these include limb-sparing and computer-assisted surgical procedures, chemotherapy, radiation, bone implants for reconstruction, and innovations through clinical trials, including Phase I trials. We also specialize in pain management and quality of life during treatment. As of 2026, we are one of the first programs in the country to offer Tecelra TCR T-cell therapy for the treatment of refractory synovial sarcoma.

Major accomplishments:

- Integration of patients into our large panel of early-phase trials within the Developmental Therapeutics program.
- Participation in multiple cooperative groups, sarcoma-focused clinical trials, including Phase I trials.
- A publication in the [*Journal of Bone and Joint Surgery*](#) about the use of multidisciplinary care to treat pathologic fractures.
- Approved treatment center for Tecelra, the first FDA-approved TCR T-cell Therapy in oncology for use in refractory synovial sarcoma.

What's next?

- Offering afami-cel, a novel TCR T-cell based cell therapy treatment for synovial sarcoma, in partnership with the Cell Therapy Program.
- Providing treatment for desmoid tumors through a newly FDA-approved [systemic treatment option](#). This work is part of a cancer risk clinic for patients who have a diagnosis of heritable cancer syndrome FAP, which has resulted in many referrals for patients with desmoid tumors.

Stem Cell Transplant & Cellular Therapy Program



Focus: Hematopoietic stem cell transplant & cellular therapy, hematologic malignancies, MDS/MPN, aplastic anemia, CAR-T, TIL therapy, TCR engineered therapy, solid tumor cellular therapy, gene therapy, Transplant Optimization Program (TOP), geriatric oncology, graft-versus-host-disease (GVHD)

Section Faculty: Michael Bishop, MD (Lead), Satyajit Kosuri, MD, Jennifer Cooperrider, MD, Eli Darnell, MD, Benjamin Derman, MD, Justin Kline, MD, Richard Larson, MD, Mariam Nawas, MD, Daniel Olson, MD, Peter Riedell, MD, Alexandra Rojek, MD, Greg Roloff, MD, Sonali Smith, MD, Wendy Stock, MD

Collaborating Faculty: James LaBelle, MD, Rohini Chakravarthy, MD, MPH, John Cunningham, MD

The Adult and Pediatric Stem Cell Transplant and Cellular Therapy Program is at the forefront of hematopoietic stem cell transplant, cell therapy clinical trials, and new and emerging therapies. These treatments range from new conditioning regimens, GVHD prevention and treatment, novel donors, solid tumor cell therapy, gene therapies, and cell-based therapies for non-oncologic indications such as autoimmune diseases. We utilize autologous and allogeneic stem cell transplant, CAR-T, CAR NK, TCR, TIL, and gene therapies, as well as alternative donors, including haplo-identical and mismatched unrelated donors. Other trials have included: new conditioning regimens such as total marrow irradiation, or novel GVHD prophylaxis such as abatacept, post-transplant cyclophosphamide, and clinical trials utilizing T-regs and other novel agents. We also have a variety of clinics that work in with specific populations, including: our GVHD clinic for adult allogeneic stem cell transplant; the TOP Program for geriatric and high-risk patients following transplant; our Adolescent and Young Adult (AYA) clinic; and our Solid Tumor Cell Therapy Program which uses many innovative cell therapy products, including NK cells, TILs, and TCRs. Because of our program's heavy involvement with many cell therapy clinical trials, we are often chosen as one of the earliest sites for newly FDA-approved cell and gene therapies.

Major accomplishments:

- Within two years, established the highest-volume TIL center in the Midwest and second largest nationwide.
- Active contributor to the multi-center Donor Integrated Selection Consortium (DISCo), with two publications in *Leukemia* ([article 1](#), [article 2](#)) advancing donor selection in hematopoietic cell transplantation.
- Participation in multi-center studies and a high-impact perspective pieces in [Blood Advances](#) and [Blood](#) defining role of allogeneic stem cell transplant in myeloid malignancies with *TP53* alterations.

What's next?

- A bispecific protocol that uses anti-CD19/CD22 CAR T-cells that are manufactured in-house for the treatment of relapsed/refractory mature B-cell lymphoma after prior CD19 CAR T-cell failure
- A novel NY-ESO-1 armoured TCR T-cell therapy in advanced ovarian cancer and solid tumors
- Retrospective research using our internal Cell Therapy Biobank.
- Continuing leadership within the Cell Therapy Consortium.

Thoracic Oncology Program



Focus: non-small cell lung cancer, small cell lung cancer, immunotherapy, targeted agents, thymic epithelial tumors, digital pathology

Section Faculty: Marina Chiara Garassino, MD (Co-lead), Christine Bestvina, MD (Co-lead), Everett Vokes, MD, Noura Choudhury, MD

Lung cancer remains one of the leading causes of cancer-related death worldwide. In non-small cell lung cancer (NSCLC), targeted therapies and immunotherapy have improved outcomes, but predicting which patients will benefit most remains a major challenge. To address this, our team leads **I3LUNG**, a large international project that integrates clinical data, imaging, digital pathology, and genomics to develop AI-driven tools for precision oncology and more personalized care. We are also advancing research in thymic malignancies, rare cancers that are often misclassified, by developing AI-based tools to improve diagnosis. Through strong collaborations with Argonne National Laboratory and the Booth School of Business, we are also building innovative algorithms to make drug discovery and development more precise, efficient, and economically sustainable.

Major accomplishments:

- A paper in [Clinical Lung Cancer](#) describing a study to promote individualized treatment in aNSCLC, with the goals of improving survival and quality of life, minimizing or preventing undue toxicity, and promoting efficient resource allocation. The final objective of the project is the construction of a novel, integrated, AI-assisted data storage and elaboration platform to guide IO administration in aNSCLC, ensuring easy access and cost-effective use by healthcare providers and patients.
- The publication of a study in the [Annals of Oncology](#) that demonstrated that an AI algorithm is able to diagnose thymic malignancies with higher accuracy than non-trained pathologists.
- A publication in the [Lancet](#) about the KEYNOTE-671 Phase III trial. This is a paradigm-shift trial that showed that in patient with resectable NSCLC, a neoadjuvant adjuvant treatment is able to improve the survival

What's next?

- A collaboration with San Raffaele Hospital in Milan to study the tertiary lymphoid structures (TLS) microenvironment in NSCLC after neoadjuvant chemo-immunotherapy through single-cell analysis, spatial transcriptomics, digital pathology, and AI.
- The launch of LINEAGE, a national registry aimed at identifying genetic alterations in patients with a strong family history of cancer.
- AI-MATCH, an innovative trial designed to guide treatment selection for patients whose cancer is progressing after conventional therapies. This treatment guidance uses gene expression profiling and AI-based models derived from cell lines.

Basic & Translational Research Programs

Our Section prides itself on a longstanding tradition of excellence in cancer research, spanning the spectrum of basic research to translational research and clinical trials. We take a “team science” approach, where collaboration amongst and between teams is encouraged and facilitated. Led by our expert faculty, research efforts are supported by a dedicated team of staff scientists, graduate students, post-doctoral scholars, fellows, data analysts, research laboratory managers, and technicians.

Building on this strong foundation, our faculty possesses deep expertise across a broad range of research areas, including cancer metabolomics, tumor immunology, and cellular therapy. This wealth of expertise is fundamental to the collaborative spirit of our team science model, fostering innovative and diverse partnerships. Our partnerships extend across several leading basic and translational research entities, including the [Ben May Department for Cancer Research](#), the [University of Chicago Comprehensive Cancer Center \(UCCCC\)](#), the [National Cancer Institute \(NCI\)](#), and the [Pritzker School of Molecular Engineering \(PME\)](#).

Our basic and translational research spans a variety of fields, including:

- Developmental biology and genetics
- Cellular biology (focusing on intracellular pathways and signal transduction)
- Drug resistance and the development of new therapeutics
- Cell Therapy
- Tumor Immunology
- Genetics
- Metabolomics
- Transplant biology
- Protein targeting
- Artificial intelligence
- Computational Oncology

Much of our basic research carries over into translational research and clinical studies. With our patient-facing research, the Section believes in a multimodal, multidisciplinary approach that follows a bench-to-bedside model, integrating both laboratory and clinical research in pursuit of the best treatment and care options available.

Our robust research activities receive support from several prestigious sources, including the National Institutes of Health (NIH) and various non-federal granting agencies like the American Cancer Society. Research training is bolstered by an NCI-sponsored training grant, which supports both MD and MD/PhD post-doctoral investigators. Currently, the Section manages over \$32 million in federally-funded grants, non-federally funded research projects, philanthropic donations, and clinical trials.

Chen Lab



Focus: cancer metabolism, metabolomics, immunology, signal transduction, chemical biology, therapy development

PI: Jing Chen, PhD

Our lab has a long-term interest in elucidating the signaling links between metabolism and cancer for a better understanding of cancer metabolism and improved clinical outcomes. Two major research foci of this lab include (1) to determine both metabolic and signaling functions of intracellular metabolites and circulating “blood chemicals”, which influence tumorigenesis and tumor progression, and responses to anti-cancer therapies including chemotherapy and immunotherapy; and (2) to decipher mechanistic basis underlying the pathogenic links between diets and particular oncogenic mutations by exploring the pro- and anti-tumor effects of diet-derived substances on tumors with specific genetic backgrounds. Our hypothesis is that the circulating “blood chemicals” including diet-derived nutrients have a vital, and specific, influence on anti-tumor immunity; uncovering the relevant blood chemicals and underlying mechanisms will provide the foundation for new clinical treatments to control tumor growth and eliminate tumor invasion and metastasis.

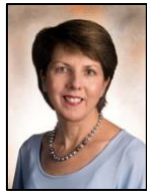
Major accomplishments:

- Publication of a paper in [Nature](#) about a blood nutrient compound library-based screening approach to demonstrate that dietary trans-vaccenic acid (TVA) directly promotes effector CD8+ T cell function and anti-tumor immunity in vivo. These findings reveal that diet-derived TVA represents a mechanism for host-extrinsic reprogramming of CD8+ T cells as opposed to the intrahost gut microbiota-derived short-chain fatty acids. TVA thus has translational potential for the treatment of tumors.
- A paper that elucidates maternal supplementation of TVA reshapes neonatal T cell development and early-life immune imprinting was recently accepted by *Science*.
- Two papers have been published in *Molecular Cell*. [One paper](#) demonstrates that intracellular PLA2G7 is selectively important for cell proliferation and tumor growth potential of melanoma cells expressing mutant NRAS, but not cells expressing BRAF V600E and shows that PLA2G7 and Lyso-PAF exhibit intracellular signaling functions as key elements of RAS-RAF1 signaling. The [second paper](#) shows that mutant isocitrate dehydrogenase (IDH) 1 and 2 play a pathogenic role in cancers, including acute myeloid leukemia (AML), by producing oncometabolite 2-hydroxyglutarate (2-HG).

What's next?

- The laboratory advances the premise that “blood chemicals” form a unifying regulatory layer in human physiology and pathologic responses. Here, blood chemicals refer to chemically defined, systemically circulating small molecules stable in plasma, including diet-derived nutrients, microbiota-produced metabolites, and bloodborne neuroendocrine factors. The lab will investigate how blood chemicals act as long-range messengers that reach tumors through the circulation and directly reprogram immune cell metabolism, differentiation, and functions, thereby shaping antitumor immunity across sex, age, and physiological context.

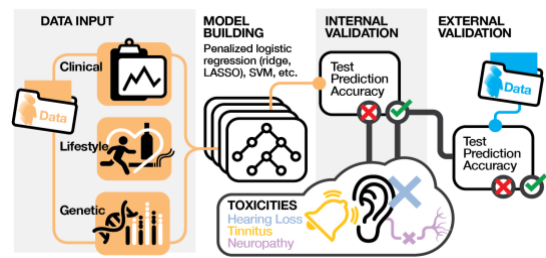
Dolan Lab



Focus: Pharmacogenomics, anticancer agent toxicity, cisplatin, neurotoxicities, GWAS

PI: M. Eileen Dolan, PhD

Our lab is focused on the pharmacogenomics of anticancer agent toxicities, with a particular interest on cisplatin-induced neurotoxicities. Platinum compounds are among the most widely used and successful groups of cytotoxic drugs worldwide but can cause severe hearing loss, tinnitus, and peripheral neuropathy; there are no FDA-approved agents for the prevention or therapy of these side effects in adult-onset cancers. Our laboratory has extensive experience conducting genome-wide association studies (GWAS) and functional validation of genetic variants associated with adverse drug reactions, including cisplatin-induced hearing loss, tinnitus, and peripheral neuropathy.



Machine Learning Workflow to Predict Cisplatin Related Toxicities

Major accomplishments:

- A publication in [Cancer Medicine](#) demonstrating for the first time that African ancestry testicular cancer survivors were significantly more likely to experience cisplatin-induced neuropathy and vertigo versus European and Asian ancestry survivors. This is consistent with data indicating that individuals of African ancestry were more likely to experience *paclitaxel*-induced neuropathy compared to those of European ancestry. Population allele frequency differences and expression levels of RNF24 was implicated in cisplatin induced neuropathy.
- The lab utilized GWAS in a well-characterized cohort of approximately 1800 testicular cancer survivors and identified genetic risk factors and genes associated cisplatin induced [hearing loss](#), [tinnitus](#), [neuropathy](#), [multiple severe neurotoxicities](#), and [speech recognition thresholds](#). Understanding the genes involved in these outcomes allows for the development of therapies to prevent or treat these toxicities.
- The lab performed a comprehensive, rigorous [pharmacokinetic study of serum platinum](#) levels in testicular cancer survivors following cisplatin treatment. Serum platinum levels were found to exceed the reference range for more than 30 years, with a strong inverse relationship with creatinine clearance. High serum platinum levels are associated with an increased susceptibility to developing multiple severe toxicities. Employing GWAS to assess genetic variants contributing to residual serum platinum, our group was the first to link genetic variants in MYH14, a renal transport gene, to prolonged serum platinum levels offering unprecedented mechanistic insights.

What's next?

- The development of novel quantitative risk prediction models using machine learning that integrate clinical assessments, genomic data, comorbidities, and modifiable factors to identify high-risk populations for cisplatin-related toxicities. This will then help to determine the extent to which genetic and/or clinical features alone or together can predict cisplatin-neurotoxicities and identify key variants, genes, or paths for future studies. These methods afford a critical opportunity to inform up-front clinical decision-making when integrated into clinical practice.

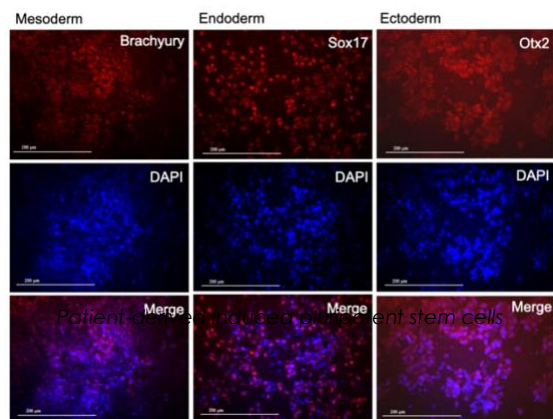
Drazer Lab

Updated May 2025



Focus: Human genetics, stem cell biology, hereditary blood cancers, hereditary cancer syndromes

PI: Michael Drazer, MD, PhD



We are focused on discovering the mechanisms of hereditary blood and cancer syndromes, with the understanding that these mechanisms may inform the treatment of both hereditary syndromes and cancers more broadly. Our team uses novel gene editing techniques (BE4max base editing, ABEmax base editing, Cas9 editing) to engineer stem cell models of these syndromes – which we refer to as patient “avatars” since they are genetically identical to the patients we care for in the clinic. We are a bioinformatics-heavy group that uses a variety of genomic and transcriptomic techniques to better understand these disorders, with a particular emphasis on optimizing bioinformatics pipelines to

improve the diagnosis of these syndromes. We are one of the only groups in the world with this research focus that is also linked to a clinic dedicated to the care of people with hereditary blood and cancer syndromes, which increases the translational impact of our work.

Major accomplishments:

- A paper in [JAMA Network Open](#) about how research-based bioinformatics pipelines were “reverse engineered” to better detect mesothelioma patients with hereditary cancer syndromes. This paper will help to build the case for universal germline testing in meso (which will be included in the upcoming ASCO Clinical Guidelines).
- A collaborative paper in [Blood](#) showing that hereditary blood cancer syndromes are much more common than previously recognized in stem cell transplant patients - this has important implications for the way donor evaluations are performed in the clinic.
- Collaboration with an Australian group and the NIH to publish a paper in [Blood Advances](#) that was the first paper to demonstrate that clonal hematopoiesis is common in *GATA2* and *RUNX1* germline mutation carriers (two hereditary blood cancer syndromes).

What's next?

- Using homegrown models to develop treatments to prevent leukemia formation in people with hereditary blood cancer syndromes – previously developed stem cell models form the backbone of this effort.
- Developing machine learning models that incorporate genomics data, improving our ability to predict prognosis in patients with blood cancers.
- Collaborating with colleagues in the Department of Radiology to use artificial intelligence-informed radiomics (their work) with contemporary circulating tumor DNA genomics (our work) to develop non-invasive methods of determining tissue histology in patients with mesothelioma.

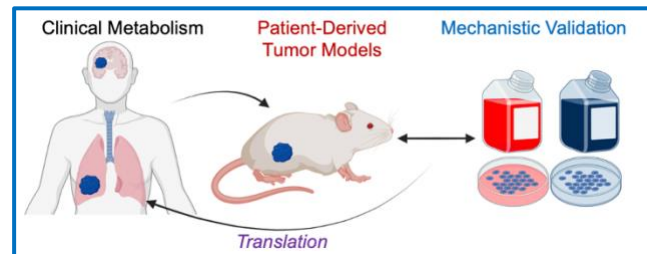
Faubert Lab



Focus: Cancer Metabolism, Metastasis, Lung Cancer, Tumor Microenvironment

PI: Brandon Faubert, PhD

Our lab is interested in how altered metabolism shapes the trajectory of cancer. By understanding the metabolic programs that drive cancer cell metastasis, we aim to uncover critical nodes that can be targeted to improve patient outcomes. We study tumor metabolism directly in patients, and interrogate the underlying biological mechanisms in preclinical mouse and tumor models. Our lab uses isotope-labeled metabolic tracers, high-resolution mass spectrometry, and flux analysis to investigate metabolic networks across all systems.



Our lab uses isotope-labeled metabolic tracers, high-resolution mass spectrometry, and flux analysis to investigate metabolic networks across all systems.

Current research projects include 1) Understanding how lactate oxidation drives lung cancer metastasis, and why blocking this metabolic pathway sensitizes tumors to chemotherapy; 2) Investigating how amino acid metabolism is reprogrammed in brain metastases to support survival; 3) Investigating how tumors perform ‘long-range’ metabolic communication with distant organs via extracellular vesicles.

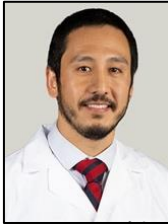
Major accomplishments:

- A paper in [Cancer Discovery](#) where we studied tumor metabolism directly in patients, where discovered altered cancer metabolism in treatment-naïve tumors predicts poor outcomes in patients. We discovered that blocking this pathway can suppresses the metastasis of human NSCLC cells in mice, suggesting that
- A pair of reviews, first in [Annual Review of Analytical Chemistry](#) describing mass spectrometry methods of measuring and analyzing stable isotope labeling; and in the [EMBO Journal](#), where we discuss how to perform stable isotope tracing studies in patients with cancer.
- A collaborative paper in [Nature Metabolism](#) examining the metabolic phenotypes of patient tumors, and how well these translate to preclinical tumor models.

What's next?

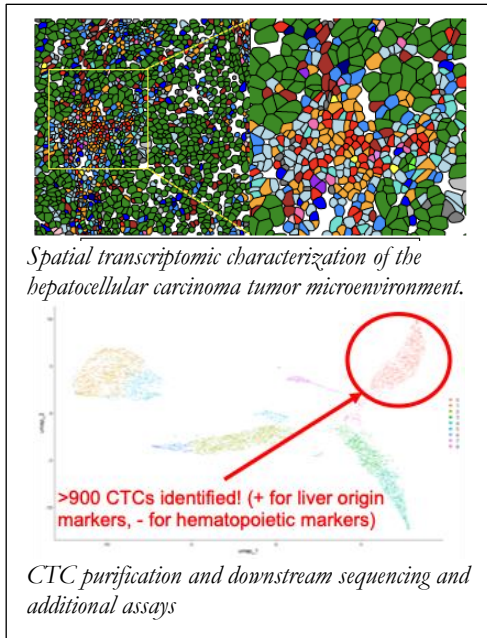
- In collaboration with our colleagues in Thoracic Oncology and Interventional Pulmonology, we are performing the very first clinical studies of tumor metabolism in patients with treatment-resistant tumors. Our goal is to understand how tumor metabolism adapts during therapy resistance to identify new treatment strategies.
- New studies from our group are investigating i) how tumors can engage alternative sugars to survive metabolic stress, and ii) how anti-metastatic signaling cascades regulate mitochondrial metabolism.

Franses Lab



Focus: tumor environment and metastasis in liver cancer, circulating tumor cell purification devices, circulating tumor DNA assays, special transcriptomic platforms

PI: Joseph W. Franses, MD, PhD



Our lab is focused on the tumor microenvironment (surrounding cells and extracellular matrix) and metastasis (distant spread of solid tumors) in primary liver cancers. We utilize state-of-the-art biospecimen profiling technologies – including spatial transcriptomic platforms and single cell gene profiling assays from circulating tumor cells (CTCs) – to develop biomarkers and motivate the evaluation of novel drug targets.

We also utilize these data to develop mechanistic hypotheses to evaluate using cell and animal model systems. This methodology has been applied to identify the LIN28B RNA-binding protein as a targetable cancer driver. We aim to increase the translatability of our results by leveraging the clinical trial and biospecimen infrastructure and the University of Chicago Comprehensive Cancer Center. We collaborate with molecular and computational experts within the University of Chicago and across the country.

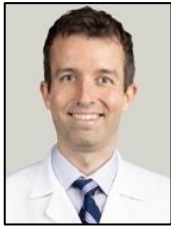
Major accomplishments:

- Established that the RNA-binding protein LIN28B is a potential drug target to inhibit circulating tumor cell function and metastasis in pancreatic cancer, published in [Nature Communications](#).
- Published papers about work in refining circulating tumor DNA subtyping for immune therapy response prediction in [Oncologist](#) and about lenvatinib resistance in [Gastroenterology](#).
- Established that aggressive bulk transcriptomic subtypes of hepatocellular carcinoma are driven by vascular endothelial cell gene expression in [Hepatology Communications](#).

What's next:

- Utilizing next-generation spatial transcriptomics characterization of pre/post-treatment liver cancer tissue specimens to develop biomarkers that predict response to immune therapies.
- Single-cell transcriptomic and additional characterization of liver and biliary CTCs to identify novel drug targets and biomarkers.
- Developing targeting and co-targeting therapeutic strategies in LIN28B-driven GI cancers for pre-clinical and clinical evaluation.
- Evaluation of additional blood-based biomarkers for response prediction and monitoring in liver and additional GI cancers.

Howard Lab



Focus: applying novel computational tools and artificial intelligence to improve the treatment of breast cancer

PI: Fredrick Howard, MD

There is a wealth of readily available data on cancer patients which is incompletely utilized. Our work focuses on integrating multiple dimensions of data – including digital histology, radiographic imaging, clinicopathologic parameters, and genomic data – to improve characterization of breast cancer, allowing for better personalization of treatment and prognostication. The main questions our lab is here to answer are: 1) Can artificial intelligence be used to improve prediction of response to therapy in breast cancer, and thus lead to better personalization of therapies? 2) Can deep learning use readily available pathologic and imaging data to improve upon or supplement existing genomic biomarkers in breast cancer in order to reduce cost, prevent unnecessary treatment delays, and improve access to biomarkers? & 3) Given the rapid growth of big data / artificial intelligence tools in oncology, what safeguards need to be in place to ensure these tools do not recapitulate healthcare disparities that are currently prevalent in cancer care?

Major accomplishments:

- Developed machine learning recurrence risk models for breast cancer recurrence published in [Clinical Cancer Research](#) and [npj Breast Cancer](#).
- Conducted one of the largest studies of epidemiology of HER2-Low breast cancer and impact on response to therapy/long term outcomes in [JAMA Oncology](#).
- Developed a deep learning model predictive of OncotypeDX signature using digital histology in [npj Breast Cancer](#), and co-developed an improved model published in [Lancet Oncology](#).
- Characterized batch effect / site specific signatures in digital histology and the impact on training deep learning models in multi-site repositories, published in [Nature Communications](#) with an example of impact on model accuracy described in [Cancer Cell](#).
- Developed a novel model, HistoXGAN for explaining predictions from deep learning foundation models, published in [Science Advances](#).
- Published an impactful biomarker study on the value of Oncotype recurrence score for decisions regarding the use of anthracycline therapy in [Annals of Oncology](#).

What's next?

- Ongoing collaborations with several external cooperative groups and organizations that will yield ~10,000 pathology slides for validation and further refinement of deep learning models for recurrence risk / OncotypeDX and response to therapy, to bring these tools closer to clinical practice.
- Building novel architectures to better integrate histologic and radiographic imaging data (predominantly breast MRI), so that predictions can be made from informative features on both the microscopic and macroscopic scale, and to better understand how histology is reflected in imaging and vice versa.

Izumchenko Lab



Focus: Human genetics, translational cancer research, molecular biomarkers for early detection, mechanisms of the progression from premalignant to invasive disease, head and neck cancer

PI: Evgeny Izumchenko, PhD

Our research focuses on understanding the interplay between the genomic alterations in carcinogenesis and disease progression, and on exploiting this understanding for developing novel biomarkers for diagnosis and risk stratification as well as identifying targets for therapeutic intervention. Specifically, we are interested in defining the drivers underlying the premalignant progression and early immune evasion of head and neck cancers. Our studies forge an inter-disciplinary collaboration between investigators with complementary and integrated expertise, including (clinicians/oncologists, translational researchers, health disparity experts, computational scientists, and biostatisticians). We are actively engaged in partnering with pharmaceutical industry worldwide, to advance our ability to detect and treat head and neck cancer.

Major accomplishments:

- A publication in [Nature Communications](#) about a nanoengineered topical transmucosal cisplatin delivery system which induces an anti-tumor response in animal models and patients with oral cancer.
- A study, published in [Cancer](#), about a low-cost, rapid, and accurate sequencing-based test with high clinical utility aimed at detecting mutations in an oral rinse for the early diagnosis and potential screening of oral cancer. Based on this study and the patented technology, the lab has founded OrisDX, a salivary diagnostic company focusing on non-invasive molecular-based detection of cancers of the oral cavity.
- An article published in [Cell Death & Disease](#) shows that AL101 (NOTCH signaling inhibitor) has potent effects in adenoid cystic carcinoma models with activating NOTCH1 mutations and constitutively upregulated NOTCH signaling pathway.
- A comprehensive computational analysis in [Frontiers in Oncology](#) found that DCLK1 expression positively correlates with NOTCH signaling pathway activation.
- An article in [Cancer Letters](#) about designing an ultra-deep amplicon-based sequencing library preparation approach that covers the entire mitochondrial genome providing the foundation for using mitochondrial sequencing for risk assessment, early detection, and tumor surveillance.
- A publication in [Journal of Experimental & Clinical Cancer Research](#) identified PRMT5 as a highly druggable therapeutic target in adenoid cystic carcinoma and demonstrated that its inhibition suppresses tumor growth across cell line, organoid, and xenograft models.
- An article published in [Oral Oncology](#) discovered that HPV-SEQ, a next-generation sequencing based liquid biopsy assay, demonstrates highly sensitive and precise detection of circulating HPV-DNA with strong clinical concordance, supporting its use for noninvasive monitoring and management of HPV-positive oropharyngeal cancer.
- An article in [Aging Cell](#) about a new study of a comprehensive AI-driven analysis of large-scale omic datasets using PandaOmics, an innovative target discovery engine, with a goal to identify dual-purpose target candidates for the treatment of cancer and aging.

What's next?

- Designing and testing PDCD10-binding inhibitory peptides.
- Developing a dual mutations/HPV salivary based liquid biopsy assay for early detection, surveillance and treatment adaptation in patients with head and neck cancers.
- Investigating HPV16-specific immunotherapy for patients with HPV driven head and neck cancer.
- Collaborating on multi-omics predictors of combination systemic therapy response/resistance in HNSCC.

Kline Lab

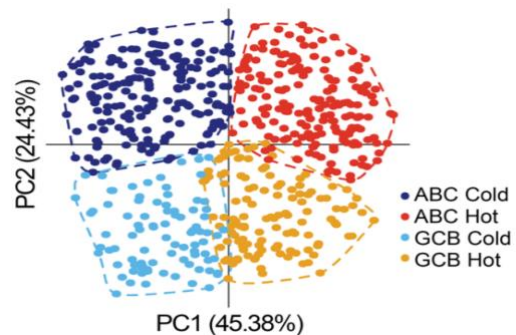


Focus: lymphoma, tumor immunology, immunotherapy, cellular therapy

PI: Justin Kline, MD

The Kline Lab is focused on overcoming immune evasion pathways activated in blood cancers and on improving the effectiveness of immune-based treatments for people with lymphoma. Our main disease of interest is diffuse large B cell lymphoma (DLBCL), the most common type of non-Hodgkin lymphoma.

We utilize *in vivo* mouse models and techniques, including CRISPR gene-editing and *in vitro* co-culture systems, to answer a range of basic and translational questions. We employ computational tools to analyze RNA-sequencing and whole exome sequencing data from tumor biopsies. We also investigate strategies to improve immune therapies for DLBCL with a focus on manipulating CAR T cells to enhance their persistence and function *in vivo*.



Using RNA-seq samples from 600 DLBCL patients, we identified clusters with distinct oncogenic pathways and immune microenvironments.

Major Accomplishments:

- Characterized a subset of DLBCL patients with *PD-L1* gene alterations, which harbor a T-cell-inflamed tumor microenvironment, published in [Blood](#). These patients likely stand to benefit from anti-PD-1 checkpoint blockade therapy, a trial that initiated by this lab in collaboration with Merck.
- Established the requirement for dendritic cells (DCs) to be MHC-dressed for effective anti-tumor immune responses, published in [Immunity](#). MHC-dressing is a phenomenon wherein tumor-cell-derived peptide:MHC is transferred to DCs for priming of anti-tumor CD8⁺ T cells.
- In collaboration with Janssen, this we developed a gene expression signature that identifies DLBCL patients sensitive to the addition of a Bruton's tyrosine kinase inhibitor (BTKi) to standard chemoimmunotherapy. This work is published in [Journal of Clinical Oncology](#).
- Using computational approaches and a large dataset, identified 4 DLBCL immune environments (so-called immune quadrants (IQs)), each enriched for particular recurring genomic alterations. We associated DLBCL IQs with response to bispecific antibody and CAR T cell therapies. This work is published in [Blood](#).

What's next?

- Using novel computational methods to characterize and predict recurrent features of immune-inflamed DLBCL using multi-omic data and exploring how lymphoma cell-intrinsic alterations regulate the tumor microenvironment and responses to immunotherapy.
- Chimeric antigen receptor (CAR) T cell therapy has brought significant benefits to patients with relapsed/refractory DLBCL, but the reality remains that a majority of patients will progress. We are interested in exploring methods to improve CAR T cell persistence and function through genetic and pharmacologic manipulations.

O'Donnell Lab



Focus: pharmacogenomics, personalized medicine

PI: Peter O'Donnell, MD

By making pharmacogenomic information accessible and understandable for providers and patients, the O'Donnell Lab leads cutting-edge research efforts that aim to translate genomic discoveries into improved prescribing decisions. Our translational research lab, housed within the [Center for Personalized Therapeutics](#), focuses on understanding the adoption of pharmacogenomic information at the point-of-care. We are especially interested in assessing how clinically actionable germline pharmacogenomic biomarkers can be utilized to inform selection or dosing of medications across the care continuum, including within cancer care. Dr. O'Donnell is or has been PI or Co-I/Project Lead for six large NIH-funded studies examining clinical delivery of pharmacogenomic results to aid treatment decision-making. We are a leading center in the field of personalized therapeutics, aiming to translate genomic discovery into results that will improve care for patients.

Major Accomplishments:

- Established, in conjunction with partners in the Department of Pathology, a [clinical testing platform](#) at the University of Chicago for pharmacogenomic testing. Research on this work has been published in *Clinical Pharmacology & Therapeutics* ([paper 1](#), [paper 2](#)).
- Demonstrated the impact and clinical relevance of pharmacogenomic information through large prospective implementation studies. This work has been published in:
 - [Anesthesia & Analgesia](#)
 - [Clinical Pharmacology & Therapeutics](#)
 - [Cancer](#)
 - [Therapeutic Advances in Medical Oncology](#)
 - [Journal of Pain Research](#)
- Studied aspects of engagement with patients and providers around the safe and effective consideration of pharmacogenomic results during medical care, especially among high-risk populations. This work has been published in:
 - [Pharmacogenetics & Genomics](#)
 - [JAMIA Open](#)
 - [Clinical & Translational Science](#)
 - *Clinical Pharmacology & Therapeutics* (in press)

What's next?

- Continue the work above to examine the impact and clinical relevance of pharmacogenomics through large prospective implementation studies.
- Continue collaborations through the Center for Personalized Therapeutics and across the institution to make this personalized approach accessible to all patients.

Olopade Lab

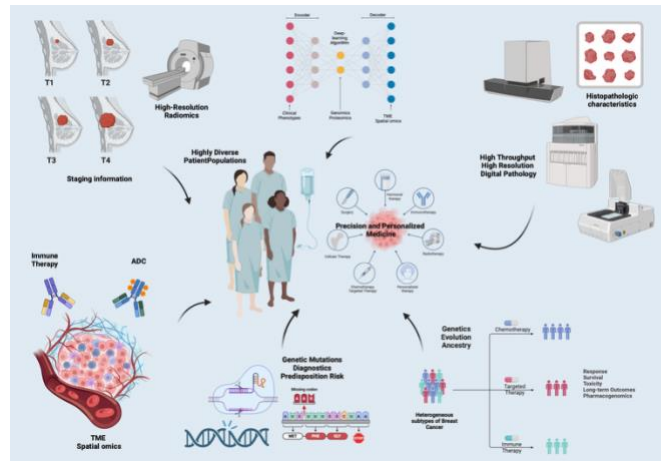
Updated May 2025



Focus: Cancer Genomics and BRCA-associated Breast Cancer

PI: Olufunmilayo I. Olopade, M.B.B.S., F.A.C.P.

We are engaged in understanding the etiology and molecular mechanisms of tumor progression in high-risk individuals. We employ novel techniques including artificial intelligence in imaging, sequencing technologies and bioinformatics to develop innovative interventions to eradicate breast cancer as a cause of premature deaths and thereby promote health equity. Our team has been the first and only laboratory in the world that has invested in sequencing the genomes to describe the omic features found in understudied populations. The lab members work in teams: Cancer Genomics, Computational Biology, Data Science and Preclinical Models.



Major accomplishments:

- Published on work in [Nature Communications](#) that highlighted a comprehensive spectrum of mutations observed in breast cancer patients from Africa for the first time, and discovery of distinct mutational processes unique to Nigerians. Further publication in [Clinical Cancer Research](#) showed that the VEGF-hypoxia signature was highest in the basal-like subtype.
- Using a large real-world data a paper published in [Breast Cancer Research](#) reveals significant differences in mutational spectra, gene expression, and relevant transcriptional signatures among breast cancer patients in diverse populations.
- Published about the regulation of viral mimicry and antiviral immunity by *BRCA1* pseudogene transcripts, which serve as immunoregulatory RNAs in breast cancer in [Cancer Research](#) and on the investigation of the functional significance of a SNP found to be associated with ER-negative breast cancer revealed that it regulates *TNFSF10* (*TRAIL*) expression in [Human Molecular Genetics](#).
- Externally evaluated a mammography deep learning tool, MIRAI, for breast cancer prediction in a high-risk population, published in [Radiology Artificial Intelligence](#).

What's next?

- Using genomics to optimize treatment of high-risk early breast cancer before surgery, and examining associations among omic signatures, molecular subtypes and environmental risk factors which contribute to the etiology of breast cancer.
- Employing emerging artificial intelligence algorithms to quantitatively analyze imaging data.
- Developing PDOs in such a way that the endogenous immune and non-immune stromal elements are preserved to allow human *in vitro* immunotherapy modeling.

Park Lab

Updated May 2025



Focus: Tumor microenvironment, immunotherapy outcomes, gut microbiome, metabolomics

PI: Joon Seok Park, PhD

The tumor microenvironment (TME) is the ecosystem surrounding cancer cells. It consists of various innate and adaptive immune cells, cancer-associated fibroblasts, vascular cells, and nerves. Notably, the outcome of cancer immunotherapy is strongly associated with many immune-specific markers in the TME, including macrophage polarization, dendritic cell subsets, CD8+ T cell to regulatory T cell ratio, and expression of co-stimulatory/co-inhibitory molecules, and T cell exhaustion. Previously published reports and our preliminary data suggest that gut commensal microbes shape the immune landscape in the TME. However, how gut microbes regulate these cellular processes is not well-defined. We aim to dissect the signaling mechanisms by which specific gut microbes regulate immune cells in the TME. We will determine signaling receptors and mediators, such as PD-L2/RGMB and innate sensing pathways, that link gut microbial signals to changes in tumor-infiltrating immune cells. Additionally, we focus on gut microbial metabolites and immunomodulatory ligands that can impact the metabolism and exhaustion of T cells in the TME. Our ultimate goal is to engineer bacteria to produce desirable molecules that enhance anti-tumor immunity and to develop methods for delivering these molecules to the TME. Beyond our mechanistic studies, we aim to define how the microbiome interacts with & influences responses to cancer therapy and are actively establishing institutional collaborations to do so. Our hope is to ultimately aid in the development of innovative therapeutic interventions.

Major Accomplishments:

- An article published in *Nature* that first determined the causal immune mechanism by which gut commensal microbes regulate anti-tumor immunity and identified a novel role of PD-L2/RGMB pathway in T cell-mediated immunity.
- The publication of a review paper in *Experimental & Molecular Medicine* that proposed a conceptual framework describing how gut microbial molecules can regulate co-stimulatory and co-inhibitory pathways.
- A research article published in *Molecular Cell* that showed that the glycerol-3-phosphate shuttle plays a critical role in balancing redox homeostasis and lipid synthesis in certain cancer, providing the foundation for our current manuscript in submission, which describes the function of Gpd2 in regulating T cell exhaustion and cytotoxicity.

What's next?

- Identify the bacterial molecules that promote anti-tumor immunity and determine the innate signaling receptor that mediates the effect of our bacterial isolates and its immunomodulatory molecules.
- Elucidate the molecular mechanisms by which RGMB regulates T cell activation and to identify the signaling factors associated with the RGMB complex. This will be done by analyzing the clinical samples to investigate the association between the microbiome features and the expression of PD-L2 and RGMB.
- Publishing a current manuscript that revealed the role of Gpd2 in T cell differentiation and aiming to modulate glycerol metabolism in the TME through diet interventions and engineered bacteria, thereby developing an innovative strategy to harness commensal microbes for regulating immunometabolism.

Patnaik Lab



Focus: Prostate Cancer, Innate Immunity, Immunotherapy, Myeloid Immunosuppression, Combination Therapies, Clinical Trials

PI: Akash Patnaik, MD, PhD, MMSc

Immunotherapy has demonstrated limited anti-tumor efficacy in metastatic, castrate-resistant prostate cancer (mCRPC). Our immune profiling studies of the tumor microenvironment (TME) in mCRPC patients revealed an enrichment of innate immunosuppressive myeloid cells, such as tumor-associated macrophages (TAM) and myeloid derived suppressor cells (MDSC). However, evaluation and targeting of the myeloid TME has been under-investigated in mCRPC, despite emerging data that it is a highly relevant component for immune escape and immunotherapy resistance. Using genetically defined murine models of AVPC, we have discovered and developed several therapeutic strategies to activate myeloid innate immunity in the TME driven by neutrophils (a paradigm shift in cancer immunotherapy research) and macrophages. Our lab has successfully translated these discoveries into innovative clinical trials, which we lead nationally and for which we organize tumor and blood-based specimens for multi-omic profiling. These efforts are being supported by NCI R01 and SPORE grants, V Foundation Translational Cancer Research Award, two Prostate Cancer Foundation (PCF) Challenge Awards and industry funding.

Major accomplishments:

- A publication in [Cancer Discovery](#) demonstrating how a tyrosine kinase inhibitor (cabozantinib) eradicates advanced murine prostate cancer by activating anti-tumor innate immunity.
- A publication in [Journal of Clinical Oncology](#) which led to the FDA approval of rucaparib in men with metastatic castration-resistant prostate cancer harboring a BRCA1 or BRCA2 gene alteration.
- A publication in [Journal of Clinical Oncology](#) summarizing recommendations from Prostate Cancer Working Group 4 (PCWG4) on trial design and objectives for patients with prostate cancer
- Two publications in *Cancer Cell* and *Nature Communications* investigating the therapeutic efficacy of dual aCTLA4/aPD-1 immune checkpoint blockade therapy in mCRPC patients.
- A publication in *Molecular Cancer Therapeutics* demonstrating how BET inhibition sensitizes immunologically-cold Rb-deficient prostate cancer to immune checkpoint blockades; and a [second](#) on how cabozantinib unlocks efficient in vivo targeted delivery of neutrophil-loaded nanoparticles into murine prostate tumors.
- Two publications in *Clinical Cancer Research*: [one](#) about suppression of tumor cell lactate-generating signaling pathways eradicates murine PTEN/p53-deficient aggressive-variant prostate cancer via macrophage phagocytosis; and a [second](#) about the reversal of lactate and PD-1-mediated macrophage immunosuppression controls growth of PTEN/p53-deficient prostate cancer.
- A paper in *Molecular Cancer Research* highlighting significant TAM heterogeneity within the TME of prostate cancers, and a therapeutic strategy to target the most immunosuppressive TAM populations that drive progression and metastasis.

What's next?

- Several novel mechanistically-driven strategies are being developed to enhance immunotherapy efficacy in PC. These include:
 - Activating the cGAS/STING Pathway and NOD-like receptor (NLR) family pyrin domain containing 3 (NLRP3) inflammasome
 - Targeting immunometabolic cross-talk between tumor cells and TAM using targeted therapies and/or dietary interventions.
 - Targeting novel immunologic checkpoints and innate immune approaches to enhance immunotherapy efficacy in metastatic prostate cancer patients.
 - Elucidating the role of circadian dysregulation/molecular clocks on immunotherapy efficacy in prostate and other immune-refractory cancers

Pearson Lab



Focus: Computational oncology, medical artificial intelligence, deep learning, digital biomarkers, mathematical modeling, head/neck cancer, salivary gland cancer

PI: Alexander Pearson, MD, PhD

The Pearson Lab integrates clinical expertise, mathematical modeling, high dimensional statistics, and tumor biology to improve cancer care using data. We believe that cross-contextualizing multiple types of cancer data can improve the lives of patients. The Pearson Lab has been at the forefront of research leveraging AI, especially deep learning, to transform cancer care and outcomes. Our work has focused on developing robust deep learning models to analyze complex cancer data, including digital pathology slides, radiology images, and multimodal data, to guide clinical decision-making. Key innovations have included novel techniques to improve model performance, such as synthetic cancer histology generation, uncertainty quantification, and the application of deep learning to pathology for predicting cancer recurrence. We have worked on developing and validating clinical machine learning models to guide decision-making and improve outcomes across cancer types. A core focus has been building prognostic models using features from clinical data, genomics, digital pathology, radiology data, and combinations of these data types. The work provides a framework for developing machine learning models that clinicians can trust and reliably act upon to benefit patient care. Overall, Pearson Lab is at the leading edge of demonstrating how many different data types can be thoughtfully and transparently translated to improve clinical decision-making and outcomes for cancer patients. We have developed integrated laboratory and computational platforms to better understand the complexities of human cancers, along with a live-cell imaging platform to observe and collect information about interactions between tumor cells, immune cells, and treatments. This information is passed into a custom-built multi-scale agent-based mathematical model of the tumor, which can be used for detailed simulations to optimize treatment combinations. Our lab leads multiple clinical trials to evaluate new treatment strategies, and organizes and analyzes samples derived from these studies. We interface closely with the University of Chicago Head and Neck Cancer Program, which is an internationally-recognized leader in treatment innovation.

Major Accomplishments:

- Developed a deep learning platform for automated digital pathology-based prediction of cancer molecular subtypes directly from diagnostic samples.
- Described and reversed sources of model bias capable of reducing AI biomarker accuracy, particularly in underrepresented groups.
- Showed how generative AI can be used to teach human physicians with synthetic images.
- Described human susceptibility to being tricked by generative AI content.
- A new article published in [Nature Communications](#) about a Phase I trial of the safety and antitumor activity of an oral MDM2 inhibitor, alrizomadlin (APG-115), +/- carboplatin in TP53 wild type unresectable recurrent/metastatic salivary gland cancers.

What's next?

- A unique portfolio of internally-maintained custom-built software pipelines to analyze cancer data.
- An expert team of data scientists to curate data, build servers, facilitate regulatory compliance, and enable collaborations both within our institution and with partners such as the Argonne National Laboratory.
- A series of custom-built GPU servers for AI research, from learning to high-performance computing needs.
- HIPAA and FISMA compliant data storage solutions to facilitate computational research on human health data.

Rahbani Lab



Focus: leukemia, adipose tissue, bone marrow adipocytes, metabolomics

PI: Janane Rahbani, PhD

Our research focuses on uncovering how adipose tissue—especially bone marrow adipocytes—drives leukemia progression and influences treatment outcomes through metabolic communication. We investigate how these specialized fat cells provide key nutrients and signaling molecules that leukemia cells exploit for growth, survival, and resistance to therapy. By combining *in vivo* models with dietary interventions like calorie restriction and time-restricted feeding, we aim to map how shifts in adipocyte metabolism reshape the tumor microenvironment. The big vision behind our work is to reimagine leukemia therapy by targeting the body’s metabolic ecosystem—rather than cancer cells alone—as a novel and powerful axis of intervention. Our long-term goal is to translate these discoveries into metabolism-based therapies that weaken leukemia from its metabolic roots, offering more effective, less toxic, and personalized treatment strategies for patients.

Major accomplishments:

- Two *Nature* publications ([one](#), [two](#)) revealed a novel mitochondrial mechanism in brown fat that fuels energy expenditure via creatine-dependent thermogenesis. The works identified creatine kinase B (CKB) as a key driver of this futile creatine cycle, demonstrating that its disruption impairs thermogenic function, lowers energy output, and accelerates obesity—uncovering a promising metabolic pathway for therapeutic targeting in obesity and related disorders.
- A paper published in *Nature Metabolism* demonstrated that $G\alpha_q$ signaling amplifies $G\alpha_s$ pathway activity in adipocytes, leading to a sustained and synergistic increase in whole-body energy expenditure. This finding uncovers a powerful mechanism to boost thermogenesis and highlights a promising therapeutic strategy for tackling obesity and metabolic disease.
- A paper published in *Cell Metabolism* challenged the long-standing belief that UCP1 is the sole driver of adaptive thermogenesis, unveiling alternative heat-generating mechanisms and reshaping our understanding of how the body maintains energy balance.

What’s next?

- Reprogramming obesity-altered bone marrow adipocytes to investigate how changes in adipose metabolism reshape the leukemia microenvironment and drive disease progression, with the goal of uncovering new therapeutic strategies to improve outcomes in obese cancer patients.
- Refining protocols to isolate the bone marrow adipocyte secretome, allowing comprehensive lipid and protein profiling to uncover diet-regulated adipokines and cytokines that modulate immune responses, inflammation, and leukemia progression.
- Leveraging adipocyte-specific preclinical models to uncover how distinct fat depots (e.g. brown adipose tissue, subcutaneous adipose tissue, epididymal adipose tissue and bone marrow adipose tissue) shape cancer progression by deconvoluting their unique signaling pathways and their impact on energy homeostasis.

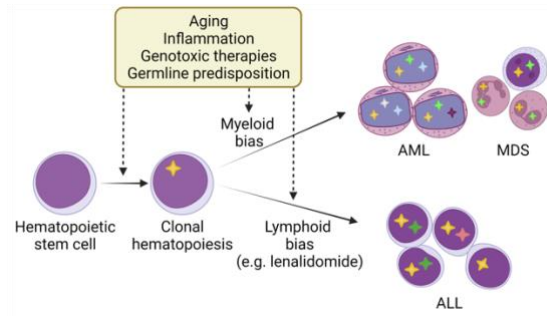
Saygin Lab



Focus: Leukemia biology, clonal hematopoiesis, experimental therapeutics

PI: Caner Saygin, MD

Saygin Lab studies leukemia biology by using *in vitro* and *in vivo* models of acute myeloid leukemia (AML) and acute lymphoblastic leukemia (ALL), as well as human samples obtained from patients treated at the University of Chicago. We are particularly interested in drivers of CHIP (clonal hematopoiesis of indeterminate potential) progression to leukemias of myeloid vs lymphoid lineage in *de novo* and therapy-related leukemogenesis. Our translational research lab aims to identify mechanisms driving these fatal diseases and leverage them for new experimental therapeutics. Our drug development efforts focusing on high-risk subsets of AML and ALL have led to “home-grown” phase I/II investigator-initiated clinical trials.



Major accomplishments:

- A recent manuscript in [Clinical Cancer Research](#) identified mechanisms driving BH3 mimetic resistance in T-ALL. We showed that LCK and ACK1 signaling pathways confer resistance to BCL-2 and BCL-xL inhibition, respectively. Dual targeting of BCL-2/BCL-xL and LCK/ACK1 signaling pathways with the combination of NWP-0476 plus dasatinib or ponatinib was more effective than single agent therapy in murine models of T-ALL. These preclinical data laid the foundation for our investigator-initiated phase 1b/2 clinical trial, LPVd study, funded by the Leukemia Lymphoma Society (NCT06207123). In 2026, we opened a second investigator-initiated trial, CAVALRY study, to investigate AKT inhibition in adult ALL (NCT07294677).
- A manuscript published in [Leukemia](#) deciphered the impact of lenalidomide in evolution of *TP53*-mutant CHIP and therapy-related leukemogenesis.
- A paper published in [Blood Cancer Discovery](#) showed that clonal hematopoiesis can be a precursor for acute lymphoblastic leukemia (ALL), and ALL with myeloid mutations is a high-risk disease with inferior survival outcomes.
- Another manuscript published in [Blood Advances](#) defined molecular and clinical characteristics of therapy-related ALL. This study represents the largest cohort ever studied for this rare entity, and offers new mechanistic insights to understand and prevent the evolution of lymphoid malignancies from pre-existing CH.

What's next?

- Mouse models of *TP53*-mutated acute leukemias to study the mechanisms of *de novo* and therapy-related leukemogenesis. *TP53*-mutant AML and ALL have the worst prognosis, thus represent areas of unmet therapeutic need. We aim to further validate our preclinical data by performing comprehensive multi-omic bulk and single cell analyses of patient samples. Collectively, these studies will identify new opportunities for drug development.
- Investigating new pathways to target for treatment of AML and ALL. These preclinical efforts in experimental therapeutics will be leveraged for future phase 1b/2 clinical trials.

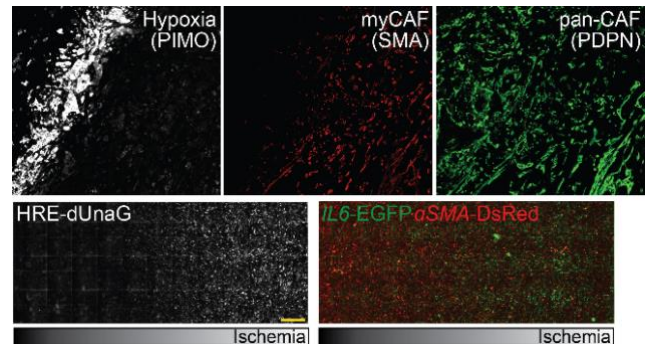
Schwörer Lab



Focus: Cancer metabolism, cancer-associated fibroblasts (CAFs), pulmonary fibrosis, pancreatic cancer, metabolism

PI: Simon Schwörer, PhD

We are interested in understanding the role that fibroblasts play in tumor progression and fibrotic disease. We are specifically interested in how metabolism controls fibroblast activation as well as the plasticity and function of fibroblasts, how metabolic rewiring in fibroblasts contributes to pro-tumor and pro-fibrosis function, and how alterations in nutrient availability impact fibroblast fate and function and can lead to therapeutic vulnerabilities. Ultimately, we aim to identify fibrosis- or tumor-specific metabolic vulnerabilities in fibroblasts that could be targeted in combination with other therapeutic approaches to improve patient outcomes.



In tumors, a subtype of CAF is excluded from hypoxic areas (top). We can recapitulate this in a dish using a novel culture method that generated oxygen gradients (bottom).

Major accomplishments:

- The metabolic conditions in tumor contribute to the heterogeneity of cancer-associated fibroblasts in pancreatic tumors. The role of hypoxia in generating a pro-tumor fibroblast subset is published in [Cancer Research](#).
- Metabolic rewiring contributes to fibrotic disease. Fibroblast synthesis of the amino acid proline is required for the production of collagen, which accumulates in fibrosis, published in the [EMBO Journal](#). Another paper published in [Science](#) shows that mitochondrial NADPH generation is selectively required for proline synthesis, and its deletion impairs collagen production, which suggests that targeting metabolism could be a way for alleviating fibrotic disease.
- A paper published in [Nature Metabolism](#) shows that fibroblasts undergo metabolic rewiring in tumors to maintain collagen synthesis despite depletion of the nutrients required for this process.
- A paper in [Nature](#) shows that metabolic rewiring in fibroblasts can be targeted to alleviate immunosuppression across a variety of tumors.
- A recent paper in [Matrix Biology](#) shows that low glutamine availability in pancreatic cancer alters fibroblast-derived extracellular matrix to promote cancer cell growth

What's next?

- Using a novel fibroblast reporter (FIRE) in pharmacological and genetic screening approaches to define novel regulators of fibroblast heterogeneity.
- Testing the role of metabolic pathways for their relevance for alleviating fibrotic disease and tumor progression.
- Working to understand how fibroblast metabolism affects immune cells to define novel mechanisms of fibroblast immune cell crosstalk.
- Establishing matched pairs of CAFs and organoids isolated from pancreatic tumors from the same patient to generate co-culture models that can be used to understand how CAFs influence cancer cell growth and therapy resistance.

Stock Lab



Focus: NCI National Clinical Trials Network (NCTN) referral center for evaluation of minimal residual disease; translational research in acute leukemias with a particular focus on ALL including pre-clinical modeling leading to design of early phase combinatorial trials and clinical validation.

PI: Wendy Stock, MD

The Stock Lab focuses on translational research in the field of acute leukemias. We are the referral center for the NCI National Clinical Trials Network (NCTN) for work related to the evaluation of minimal residual disease in acute lymphoblastic leukemia (ALL) and its correlation with clinical trial outcomes. This is based on work our lab has produced, focused on identifying new biological prognostic factors in specific subsets of leukemia that lead to novel clinical trial design and has focused particularly on the clinical significance of molecular detection and monitoring of subclinical disease (or minimal residual disease) using quantitative molecular methods. We are also involved in pre-clinical modeling of novel strategies to overcome treatment resistance in ALL to inform the design of innovative early phase trials. Another area of focus for our lab is on the identification of biomarkers of response and resistance. Additionally, we have designed biologically risk-adapted clinical trials for patients with acute leukemias, leading national trials for treatment of acute lymphoblastic leukemia (ALL) that have helped to change the standard of care for young adults with this disease.

Major accomplishments:

- Leadership in the NCI's NCTN related to in correlative sciences in leukemia.
- Collaboration with national groups to identify new genomic subsets of ALL and to evaluate new methods of treatment sensitivity and resistance.
- Leukemia and Lymphoma Society Clinical Trials Award for innovative approach to relapsed T-ALL.
- A paper published in [Clinical Cancer Research](#) about work done to develop rational combination strategies for the treatment of T-ALL.
- A publication in [Haematologica](#) focused on measurable residual disease in ALL.
- Work, published on in [Blood](#), using integrated whole-genome (WGS) and -transcriptome sequencing (RNA-seq), enhancer mapping, and chromatin topology analysis to identify previously unrecognized genomic drivers in B-ALL.
- Publication in [Blood Advances](#) of our work to better understand the genomic and epigenetic mechanisms of drug resistance in pediatric ALL.
- An article in [Blood Cancer Journal](#) about FLT3 mutant AML and potential treatment options in murine models.
- The publication of our work in [Cancer Discovery](#) combining venetoclax and navitoclax with chemotherapy for patients with relapsed or refractory ALL or lymphoblastic lymphoma.

What's next?

- Continued innovation evaluating and validating novel agents and identification of mechanisms of resistance to inform design of novel combinatorial targeted therapeutic trials.

Sweis Lab



Focus: Immunotherapy resistance in solid tumors, translational science, microbiome, bladder cancer, Immunotherapeutic development, phase 1 trials

PI: Randy Sweis, MD; Staff Scientist: Andrea Ziblat, PhD

Our lab investigates mechanisms of resistance to cancer immunotherapies in solid tumors, with a goal of translating findings into clinical trials for patients. We use state-of-the-art technology to mechanistically investigate immune responses to cancer using preclinical laboratory modeling and translational studies of human cancer. We also leverage mathematical modeling to advance our understanding of tumor-immune interactions. Our goal is to translate findings into clinical trials to improve the efficacy of cancer immunotherapy for patients. Dr. Sweis is an active phase I investigator in our developmental therapeutics program thus findings from our lab can be rapidly translated into trials.

Major accomplishments:

- This lab was the first to link FGFR3 mutations with non-T cell-inflamed bladder cancer and published this work in [Cancer Immunology Research](#). This finding led to a number of clinical trials combining FGFR inhibition and anti-PD-1 therapy including a combination trial with rogaratinib plus atezolizumab, now published in [JAMA Oncology](#).
- Published an international collaborative perspective paper in [Cancer Cell](#) on future directions with microbiome research in cancer.
- Presented pre-clinical and spatial transcriptomic data at [AACR 2026](#) demonstrating impairment of dendritic cell-T cell clustering by FGFR3 activation in bladder cancer.
- Published in [Clinical Cancer Research](#) a randomized phase II study incorporating IL-7 agonist with anti-PD-L1 therapy in urothelial cancer.
- Collaborated on the AMBASSADOR study of adjuvant PD-1 immunotherapy with pembrolizumab in bladder cancer, now published in [NEJM](#).

What's next?

- Developing novel, genetically engineered preclinical murine models for mechanistically investigating the impact of FGFR3 on the immune microenvironment and resistance to immune checkpoint inhibitors.
- Studying the relationship of the immune microenvironment in bladder cancer specimens (including spatial transcriptomics) with clinical outcomes and responsiveness to immune checkpoint blockade.
- Continuing a mathematical modeling collaboration with Dr. Trachette Jackson at the University of Michigan continues with future studies including the immunological effect of the antibody drug conjugate enfortumab-vedotin on bladder cancer in vitro and in vivo.
- Evaluation of the relationship between the urine microbiome, urine metabolomics, and responsiveness to BCG immunotherapy in early stage bladder cancer.
- Opening phase 3 clinical trial incorporating FGFR3 inhibition with PD-1 therapy and advancing PPAR-gamma inhibition in urothelial cancer.

Szmulewitz Lab

Updated May 2025



Focus: Prostate Cancer therapeutics, biomarkers

PI: Russell Szmulewitz, MD

The Szmulewitz lab is a translational research group focused on identifying novel therapeutic targets and accelerating the discovery and implementation of new treatment strategies for terminal prostate cancer. One of our primary goals is to understand and target resistance to standard hormonal-based therapies in order to ultimately improve patient outcomes. To this end, the Szmulewitz lab utilizes preclinical models of human prostate cancer and collected biospecimens from patients for analysis and further model development. We also collaborate with investigators across the University of Chicago to test emerging treatments, imaging strategies, and drug-delivery systems. In addition to working on prostate cancer therapeutics, a key mission is to combine those therapies with biomarkers to enhance precision medicine in the prostate cancer space.

Major accomplishments:

- Discovery that subsequent to treatment with potent standard androgen receptor (AR) targeted therapies, prostate cancer compensates by expressing an alternative receptor called the glucocorticoid receptor (GR) as described in [Hormones and Cancer](#). This was followed by publications in [Molecular Cancer Therapeutics](#) and showing that novel GR antagonists can be effective to ameliorate resistance to therapy. Clinical trials led by Dr. Szmulewitz targeting GR and AR concurrently have stemmed from this work.
- Development of novel circulating tumor cell (CTC) biomarkers for multiplex protein analysis that have been incorporated into clinical trials, as shared in the [Journal of Translational Medicine](#) and [Clinical Cancer Research](#).
- Demonstrated that a subset of resistant prostate cancer driven by the overexpression of the protein SOX2 could be targeted by co-targeting the AR and WEE1 cell-cycle regulator, shown in [Cancer Letters](#).

What's next?

- Examining the cooperative effects of GR and AR splice variants in therapy resistant prostate cancer.
- Understanding the potential role for targeting WEE1 in prostate cancer independent of SOX2 expression.
- Development of novel prostate cancer imaging agents and radiotherapeutics, in collaboration with our institution's Department of Radiology faculty.
- Interrogation of novel drug delivery mechanisms in collaboration with faculty in the Ben May Department.
- Developing new patient-derived prostate cancer organoids from patients of diverse racial/ethnic backgrounds.
- Understanding and targeting the biology driving prostate cancer disparities in men of African ancestry.

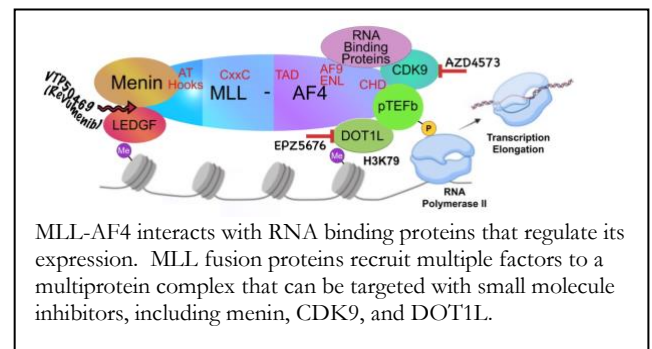
Thirman Lab



Focus: Genetic aberrations in leukemia, mouse models, development of targeted therapies

PI: Michael J. Thirman, MD

Our research focuses on the investigation of the role of mutant genes in leukemogenesis. We cloned the *ELL* gene as a fusion partner of *MLL* in the (11;19)(q23;p13.1) translocation. Subsequently, we developed mouse models of *MLL-ELL* leukemia using retroviral transduction and gene knock-in approaches. We have also identified and cloned EAF1 and EAF2, a novel class of proteins that interact with *ELL* and are required for the transforming capacity of *MLL-ELL*. *ELL*, EAF1, and EAF2 are involved in transcriptional elongation by RNA Polymerase II. We have used our *MLL-ELL* mouse models to identify genes that collaborate with *MLL* fusion proteins in the development of acute leukemia. We developed the first faithful mouse model for the t(4;11), the most common 11q23 translocation. The overall goals of our research are to understand the mechanisms that mediate leukemic transformation by *MLL* fusion proteins and to develop targeted therapies based on these insights.



Major accomplishments:

- Identification that *MLL* fusion proteins preferentially regulate a subset of wild type *MLL* target genes in the leukemic genome published in [Blood](#).
- Characterization of the regulatory elements of MEIS1 in acute leukemia published in [Leukemia](#).
- Development of the first faithful mouse model of *MLL-AF4* pro-B ALL published in [Cancer Cell](#). *MLL-AF4* is expressed at low levels and produces low levels of retrovirus, whereas *MLL-Af4* is expressed at high levels and permits high titer virus production.
- An early-phase study of the menin inhibitor revumenib in patients with *MLL*-rearranged relapsed/refractory acute leukemia published in [JCO](#) that demonstrated very promising response rates in a population where standard therapies are not very effective.

What's next?

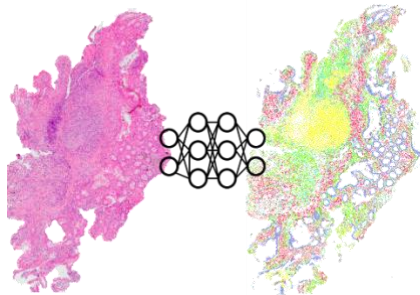
- Identify RNA binding proteins that differentially bind to human and mouse AF4 RNA.
- Develop chemotherapy-free combination therapies that target the *MLL* partner protein complex.
- Develop a novel biomarker that identifies sensitivity to *MLL*-Menin Inhibitor Therapies.

Torcasso Lab



Focus: quantitative image analysis; biomedical microscopy; artificial intelligence biomedical imaging; multimodal image analysis; spatial biology; spatial immunology; tumor-immune environment

PI: Madeleine Torcasso, PhD



The Torcasso Lab investigates spatial patterns of disease within the native tissue environment, bridging scientific discovery and clinical utility. With a focus on tumor-immune and other host-immune interactions, we develop and apply computational methods to analyze high-dimensional spatial proteomic and transcriptomic data, aiming to uncover how cellular organization and interactions drive disease progression and therapeutic response. By integrating artificial intelligence (AI) with spatial omics, we aim to identify spatial

biomarkers and provide insights into the function and dysfunction of the tumor-immune environment. Partnering with clinical collaborators, it is our goal to understand how the spatial context of immune and stromal cells influences disease progression and treatment resistance.

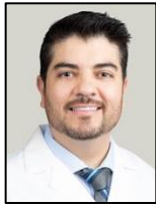
Major accomplishments:

- Published a paper in the [Journal of Medical Imaging](#) demonstrating improved cell phenotyping in high-plex images.
- In collaboration with Dr. Fred Howard, published a model in [Therapeutic advances in Medical Oncology](#) for translating histology images to multiplex immunofluorescence in triple-negative breast cancer
- Developed open-source software tools for standardization of vascular analytics in optical coherence angiography images, published in [Scientific Reports](#).
- Defined novel metrics for measuring multi-reader agreement in single- and multi-class instance segmentation tasks, published in the [Journal of Medical Imaging](#).

What's next?

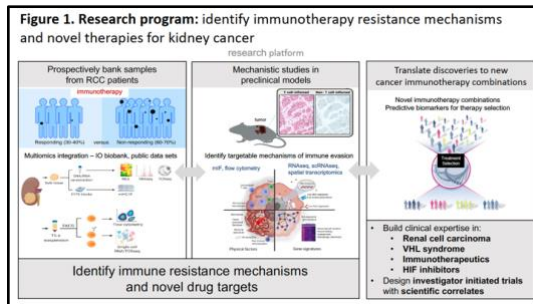
- Improve interpretability of AI methods used in biomedical imaging and improve the likelihood of clinical translation of novel computational and AI tools.
- Build computational tools for analyzing multi-modal microscopy datasets, including label-free imaging methods.
- Develop reliable methods for defining common and differentiated spatial patterns of immune activity *in situ*.

Trujillo Lab



Focus: Immunotherapy resistance mechanisms, immunobiology of renal cell carcinoma and melanoma, hypoxia inducible pathway biology, immunology and immunopathology of COVID-19

PI: Jonathan Trujillo, MD, PhD



The Trujillo Lab is focused on defining the mechanisms of cancer immunotherapy resistance to develop more effective therapies for patients with kidney cancer, melanoma, and triple-negative breast cancer (TNBC). We integrate mechanistic studies in preclinical models, patient tumor analyses, and bioinformatic approaches to identify determinants of anti-tumor immunity. A central focus is how tumor cell-intrinsic stress and oncogenic pathways, including hypoxia-inducible factor signaling, DNA damage response alterations, and the endoplasmic reticulum stress

pathway, drive immune evasion and therapeutic resistance. Through multidisciplinary collaboration, we investigate cancer-cell intrinsic mechanisms of immune evasion and apply AI-driven imaging to identify immune correlates of response. Together, our work sits at the intersection of tumor biology, immunology, and computational science to develop biomarker-driven strategies to enhance immunotherapy efficacy.

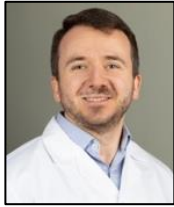
Major accomplishments

- A retrospective study published in *Blood* on CD19-directed CAR T-cell therapy resistance in T-cell/histiocyte-rich large B cell lymphoma (T/HRLBCL), an aggressive subtype of large B cell lymphoma. This finding has spurred the exploration of alternative treatments, including anti-PD-1 immune checkpoint blockade, for these patients.
- A paper published in *Journal for ImmunoTherapy of Cancer*, describing novel cases of acquired immunotherapy resistance in melanoma patients, associated with either active β -catenin signaling or PTEN gene deletion, identifying new therapeutic targets to restore immunotherapy efficacy.
- A collaborative paper published in *Cancer Immunology Research*, demonstrating that DECR2 deficiency in melanoma impairs ferroptosis, thereby reducing efficacy of immunotherapy.
- A collaborative paper in *Therapeutic Advances in Medical Oncology*, describing a deep learning pipeline converting routine H&E histology into virtual multiplex immunofluorescence images to capture tumor immune architecture and predict response to neoadjuvant therapy in TNBC.

What's Next

- Utilizing innovative tumor models to determine whether activation of cancer cell-intrinsic HIF-1 α or HIF-2 α functions by impairing naïve T cell priming and/or constraining effector T cell infiltration and function within the tumor.
- Employing preclinical models to evaluate the effects of HIF-2 α inhibitor treatment on response to immune checkpoint blockade.
- Development of human and murine kidney cancer models to elucidate the impact of BAP-1 loss on innate immune sensing, T cell priming, and immune checkpoint inhibitor efficacy in renal cell carcinoma.
- Determine the role of ER stress and XBP1 signaling in TNBC in shaping immune suppression and therapeutic resistance and identify strategies to target this pathway to enhance immunotherapy.

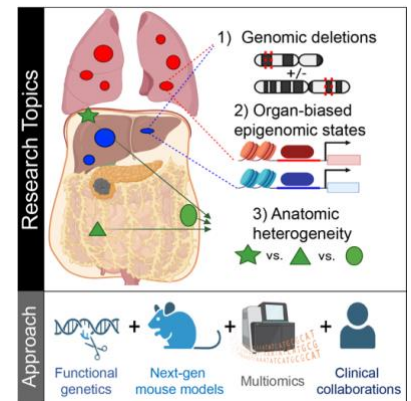
Tsanov Lab



Focus: metastasis, genetics, epigenetics, tumor microenvironment, pancreatic cancer, gastric cancer

PI: Kaloyan (Kal) Tsanov, PhD

Our laboratory investigates metastatic disease – the major cause of cancer-related deaths. The overall goal of our research is to elucidate mechanisms that sustain metastatic tumors and to identify related vulnerabilities that can be therapeutically targeted. We focus on pancreatic and gastric cancers, and the three most common sites (liver, peritoneum, and lungs) of distant metastasis across gastrointestinal malignancies. Our work integrates innovative mouse models, functional genetics tools and multiomic approaches to dissect and target the interplay of genetic, epigenetic and microenvironmental factors in metastatic tumors. Our vision is that understanding natural barriers to metastasis and tumor–microenvironment crosstalk at different metastatic sites will reveal a set of governing principles that can be leveraged for novel therapies that are better tailored to metastatic tumors.



Major accomplishments:

- Co-developed an experimental framework for functional analysis of chromosomal deletions and used it to discover that frequent co-deletion of the type I interferon gene cluster at chr9p21 promotes immune evasion, metastasis, and immunotherapy resistance (published in [Nature Cancer](#)).
- Developed a new mouse model of pancreatic cancer and used it to discover that metastatic site can influence the functional output of driver gene lesions (published in [Nature Cancer](#)).
- Co-developed a suite of novel mouse models—termed EPO-GEMMs—that feature hallmark properties of the major subtypes of metastatic gastric cancer and provide unique genotype and host flexibility. By leveraging this flexibility, we discovered genotype-specific patterns of metastatic spread and modes of immune surveillance of metastatic tumors (published in [Nature Cancer](#)).

What's next?

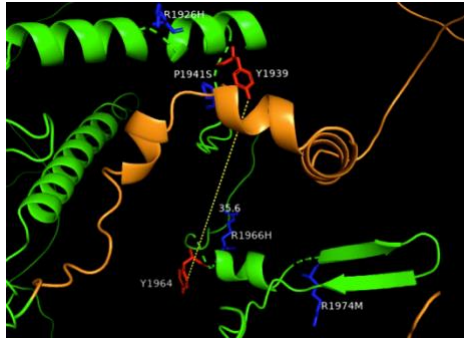
- Systematic functional interrogation of recurrent genomic deletions, with the goal of identifying new anti-metastatic genes. Functional restoration of such natural barriers to metastasis, or targeting of liabilities created by their loss, can provide novel therapeutic opportunities for metastatic tumors.
- Investigating microenvironmental factors that induce and/or select for organ-biased epigenomic states, identifying targetable vulnerabilities presented by them, and assessing how they affect therapy response. Such knowledge can inform the implementation of current therapies or development of new therapies that target tumor-microenvironment crosstalk.
- Leveraging next-generation mouse models to understand the molecular basis of anatomical heterogeneity in metastatic tumors, and test at scale new therapeutic strategies that take into account this heterogeneity.
- Establishing cross-departmental collaborations to generate patient-derived resources for integrative mechanistic studies of metastatic tumors.

Wickrema Lab



Focus: Epigenetic regulation focused on mechanism of action of TET2 during blood cell development; Erythropoiesis, Anemia and Sickle Cell Disease; Development of novel cell therapies

PI: Amittha Wickrema, PhD



Predicted Interaction between **JAK2 Kinase domain** (orange) and **TET2 C-terminal** (green) region along with sites of tyrosine phosphorylation (Red) and patient mutations (blue).

Our work is focused on elucidating the mechanism of action of epigenetic control of gene transcription by TET2. TET2 is a hydroxylase enzyme responsible for modifying methyl cytosines in DNA. With ageing TET2 acquires numerous mutations but only some mutations lead to leukemia and/or MDS. Our work is focused on understanding structural functional relationships in normal and mutant TET2 proteins with the hope of designing novel therapies to treat malignant conditions arising due to TET2 mutations. The second area of investigation consist of understanding molecular basis of erythropoiesis with the goal of treating anemic conditions. A very well characterized human cellular model developed by our group is used in these studies to uncover molecular pathways responsible for red blood cell production. The third area of focus is targeting TET2 enzyme as means to modulate key epigenetic regulators for reactivation of fetal hemoglobin as a treatment for sickle cell anemia. A fourth area of research include development of novel cellular therapies for treatment of blood cancers and solid tumors. This work include development, manufacturing and treatment of patients under INDs secured for Phase 1 clinical trials.

Major Accomplishments:

- Publication of a paper in [Cancer Discovery](#) identifying how TET2 enzyme is activated in developing blood stem cells and during development of red blood cells
- Two papers (in [PNAS](#) and [Clinical Cancer Research](#)) about the mechanisms underlying myelodysplastic syndromes and a potential molecular target to treat the condition.
- International partnerships resulting in a paper in [Elife](#) entitled “Activation of targetable inflammatory immune signaling is seen in myelodysplastic syndromes with SF3B1 mutations”.
- A paper in [Cytotherapy](#) about the validation of novel tools for efficient manufacturing of immune-based cellular therapies for the treatment of cancer and autoimmune diseases.

What's next?

- Using Artificial Intelligence (AI) – based highly accurate computer modeling of mutant TET2 proteins to predict functional outcomes during ageing and cancer by correlating computer-generated models with experimentally derived data.
- Development and validation of novel epigenetic-based small molecule drugs to treat sickle cell disease.
- Development of low-cost, high-value CAR T-cells and other cellular therapies for phase I and II clinical trials.

