



PATHWAYS

**COVID-19 has not slowed
down Cancer Research.**

*Every day, 1,500
people will die from
cancer and 5,000
individuals will be
diagnosed.*

I Cancer Center
at Illinois

SUMMER 2020

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Pathways is a Cancer Center at Illinois (CCIL) publication that highlights the interdisciplinary and translational work of CCIL faculty, staff, students, and external partners.

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Special Thanks to Elizabeth Song for her contributions to this issue



FROM THE DIRECTOR

We are in the midst of a pandemic. Our thoughts go out every day to those who have lost their lives, the ones at the frontlines caring for the thousands affected and those who are facing difficult and uncertain times.

Not only has COVID-19 pervaded our daily lives in so many ways, but it has invaded and impacted cancer detection, diagnosis, treatment, and survivorship. Cancer care will forever be changed by this pandemic. Not only will already over-worked doctors and hospitals have a backlog of cancer patients, but the biological changes that COVID makes within human bodies is still unknown. One cannot imagine that these changes will positively affect outcomes. A stark example was provided by the Director of the National Cancer Institutes that their current models predict an additional 10,000 pandemic-related cancer deaths – for just breast and colorectal cancer - will occur over the next ten years.

We can mitigate this outcome by focusing on better tools and technologies to equip our caregivers with. In this issue, you will find the incredible story of how the University of Illinois is preparing to continue with education, research, and other work – safely and with assurance. Illinois' community of cancer researchers have spent decades fighting cancer. It took us only months to organize and fight against COVID. CCIL members are strongly motivated to positively impact the lives of so many and transform health care. This pandemic has only strengthened our resolve and highlighted the urgent need to apply the same use of technology, basic science, and large-scale deployment for cancer.

Cancer has not stopped, and neither have we. Our cancer research advances, clinical relationships are being forged, members continue to publish transformative and exciting work, our community outreach connections grow, students continue to work their magic, and new leadership appointments guide our research and educational programming. The work from our colleagues in this issue highlights exciting new opportunities. Together, we must accelerate these efforts to prevent taking a step back in the fight against cancer. I urge you to join in this effort by supporting our researchers, students, and staff. Together, we will overcome this pandemic and advance our efforts to a better world without cancer.

ROHIT BHARGAVA, CCIL DIRECTOR



FUNDING CANCER RESEARCH FOR FUTURE GENERATIONS

Six interdisciplinary projects designed by University of Illinois at Urbana-Champaign faculty were selected for the CCIL's annual Seed and Planning Grant Programs.

The CCIL Seed Grant Program distributes funding over two years to foster additional collaborations that reach across the engineering and biology, leveraging research team results for submitting external multi-PI grants. Planning grant awards are used to bring together faculty from multiple disciplines to develop collaborative ideas, workshops and/or programs or collect preliminary data over the course of one year.

"The Cancer Center at Illinois' grant funding initiatives support innovation and discovery at the earliest stages of a major idea," Paul Hergenrother, CCIL Deputy Director, said. "These pilot projects will encourage new collaborations and develop important research to compete for external funding."

2020 CCIL SEED GRANT PROJECTS

Project Title: Using Anticancer Drug-Induced Immune Cell Activation to Target Ovarian Cancer for Eradication

PI: David Shapiro, Professor in Biochemistry

Research Team: Erik Nelson, Assistant Professor in Molecular and Integrative Physiology; Georgina Cheng, Clinical Assistant Professor in the Carle Illinois College of Medicine

Project Title: Elucidating the Role of Minor Cannabinoids on Immune Cell Activation Involved in Lung Cancer Metastatic Progression

PI: David Sarlah, Assistant Professor in Chemistry

Research Team: Aditi Das, Associate Professor in Comparative Biosciences; Timothy Fan, Professor in Veterinary Clinical Medicine

Project Title: Establishment of a Spatially Resolved Noncoding RNA-mRNA Interactome Map for Breast Cancer Progression

PI: Hee-Sun Han, Assistant Professor in Chemistry

Research Team: Saurabh Sinha, Professor in Computer Science; Prasanth Kumar V. Kannanganattu, Associate Professor in Cell and Developmental Biology

2020 CCIL PLANNING GRANT PROJECTS

Project Title: Identifying Pathways for Therapeutic Design to Stop Liver Cancer

PI: Sayeepriyadarshini Anakk, Associate Professor in Molecular and Integrative Physiology

Research Team: Auinash Kalsotra, Associate Professor in Biochemistry; Stephen Boppart, Professor in Electrical and Computer Engineering

Project Title: Enhancing GBM Immunotherapy Through Peripheral Viral Infection and Inhibition of Immune Suppression in the Tumor Microenvironment

PI: H. Rex Gaskins, Professor in Animal Sciences

Research Team: Andrew Steelman, Assistant Professor in Animal Sciences; Ed Roy, Professor Emeritus of Pathology and Molecular and Integrative Physiology; Stephen Boppart, Professor in Electrical and Computer Engineering; Brendan Harley, Professor in Chemical and Biomolecular Engineering

Project Title: Effect of Dietary Modulation of RAGE/AGE Axis on Prostatic Neuroendocrine Differentiation and the Efficacy of Anticancer Therapies

PI: Wawrzyniec Dobrucki, Associate Professor in Bioengineering

Research Team: Erik Nelson, Assistant Professor in Molecular and Integrative Physiology; Gregory Underhill, Associate Professor in Bioengineering



Seed Grant Program recipients. From left to right, top: David Sarlah, Hee-Sun Han, David Shapiro. Middle: Aditi Das, Saurabh Sinha, Erik Nelson. Bottom: Tim Fan, Prasanth Kannanganattu, Georgina Cheng.



Planning Grant Program recipients. From left to right, top: Brendan Harley, Sayeepriyadarshini Anakk, Wawrzyniec Dobrucki. Middle: Andrew Steelman, Auinash Kalsotra, H. Rex Gaskins. Bottom: Ed Roy, Stephen Boppart, Gregory Underhill.

COVID 19 - SHIELD

Target, Test, Tell

*Cancer Center at Illinois Members
working on the frontlines*



Volunteers take saliva samples at university testing sites.
Photos by Fred Zwicky.



To ensure the safety and health of students, faculty, staff, and community members, the University of Illinois has called for internal and external experts to come together to form the COVID-19 SHIELD Committee on Return to On-Campus Operations. Multiple Cancer Center at Illinois members have answered the call to action.

Tim Fan, CCIL Research Program Leader, is serving as Diagnostics Operations Manager and the CCIL's Brian Cunningham, Paul Hergenrother, and David Kranz serve on the committee. As members of the COVID-19 SHIELD team, these researchers are asked to develop and implement programs that "target, test, and tell" in accordance with proven science and medical evidence as well as legal and ethical implications.

The combined expertise of CCIL researchers has led to the swift development of a saliva-based COVID-19 test. In July 2020, the university announced that free testing would be available to all campus students and employees, and trained units have been activated to take these tests to other areas of the state to test additional individuals. The entire campus truly is serving as a living lab in the fight against COVID.

LEARN MORE: go.illinois.edu/SHIELDCommittee

Inspiring Innovation



Tim Fan, CCIL Research Program Leader and Paul Hergenrother, CCIL Deputy Director.

CCIL Member Develops Illinois RapidVent COVID-19 Technology

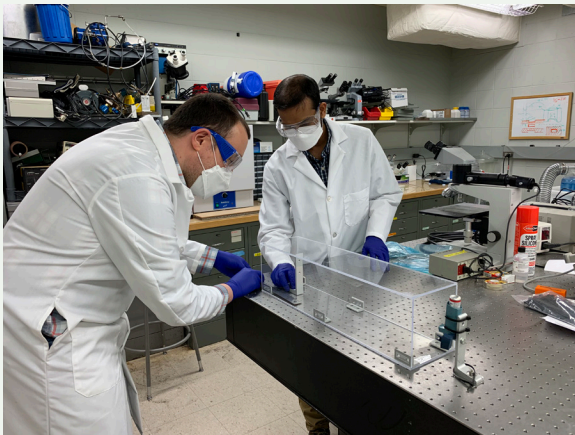
Rashid Bashir, CCIL member and Dean of the Grainger College of Engineering, is leading a team comprised of researchers from Grainger and Carle Health. These scientists saw a global need for respiratory care associated with COVID-19. Joining their disciplines and expertise, they developed the Illinois RapidVent, a ventilator that plugs into an oxygen source and has a runtime of over 75 hours – or, 125,000 breathing cycles.

“We saw this massive, urgent need, and our partners from across the state jumped on it. This is precisely what America’s research universities and their partners are uniquely equipped to do,” Bashir said.

Bashir and the team’s goal with RapidVent is not only to help support COVID patients but also to inspire other researchers to work towards improving the global response. Currently, the design has been licensed by more than 60 external organizations and is pending approval from the FDA.

LEARN MORE: go.illinois.edu/RapidVent

FIGHTING CANCER. FIGHTING COVID.



CCIL Member Tests Face Mask Materials

The COVID-19 global pandemic gave way to a new wave of research from the University of Illinois campus community, with researchers seeking more information about the virus and developing methods of diagnosing, preventing, and treating it. CCIL member and Professor of Mechanical Science and Engineering, Taher Saif, and his graduate students conducted a study on the effectiveness of masks made from household fabrics in preventing the spread of the virus during close interactions. Saif’s research utilizes a device that simulates the issue of breath droplets from an individual testing positive for the SARS-Cov-2 virus. The team found that 2-3 layers of simple, cotton t-shirt fabric were among the most effective in containing breath droplets and preventing the spread of disease.

LEARN MORE: go.illinois.edu/MaskTests

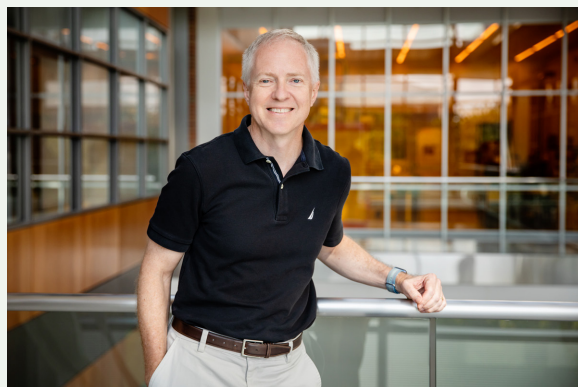
Members of Taher Saif’s lab test mask materials. Photos provided by Saif’s lab group.

CCIL Research Program Leader Translates Cancer Smartphone Application to COVID

Cancer Center at Illinois researchers are dedicated to finding solutions and cures to diseases and viruses that pose a threat to society. In response to the COVID-19 outbreak, CCIL Research Program Leader Brian Cunningham is using his experience in developing cancer diagnostics to finding accessible and immediate testing solutions for the virus. Cunningham and his team have developed a smartphone application that pairs with a small plastic cartridge that detects a genomic sequence specific to COVID-19 within 30 minutes. In addition to this novel point-of-care technology, Cunningham's lab is working on a biosensor method and antibody detection.

LEARN MORE: go.illinois.edu/COVIDSmartphoneApp

Top: Brian Cunningham, CCIL's Research Program Leader.
Bottom: Image of testing cartridge.



Rashid Bashir, Dean of the Grainger College of Engineering



Yi Lu, Professor of Chemistry and Bioengineering

Rapid Collaboration Leads to RAPID Grants for CCIL Members

Rashid Bashir, Brian Cunningham, and Yi Lu are among many dedicating their efforts to ensure that the University of Illinois campus is safe for students, faculty, and staff. Recently, these members have been awarded NSF Rapid Response Research (RAPID) program grants.

Rashid Bashir and his team are developing a portable and low-cost graphene sensor diagnostic device that uses nasal fluid samples to detect specific nucleic acid molecules which indicate the presence of COVID-19. Brian Cunningham's lab aims to significantly reduce the testing process time with the help of biosensor imaging. With his technique, the SARS-Cov-2 virus can be caught on a "virus net" and counted using biosensor microscopy. Yi Lu is developing a biosensor to differentiate infectious SARS-CoV-2 from noninfectious antibodies or disinfectants with fellow researcher Lijun Rong from the University of Illinois at Chicago. This test, which will use a modular sensor and DNA aptamers, will facilitate faster treatment for COVID-19 patients.

LEARN MORE: go.illinois.edu/NSFRapidGrants

Cancer Research Saves Lives.

FROM CANCER SURVIVORS TO CANCER SCIENTISTS.

Catherine Applegate was recently diagnosed with breast cancer while completing her PhD in Nutritional Sciences as a graduate student in the CCIL's Tissue Microenvironment (TiMe) Program. As a cancer researcher, Catherine explores the role that food and nutrition play in impacting cancer diagnoses.

"Cancer is a complex and fascinating disease [not to be taken the wrong way] with many factors that have different effects and are always changing. It seems like it's always been personal for me without having a reason why...now I know," Catherine said.



Brendan Harley, CCIL Research Program Leader, was diagnosed with acute myelogenous leukemia when he was 17 years old. Though he's been in remission for 25 years, he's still fighting cancer through his research. Brendan's lab is developing new ways to engineer biomaterials such as bone marrow and tissues. His team is researching to improve outcomes for cancer patients diagnosed with glioblastoma multiforme (GBM) - an aggressive brain cancer.

"Through research, we are changing the way we understand the onset and growth of cancer, and fundamentally shifting how we treat it. The impact will be felt for generations ahead," Brendan said.

ILLINOIS' "BIGGEST" FAN AND FAMILY DONATES TO CCIL

Tim (ENGR, 87') traveled around the world through his work as an engineer, taking photos in front of global landmarks in his Illinois polo. When Tim was diagnosed with tongue cancer in Feb. 2019, even through the doctor's visits, treatments, and surgeries, his love of Illinois never diminished.

During Tim's hospital stays and cancer treatment sessions, his family began fundraising through the sales of orange and blue "Team Tim" bracelets.

"My Dad said that he did not want any of the money we raised to go to him. When he found out about the Cancer Center at Illinois, he knew that is where the money should go," said Josh Oberg, Tim's son. "He knew that if anyone was going to find a cure for cancer it would be the researchers from the Cancer Center on the Urbana-Champaign campus."

All proceeds donated to the CCIL will go directly to fund cancer research.

LEARN MORE: go.illinois.edu/TeamTim



IT TAKES A TEAM TO KRUSH CANCER.

For the second year, the Cancer Center at Illinois teamed up with Illinois' Division of Intercollegiate Athletics (DIA) to promote cancer research and education during a Fighting Illini men's basketball game.

The collaboration culminated in Krush Cancer, a night showcasing the revolutionary cancer technologies and treatments developed at the University of Illinois. CCIL information and facts were displayed while fans entered the game and during, and the CCIL's research, scientists, and students were featured before tip-off. Throughout the game, fans waved Cancer Center at Illinois towels and proudly sported orange "Krush Cancer" t-shirts.

CCIL Member Named Head of Illinois Department of Chemistry

Catherine Murphy, CCIL member and the Larry R. Faulkner Endowed Chair in Chemistry, is making history as the first female Head of Chemistry at the University of Illinois at Urbana-Champaign.

Murphy's lab makes inorganic nanoparticles with controlled size, shape, and surface chemistry. These particles, often made of gold, can be fabricated to penetrate tissue and absorb certain wavelengths of light.

This property is being studied for use in photothermal therapy, in which nanoparticles enter pathogenic cells, like cancer cells, and undergo light-to-heat conversion to destroy cells. Murphy and her students are concentrated on basic research but often collaborate with other Cancer Center at Illinois members on studies that can translate from the lab to the clinic.

"We're always prepared to work with people on that, and the students are always the glue – going back and forth and doing experiments together," Murphy said.



RENOWNED EXPERTISE. REVOLUTIONARY LEADERSHIP.



Benita S. Katzenellenbogen, Professor of Molecular and Integrative Physiology, has been appointed Senior Advisor to the Director of the CCIL, Rohit Bhargava. In this new role, Katzenellenbogen will counsel strategic, cancer-focused directions of CCIL research programs and educational activities.



Paul J. Hergenrother, the Kenneth L. Rinehart Endowed Chair in Natural Products Chemistry and Professor of Chemistry, has been named the CCIL's Deputy Director. Hergenrother succeeds David Kranz, Professor of Biochemistry.



Timothy M. Fan, Professor of Veterinary Oncology, has been appointed as program leader of the CCIL's research program *Cancer Discovery Platforms Across the Engineering-Biology Continuum*. Fan will co-lead this research program with Brendan Harley, Professor of Chemical and Biomolecular Engineering.

CCIL Member Focuses on Health Disparities in Cancer

Zeynep Madak-Erdogan's interest in researching cancer began during high-school, when the first molecular biology and genetics department in Turkey was established. Her academic journey started there, before continuing her studies at the University of Illinois for her PhD, postdoctoral fellowship, and finally, as a faculty member. Since joining Illinois, Madak-Erdogan has concentrated on understanding health disparities in cancer and other diseases. Currently, she and her colleagues are studying estrogen-receptor (ER) signaling and regulation. During this research, she discovered that African-American women in Southside Chicago are four times more likely to die from estrogen-receptor positive (ER+) breast cancer. This type of breast cancer is otherwise a better prognosis for patients coming from more affluent backgrounds, particularly if the patient is Caucasian.

LEARN MORE: go.illinois.edu/HealthDisparities



Zeynep Madak-Erdogan

Health Care Engineering Systems Center

CCIL Member Leads Collaboration Between Engineers and Physicians

Thenkurussi (Kesh) Kesavadas, CCIL member and Director of the HCESC, is a driving force behind Jump Applied Research for Community Health through Engineering and Simulation (Jump ARCHES). The program recently funded 17 research projects answering the priority call to address public health crises (like COVID) through smart health, data analytics, AI, and other technologies.



LEARN MORE: go.illinois.edu/HCESC

Collaborations Key to CCIL's Cancer Research Successes

STEPHEN BOPPART, CCIL RESEARCH PROGRAM LEADER

The Abel Bliss Professor of Engineering is a pioneer in CCIL collaborations with Carle Foundation Hospital. In 2000, Boppart balanced his medical residency there while starting his own lab, Imaging at Illinois, and working as an assistant professor. In 2008, Boppart was a founding director of the Mills Breast Cancer Institute and helped to design the Biomedical Research Center space managed by the CCIL at Carle.

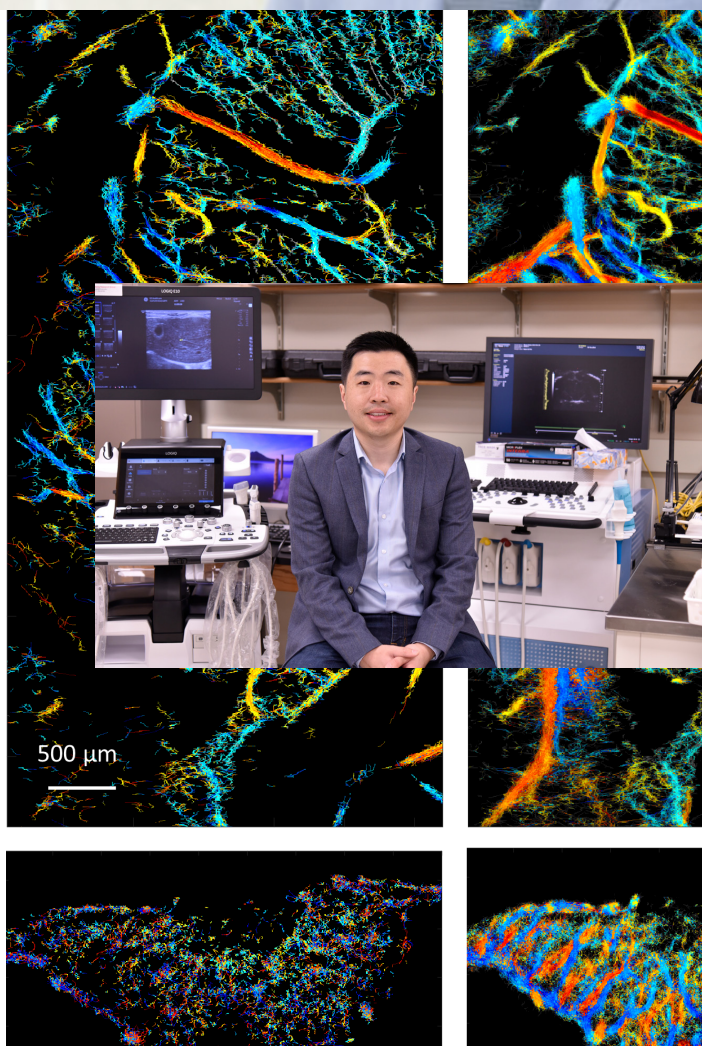
From this space, Boppart and colleagues are providing intraoperative surgical guidance through optical coherence tomography. These techniques provide the surgeon with high-resolution images that help assess tumor margins in real time, reducing the number of patients who are recalled due to positive margins found in tumor pathology.

PENGFEI SONG, CCIL MEMBER

Pengfei Song, Professor of Electrical and Computer Engineering, was introduced to Dr. Kendrith Rowland, Carle physician, through staff from the Beckman Institute of Advanced Science and Technology. The researcher and physician were both interested in utilizing ultrasound, a widely available clinical technology, to image colorectal cancer metastasis to the liver. Super resolution ultrasound imaging will be conducted on newly diagnosed patients to differentiate non-responders to antiangiogenic therapies as early as possible to prevent unnecessary toxicity from these drugs.

"As a community hospital, Carle's staff really cares about its patients. There's a real sense of community and personal connection," said Song.

The Cancer Center at Illinois and the Beckman Institute recently co-purchased equipment to conduct the clinical studies, and the Cancer Center at Illinois is providing the space for the system.



MICHAEL OELZE, CCIL MEMBER



Michael Oelze, Professor of Electrical and Computer Engineering, has been working with QT Ultrasound to implement their techniques to obtain more robust imaging biomarkers for quantitative ultrasound. Oelze partnered with Maria Grosse-Perdekamp, Carle oncologist, and James Wade, Cancer Care Center of Decatur oncologist, to look at breast cancer patients receiving neo-adjuvant therapy and identify non-responders. Normally, identifying patients' responsiveness to therapy can take months; however, Oelze and his clinical collaborators use biomarkers to detect apoptosis, or cell death, within a week of therapy initiation and offer a high accuracy for predicting patient outcome.

The study is proposed to begin in April 2021. The Cancer Center at Illinois will be providing the space for this research.

POWERFUL PARTNERSHIPS. TRANSFORMATIVE TECHNOLOGY.

Over six years ago, Brendan Harley, CCIL Research Program leader, was approached by another Illinois lab to partner on a project targeting glioblastoma (GBM), the most aggressive brain cancer. The Harley Research Group would use their expertise in printing 3D models to re-create the human brain environment, and the Biosystems Engineering team would use the models to grow and better understand GBM cell lines.

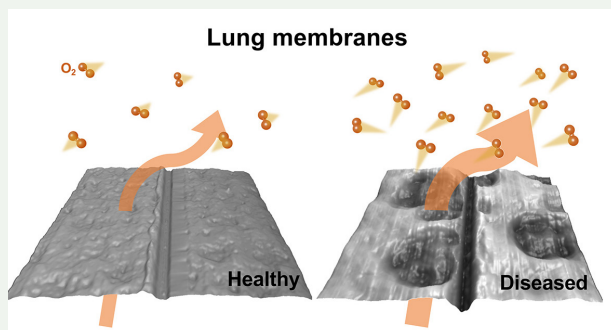
But, the collaboration didn't stop there. The success of this project led to several grants, including a large one through the Mayo Clinic & Illinois Alliance. Working with Mayo researchers, the Harley lab wanted to create a 3D model to not only understand how the tissue environment affected cancer cell behavior, but how to use this information to better treat GBM.

"Almost all of the projects I'm involved with are collaborative. The reality is that the problems we're working on, especially with cancer, are so complex that one single group doesn't have all of the necessary skills. Team science approaches let us build partnerships and collaborative teams with disparate strengths that let us tackle really hard problems and find new solutions," Harley said.

Harley continues to grow his partnership portfolio. His research group has plans to expand their work with Mayo, folding in the Georgetown Cancer Center and other Illinois units extending the GBM groundwork already laid.



CCIL member, Cecilia Leal, center, and graduate students Mijung Kim, left, and Marilyn Porras-Gomez.



CCIL Member's Research Shows How Oxygen Transfer is Altered in Diseased Tissue

Cecilia Leal, materials science and engineering professor, led a study with Illinois graduate students Mijung Kim and Marilyn Porras-Gomez published in *Nature Communications*. The study details the development of tiny silicon- and graphene-based sensors that measure oxygen transport in bovine lung tissue.

"Our results raise important insights on lung membrane function, indicating that changes in structure and composition directly relate to oxygen permeation. This work can potentially enable clinical research examining the role of unbalanced oxygen diffusion through lung membranes in a pathological context," Leal said.

LEARN MORE: go.illinois.edu/O2Transfer

GROUNDBREAKING RESEARCH. GLOBAL IMPACT.

Engineered Immune Cells Recognize, Attack Human & Mouse Solid-Tumor Cancer Cells

Research led by David Kranz, CCIL member, and Preeti Sharma, postdoctoral researcher, has broadened the application of CAR-T therapy for patients with blood cancers. Sharma and Kranz are engineering T-cells that recognize multiple proteins with short sugars, enabling the T-cells to recognize multiple targets.

"Although these engineered cells are early in development, we are particularly excited that we can use the same T-cell product to study efficacy and safety against cancers in mice and humans," Kranz said.



David Kranz, CCIL member and biochemistry professor (left) and Illinois postdoctoral researcher Preeti Sharma.

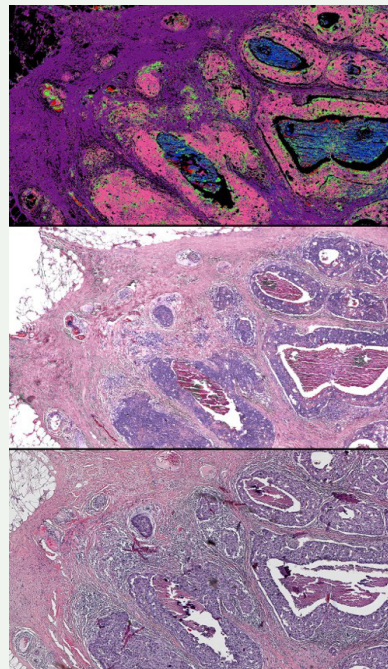
LEARN MORE: go.illinois.edu/TCells

Hybrid Microscope Could Bring Digital Biopsy to the Clinic

By adding infrared capability to the ubiquitous, standard optical microscope, CCIL researchers hope to bring cancer diagnosis into the digital era. Pairing infrared measurements with high-resolution optical images and machine learning algorithms, the researchers created digital biopsies that closely correlated with traditional pathology techniques and also outperformed state-of-the-art infrared microscopes.

"The advantage is that no stains are required, and both the organization of cells and their chemistry can be measured. Measuring the chemistry of tumor cells and their microenvironment can lead to better cancer diagnoses and better understanding of the disease," Rohit Bhargava, CCIL Director, said.

LEARN MORE: go.illinois.edu/Microscopy



CCIL Member Explores Cancer-Fighting Properties in Hawaiian Flower

CCIL member, David Sarlah, was named a 2020 American Cancer Society Scholar, receiving funding to investigate an issue that has baffled science for years: how can we successfully acquire pancratistatin, a naturally occurring compound that has cancer-fighting properties found in the Hawaiian spider lily?

"Often, chemistry is a crucial part to enabling drug therapies – more than 50% of anti-cancer drugs are based on natural products," Sarlah said. "As organic chemists, we must think about what we can do with these natural products, how we can use them in new ways, and how we can replicate these natural molecules in the lab."

Sarlah's team also studies the natural, anti-cancer compounds found in cannabis and sea sponges.

LEARN MORE: go.illinois.edu/SpiderLily

Crumpled Graphene Makes Ultra-Sensitive Cancer DNA Detector

Graphene-based biosensors could usher in an era of liquid biopsy, detecting DNA cancer markers circulating in a patient's blood or serum. But current designs need a lot of DNA. In a new study, crumpling graphene makes it more than ten thousand times more sensitive to DNA by creating electrical "hot spots."

Crumpled graphene could be used in a wide array of biosensing applications for rapid diagnosis, the researchers said. Led by CCIL member Rashid Bashir, the lab's results were published in Nature Communications.

"This sensor can detect ultra-low concentrations of molecules that are markers of disease, which is important for early diagnosis," Bashir said.

LEARN MORE: go.illinois.edu/DetectCancer

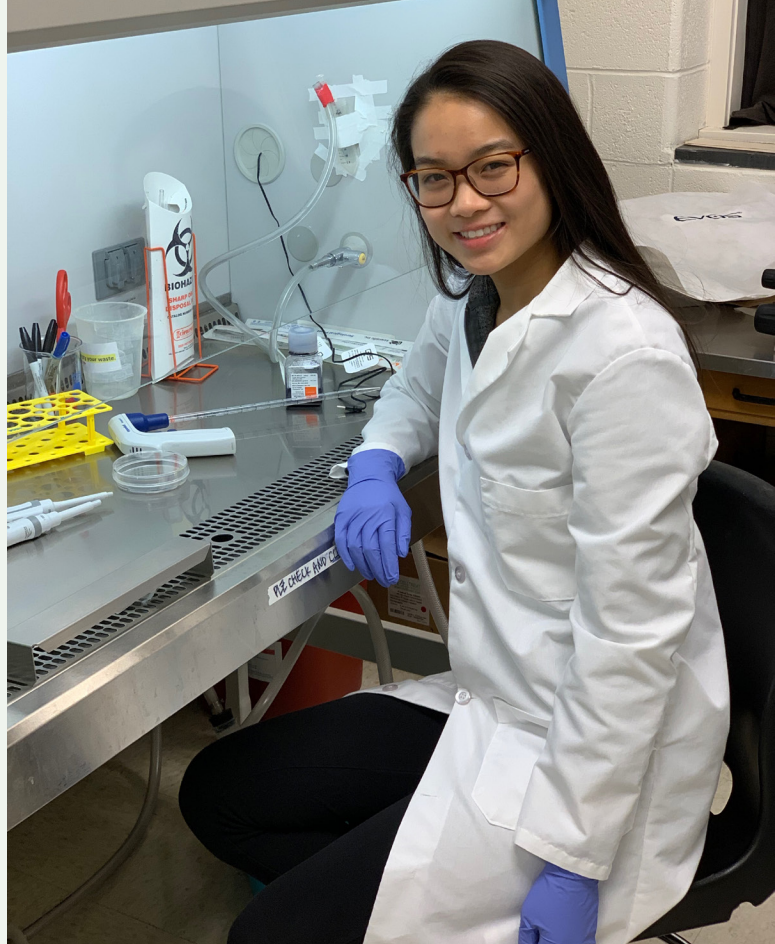
Researching Cancer as a CCIL Student

Bridging the engineering-biology continuum is a puzzle that drives and fascinates cancer researchers like Joy Chen, a senior undergraduate bioengineering student at the University of Illinois, former researchHStart student, and current Cancer Scholar.

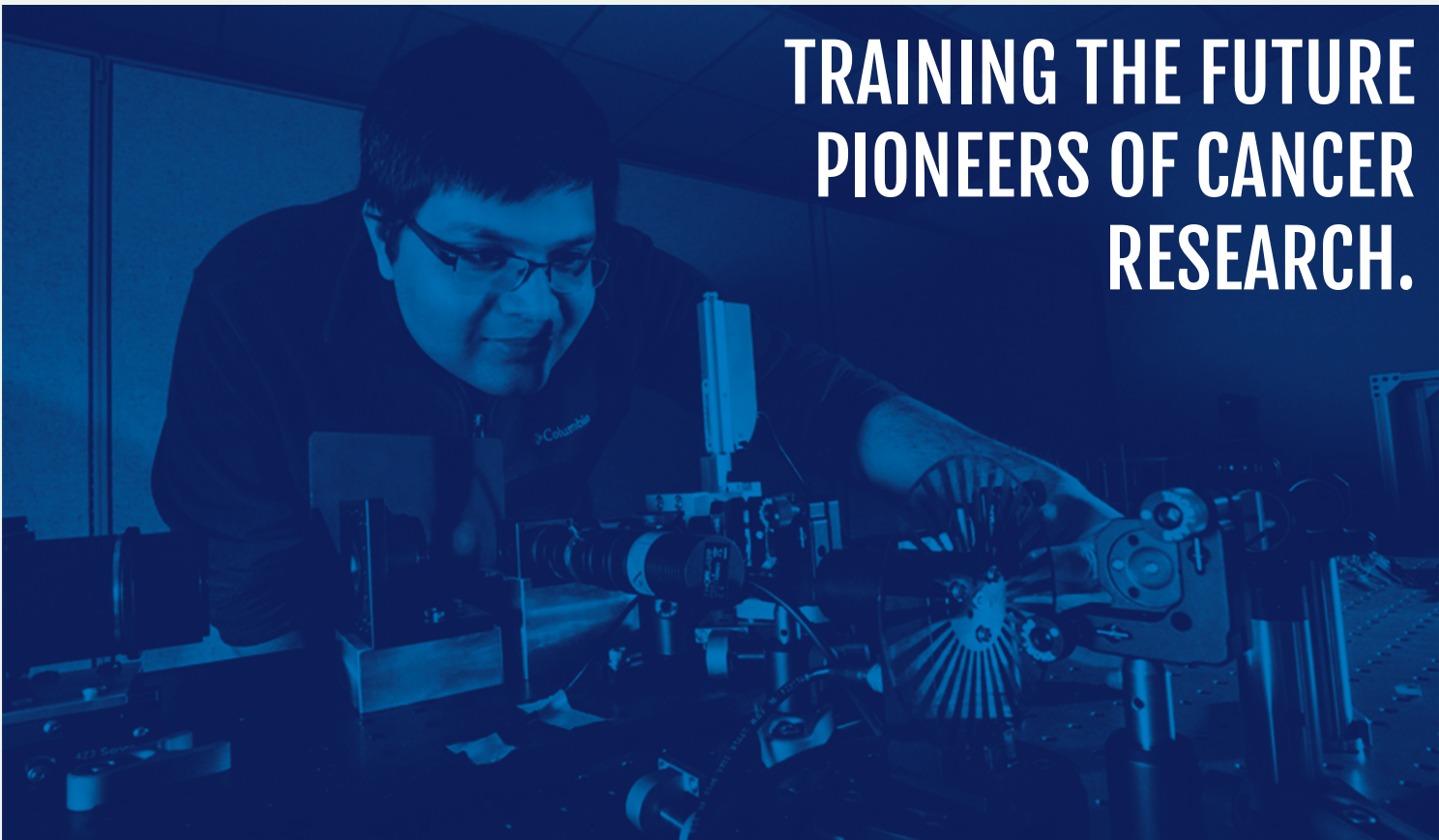
In high school, the CCIL's summer program, researchHStart, offered Joy a chance to hone her basic laboratory skills and scientific methods, while also introducing a love for engineering and a passion for cancer research.

"Engineering is focused on problem solving, and there's an endless amount of things that you can discover. You apply creativity to biological concepts to create something that can help people," said Joy. "As a child I would wonder, 'What can we do, as scientists and doctors, to help others?'"

LEARN MORE: go.illinois.edu/JoyChen



**TRAINING THE FUTURE
PIONEERS OF CANCER
RESEARCH.**





**Ian Berg, Bioengineering Graduate Student
Tissue Microenvironment (TiME) Program**

I first applied for the TiME program in my first year of graduate studies, as it was a great fit for my microenvironment focused research. Although I wasn't selected to be part of the first cohort, I jumped at the chance to apply again with more experience.

The greatest part of being in the program is having a cohort of students, all interested in the microenvironment but with very different

approaches and a huge variety of applications, to discuss and compare ideas with.

My research is around developing a platform to fabricate and analyze 3D tissues with controlled microenvironments. More specifically, I am interested in how mechanical properties such as tissue shape, curvature, and stress profile can drive cell fate and behavior. I am currently focusing on liver tissue and bile duct development.

My research will improve our understanding of liver development, leading to improved stem cell differentiation protocols and insight into the mechanisms of liver regeneration, biliary disorders, cancer, and other diseases linked to microenvironment abnormalities. I also believe the platforms and techniques I develop will aid in investigating other human systems.

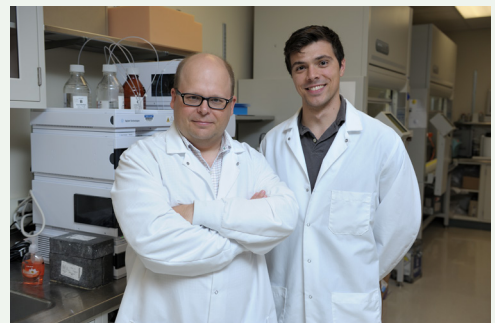
LEARN MORE: go.illinois.edu/IanBerg

CCIL Member Develops Probe to Assess Prostate Cancer Aggressiveness

Many men will develop prostate cancer in their lifetime, but most of these cancers are low-grade and non-aggressive. Current diagnostics, such as the serum test and physical exam, work well for detection, but don't accurately identify the stage or grade of the disease.

To improve precision, Illinois researchers are developing a solution using an imaging probe that determines the aggressiveness of cancer cells. The study was led by Wawrzyniec Dobrucki, CCIL member and bioengineering associate professor.

LEARN MORE: go.illinois.edu/Imaging





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