



## CANCER CENTER AT ILLINOIS

UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN



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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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## FROM THE DIRECTOR

The summer break provides ample opportunity to reflect on the happenings at the Cancer Center at Illinois, and what a productive year it has been. Through exciting research findings, new partnerships, and applying for National Cancer Institute designation, the CCIL has been a hub of activity.

Our members continue to show that research is at our center's core. From Stephen Boppart's visualization of breast cancer tissue in real-time to Timothy Fan's work in fighting osteosarcoma with immunotherapy, CCIL members are at the forefront of cancer research.

To foster that work, we launched a new Seed Grant Program in the spring. This initiative builds engineering–biology collaborations and advances novel research that shows promise for future external funding. In our initial call, the CCIL selected four projects for seed grants and eight for planning grants, and we're eager to see their progress over the coming year.

We're also excited to announce a new partnership with the Illini 4000, a student-led group of ambassadors who embark on a cross country bike ride every year to raise awareness for cancer research. The CCIL is now the official home of the group, and we're looking forward to planning new events with them over the coming year.

The CCIL also welcomes new members to our senior leadership team. Barry Schatz, our Associate Director for Administration, brings a wealth of experience from Loyola University's Cardinal Bernardin Cancer Center. Marcia "Marci" Pool, the former director of undergraduate programs for the Department of Bioengineering at Illinois, joins the CCIL as an Assistant Director for Education and is intimately familiar with our educational programs. Both will provide exceptional expertise and guidance for our center.

Exciting times are ahead as we develop our infrastructure, sharpen our focus, and mature as a research institute. We are, as always, thankful for your continued support and interest.

*Rohit Bhargava*



### **VISUALIZING BREAST CANCER TISSUE IN REAL-TIME**

Bioengineering Professor Stephen Boppart led a team of Illinois researchers who visualized the tumor microenvironment of breast tissue in real-time by using a new portable optical imaging system. This system uses precise light pulses to simultaneously image tissue in four modalities, enabling his team to study concurrent processes within cells and tissue that make up the tumor microenvironment. This novel imaging technique is a major step toward a new tool for tracking tumor progression.

**FOR MORE:** [go.illinois.edu/BreastCancerTissue](http://go.illinois.edu/BreastCancerTissue)



### **DNA REPLICATION AND THE FIGHT AGAINST CANCER**

Supriya Prasanth, a professor of cell and developmental biology, and her research team have found that RFWD3, a protein previously thought to be active only in cell repair, is required for DNA replication. The protein not only repairs DNA damage but is also important in preventing damage during DNA replication. Insights into this protein may be important for maintaining genomic stability and preventing some forms of cancer.

**FOR MORE:** [go.illinois.edu/DNAReplication](http://go.illinois.edu/DNAReplication)



### **FREE FATTY ACIDS REWIRE CELLS, PROMOTE BREAST CANCER**

A study by Zeynep Madak-Erdogan, a professor of food science and human nutrition, shows that fatty acids may boost growth of breast cancer. Scientists have long known that excess body weight increases risk of breast cancer after menopause, and these findings could explain that correlation. "Our clinical data provide a more complete understanding of the mechanisms that connect obesity with breast cancer, and provide an opportunity to assess the ability of estrogens to decrease breast cancer risk in obese postmenopausal women," said Madak-Erdogan.

**FOR MORE:** [go.illinois.edu/RewiringCells](http://go.illinois.edu/RewiringCells)



### COUNTING GROWTH FACTORS IN SINGLE CELLS

Human cells exhibit behaviors and processes that are largely dictated by growth factor molecules, which bind to receptors on the cells. When growth factor levels are too high or too low, many diseases can result, including cancer. Bioengineering Associate Professor Andrew Smith and a team of Illinois researchers developed a new technology that digitally counts the amount of growth factor entering an individual cell for the first time. “We expect the outcomes to lead to a new understanding of cell signaling, how cells respond to drugs, and why cell populations become resistant to drugs, particularly toward improved treatments for cancer.”

**FOR MORE:** [go.illinois.edu/SingleCellGrowthFactor](https://go.illinois.edu/SingleCellGrowthFactor)

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*“We expect the outcomes to lead to a new understanding of cell signaling, how cells respond to drugs, and why cell populations become resistant to drugs, particularly toward improved treatments for cancer.”* — Andrew Smith

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### MUTATIONS IN NONCODING GENES AND REGULATING CANCER

A study by Kannanganattu Prasanth, a professor of cell and developmental biology, found that certain genes that don't code for proteins could play an important regulatory role in breast cancer. Prasanth's team focused on a well-studied tumor-suppressor gene called PDCCD4. In studying PDCCD4 RNA and its antisense counterpart, they found that both were crucial for the gene to function in normal breast cells. This shows that mutations in genes that seem to be noncoding could help fill in gaps in understanding cancer's mechanisms.

**FOR MORE:** [go.illinois.edu/NoncodingGeneMutations](https://go.illinois.edu/NoncodingGeneMutations)





## DRUG COMBINATION REPROGRAMS GENES IN BREAST TUMORS

Endocrine therapy is currently the most effective treatment for hormone-responsive breast cancer. However, some patients will either not respond or will develop resistance to it. This condition, called endocrine resistance, causes metastases and is responsible for a majority of deaths from this type of breast cancer. A study led by Zeynep Madak-Erdogan found that treating breast tumors with two cancer drugs, selinexor and 4-OHT, may prevent endocrine resistance by attacking the disease along two separate gene pathways, causing cancer cells to die and tumors to regress.

**FOR MORE:** [go.illinois.edu/BreastTumorsDrugCombination](http://go.illinois.edu/BreastTumorsDrugCombination)

*“Because there are similarities between canine osteosarcoma and human pediatric osteosarcoma, finding better treatment options for this form of cancer is especially important.”* — Timothy Fan



## COMBATING OSTEOSARCOMA WITH IMMUNOTHERAPY

Every year, 10,000 dogs in the U.S. are diagnosed with osteosarcoma, an aggressive bone tumor. The Morris Animal Foundation recently funded a study to examine whether the body's immune system helps eliminate the disease. Timothy Fan, a veterinary oncologist, and Kim Selting, a radiation oncologist, are co-investigators on the study and will explore the combination of immuno- and radiation therapy. The study could lead to advances in treating both canine patients and children. “Because there are similarities between canine osteosarcoma and human pediatric osteosarcoma, finding better treatment options for this form of cancer is especially important,” said Fan.

**FOR MORE:** [go.illinois.edu/ImmunotherapyOsteosarcoma](http://go.illinois.edu/ImmunotherapyOsteosarcoma)

**HYUNJOON KONG**

PROFESSOR, CHEMICAL AND BIOMOLECULAR ENGINEERING

Hyunjoon Kong's research explores the roles of an extracellular matrix and biotransports on cancer progression and enhancing molecular and cellular treatments of cancer.



*National Science Foundation Career Award winner in 2009.*



*Named a Fellow for the American Institute for Medical and Biological Engineering in 2017.*



*Issued and pending patent applications related to hybrid materials for biotransports.*

**CECILIA LEAL**

ASSISTANT PROFESSOR, MATERIALS SCIENCE AND ENGINEERING

Cecilia Leal's research interests lie at the intersection of materials science and biology. In particular, she studies the structure of lipids, peptides, and nucleic acid assemblies to both understand their function in nature and design new materials for drug delivery.



*Selected for the NIH Director's New Innovator Award in 2016.*



*Won The Grainger College of Engineering Dean's Award for Excellence in Research in 2018.*



*Received the National Science Foundation CAREER Award in 2016.*

## **INAUGURAL PROJECTS SELECTED FOR CCIL SEED GRANT PROGRAM**

In April, four projects were selected for the CCIL Seed Grant Program, a program designed to foster collaborations reaching across the engineering–biology continuum and to leverage research results for future external multi-PI grants in the cancer area.

In the initial cycle, the CCIL received 19 applications that were carefully reviewed and discussed by a five-member panel. The review process was similar to the one used by the NIH, and awards were given for both seed grants and planning grants. “Our new seed funding initiative will support even more innovation and discovery,” said CCIL Director Rohit Bhargava. “These pilot projects will encourage new collaborations, unique research, and external funding, ultimately boosting Illinois researchers in developing novel approaches to fighting cancer.”

Running annually, the Seed Grant Program will facilitate collaboration, build thematic research, and support data collection. Be on the lookout for the next request for proposals in Fall 2019.

## **SEED GRANT PROJECTS**

### **CANCER IMMUNOTHERAPIES FOR PRECISION MEDICINE IN THE STATE OF OBESITY**

**PI:** Andrew Smith, Bioengineering

**RESEARCH TEAM:** Erik Nelson, Molecular and Integrative Physiology | Wawrzyniec Dobrucki, Bioengineering

### **CHARACTERIZATION OF ONCOGENIC NONCODING RNAs IN BREAST CANCER PROGRESSION AND METASTASIS**

**PI:** Kannanganattu Prasanth, Cell and Developmental Biology

**RESEARCH TEAM:** Auinash Kalsotra, Biochemistry | Erik Nelson, Molecular and Integrative Physiology | Wawrzyniec Dobrucki, Bioengineering

### **DEEP MUTATIONAL SCANNING OF RECEPTOR TYROSINE KINASES INVOLVED IN CANCER USING TRANSFER LEARNING APPROACHES**

**PI:** Diwakar Shukla, Chemical and Biomolecular Engineering

**RESEARCH TEAM:** Erik Procko, Biochemistry and Biophysics and Quantitative Biology

### **NEXT GENERATION CANCER IMAGING USING SUPER-RESOLUTION ULTRASOUND MICROSCOPY COMBINED WITH PHOTOACOUSTIC TOMOGRAPHY**

**PI:** Pengfei Song, Electrical and Computer Engineering

**RESEARCH TEAM:** Yi Lu, Professor of Chemistry | Liang Gao, Electrical and Computer Engineering | Timothy Fan, Veterinary Clinical Medicine



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## **PLANNING GRANT AWARDS**

Planning grant awards for \$25K are used to bring together faculty from multiple disciplines to develop collaborative ideas, workshops, and programs or collect preliminary data over the course of one year. The following projects were selected during this funding cycle.

### **A 3D IN VITRO BIOMIMETIC TUMOR MICROENVIRONMENT INTEGRATED WITH A MICRO SENSOR PLATFORM**

**PI:** M. Taher Saif, Mechanical Science and Engineering

**RESEARCH TEAM:** Kim Selting, Veterinary Medicine | Mohammed El-Kebir, Computer Science

### **DIET-MODIFIED EFFICACY OF RAGE-TARGETED PROSTATE CANCER TREATMENTS**

**PI:** Wawrzyniec Dobrucki, Bioengineering

**RESEARCH TEAM:** Erik Nelson, Molecular and Integrative Physiology | John Erdman, Food Science and Human Nutrition

### **ELUCIDATING MECHANISMS BY WHICH ENVIRONMENTAL TOXICANTS INDUCE LIVER CANCER**

**PI:** Auinash Kalsotra, Biochemistry

**RESEARCH TEAM:** Joseph Irudayaraj, Bioengineering | Jodi Flaws, Comparative Biosciences

### **ELUCIDATING PREMETASTATIC NICHE-INDUCED THERAPY RESISTANCE MECHANISMS IN ER(+) METASTATIC BREAST CANCERS**

**PI:** Zeynep Madak-Erdogan, Food Science and Human Nutrition

**RESEARCH TEAM:** Roy Dar, Bioengineering | Erik Nelson, Molecular and Integrative Physiology

### **ERADICATION OF H. PYLORI WITH PH-SENSITIVE ANTIMICROBIAL POLYPEPTIDES TO REDUCE GASTRIC CANCER**

**PI:** Jianjun Cheng, Bioengineering

**RESEARCH TEAM:** Lin-Feng Chen, Biochemistry

### **INTEGRATED COMPUTATIONAL AND CRISPR-CAS9 IMAGING PLATFORMS FOR STUDYING NONCODING PATHOGENIC GERMLINE VARIANTS AND SOMATIC MUTATIONS IN BREAST CANCER**

**PI:** Pablo Perez-Pinera, Bioengineering

**RESEARCH TEAM:** Jun Song, Physics | Thomas Kuhlman, Physics

### **LISTENING ONLINE AND LISTENING FACE-TO-FACE: INNOVATIVE MIXED-METHOD APPROACHES FOR STUDYING CANCER COMMUNICATION IN THE NEW MEDIA ENVIRONMENT**

**PI:** Kevin Chang, Computer Science

**RESEARCH TEAM:** Cabral Bigman-Galimore, Communication | Diana Grigsby-Toussaint, Kinesiology and Community Health

### **PREDICTING RESPONSE TO CANCER IMMUNOTHERAPY USING A SUBCLONE-INTEGRATED MACHINE-LEARNING MODEL OF NEOANTIGEN PROCESSING, PRESENTATION, AND RECOGNITION**

**PI:** Jian Peng, Computer Science

**RESEARCH TEAM:** Mohammed El-Kebir, Computer Science | Hong Jin, Biochemistry

**MURPHY ELECTED TO AAAS**

Catherine Murphy, the Larry Faulkner Endowed Chair in Chemistry, was elected to the American Academy of Arts and Sciences, one of the oldest honorary societies in the nation. Murphy's research focuses on developing diverse nanomaterials for applications in biology and biotechnology for imaging cells, chemical sensing, and photothermal therapy. She also studies the environmental impact of nanoparticles and how their chemical properties influence their behavior.

**FOR MORE:** [go.illinois.edu/CatherineMurphyAAAS](http://go.illinois.edu/CatherineMurphyAAAS)

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**DAS RECEIVES YOUNG INVESTIGATOR AWARD FROM ASN**

Assistant Professor Aditi Das is the 2019 recipient of the Mary Swartz Rose Young Investigator Award from the American Society for Nutrition. This award recognizes an investigator who is within 10 years of postgraduate training and has conducted groundbreaking research on the safety and efficacy of bioactive compounds for human health. Das explored endogenous cannabinoids derived from omega-3 fatty acids and demonstrated that the body converts these fatty acids into cannabinoids that have anti-inflammatory benefits similar to cannabinoids found in marijuana, but without the psychoactive effects.

**FOR MORE:** [go.illinois.edu/AditiDasYoungInvestigator](http://go.illinois.edu/AditiDasYoungInvestigator)

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**BOPPART WINS BIOPHOTONICS INNOVATOR AWARD**

Stephen Boppart, the Abel Bliss Professor of Engineering, won the 2019 Biophotonics Technology Innovator Award from the International Society for Optics and Photonics. This award is for extraordinary achievements in biophotonics technology development. His lab has developed new applications for nonlinear imaging and optical coherence tomography. He has also contributed to imaging of neural morphology, gastrointestinal malignancies, embryonic morphology, and engineered tissues and has developed interferometric synthetic aperture microscopy and computational adaptive optics—all of which will impact future biomedical applications.

**FOR MORE:** [go.illinois.edu/BoppartSPIE](http://go.illinois.edu/BoppartSPIE)



### **HAN NAMED THE MICHAEL AIKEN ENDOWED CHAIR**

Jiawei Han has been named a Michael Aiken Endowed Chair, one of the most distinguished honors on campus. Han, an Abel Bliss Professor of Engineering, is a leader in data-mining research. His interests include text mining, information network analysis, and big data analytics. He has made a number of important contributions to data mining, among them the development of scalable frequent-pattern mining algorithms, including FP growth and PrefixSpan. Han has also developed both network mining methods that are widely referenced and influential methods for mining structures from massive unstructured texts.

**FOR MORE:** [go.illinois.edu/HanEndowedChair](http://go.illinois.edu/HanEndowedChair)

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### **DOBRUCKI NAMED CO-CHAIR OF INTEGRATIVE IMAGING RESEARCH**

Wawrzyniec Dobrucki, an assistant professor of bioengineering, is the new co-chair of the Beckman Institute's integrative imaging research theme. Dobrucki's research focuses on multimodal imaging, specifically looking at tissue microenvironments using nuclear and optical methods. While his professional experience has been in imaging cardiovascular pathologies, he has a growing interest in cancer because of the collaborative opportunities open at the Beckman Institute.

**FOR MORE:** [go.illinois.edu/DobruckiImagingTheme](http://go.illinois.edu/DobruckiImagingTheme)

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### **HARLEY INDUCTED INTO AIMBE**

Brendan Harley, the Robert W. Schaefer Faculty Scholar of Chemical and Biomolecular Engineering, was elected into the American Institute for Medical and Biological Engineering for his innovative and translational contributions to instructive and spatially graded biomaterials for regenerative medicine and for engineering dynamic cell-material interactions. Harley focuses on developing biomaterials that replicate the microenvironment found in the tissues and organs. He uses this approach to design biomaterials for tissue regeneration, stem cell engineering, and 3D models of the glioblastoma tumor microenvironment.

**FOR MORE:** [go.illinois.edu/HarleyAIMBE](http://go.illinois.edu/HarleyAIMBE)

## CCIL STUDENTS EXPLORE LINK BETWEEN OVARIAN CANCER AND CHOLESTEROL



*The ovarian cancer study research team from left to right: Varsha Vembar, C\*STAR Scholar Sisi He, Cancer Scholar Joy Chen, and Assistant Professor Erik Nelson.*

The statistics behind ovarian cancer are grim: roughly 23,000 new patients are diagnosed each year, and the five-year survival rate is less than 50%.

The disease is difficult to diagnose—its vague, flu-like symptoms are often attributed to more common ailments, and diagnostic testing frequently does not catch it in its early stages. Treatments, involving surgery and chemotherapy, are not especially effective and often have debilitating side effects and dismal outcomes.

“This type of cancer has a high mortality and recurrence rate,” said Sisi He, a member of the C\*STAR graduate student program. “New therapeutic and lifestyle strategies are a must if we want to prolong progression-free survival. So many people suffer from this disease, and I want to perform research that will result in less suffering.”

He’s work focuses on cholesterol’s effect on ovarian cancer progression and survival. Her advisor, Erik Nelson, an assistant professor of molecular and integrative physiology, previously discovered that cholesterol, and its metabolite 27-hydroxycholesterol (27HC), affects breast cancer progression.

“When I came into his lab,” said He, “we were curious if cholesterol affected ovarian cancer as well, and if so, what is the molecular mechanism behind it.”

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Cholesterol breaks down in the body through an enzyme called CYP27A1, which is associated in patients who have a poor survival rate. This enzyme converts cholesterol into 27HC, and researchers conjecture that this product drives ovarian cancer cell growth through the tumor microenvironment—the blood vessels, immune cells, and other elements that surround and interact with a tumor.

To test this, He's team implanted ovarian cancer cells into two groups of mice: normal ones and those that lacked CYP27A1. They then fed the mice a high-cholesterol diet and monitored the results. Helping with this part of the study was Joy Chen, an undergraduate student in the CCIL's Cancer Scholars program, who performed the tumor implantation procedures.

"Before joining this lab, I've never worked with mice before," said Chen. "Assisting with the surgeries and data analysis was interesting, and I was able to learn a lot through the process."

Incorporating undergraduate students like Chen into research has many benefits for both graduate researchers and faculty members.

"Students bring tremendous enthusiasm and the spark for research into the lab," said Nelson. "They often bring a fresh perspective and may bring up things you would not have thought about otherwise."

After implanting the tumors, He and the team observed that they grew aggressively in the normal mice but developed only slightly and then regressed below detection levels in the mice that lacked CYP27A1. This indicated that the enzyme and its interaction with cholesterol may be necessary for tumor growth, and its presence could lead to a worse prognosis.

Further exploration is necessary—even though the researchers found that 27HC can affect the immune system, the exact process is unclear. He's team wants to determine how it suppresses the immune system and validate the findings in samples from human patients.

If the findings are validated, the work may ultimately lead toward more targeted ovarian cancer treatments in the future. "Since our findings suggest that cholesterol plays a role in ovarian cancer progression and survival, we might be able to target the disease through lifestyle changes and cholesterol-lowering drugs," said He.

Through a partnership with Carle Foundation Hospital, He is now working to confirm her findings in human samples. "We're analyzing patient data and tumor samples to see if we can confirm our observations that cholesterol is associated with a suppressed tumoral immune system environment. I'm very excited to see what we'll find," said He.

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*The National Institute of Health and the Cancer Scholars for Translational and Applied Research supported this research. Find the paper "Host CYP27A1 expression is essential for ovarian cancer progression" at [go.illinois.edu/CYP27A1](http://go.illinois.edu/CYP27A1).*

**HAILEY KNOX, CHEMISTRY**

TISSUE MICROENVIRONMENT TRAINING PROGRAM

**WHAT IS YOUR RESEARCH FOCUS?**

I explore photoacoustic imaging, a technique where light is delivered into tissues, and certain compounds absorb it. When they release it as heat, we can detect that energy output on an ultrasound. The technique provides better penetration and resolution than traditional imaging. We want to study the tumor microenvironment inside a living animal as opposed to having to do biopsies or other invasive methods, and this technique allows that to happen. I'm currently synthesizing molecules that respond to hypoxia—a lack of oxygen at the tissue level.

**SO THIS TECHNIQUE IS NON-INVASIVE—YOU DON'T HAVE TO DO A TRADITIONAL BIOPSY?**

Exactly, it's great for preclinical studies because it's not invasive, it's the same level as taking fluorescence images.

**WHY IS IT IMPORTANT TO LEARN MORE ABOUT HYPOXIA IN TUMORS?**

Hypoxia is one of the hallmarks of solid tumors and correlates with a poor prognosis because of significant effects on treatment resistance. There are also some cancers where hypoxia is more prevalent, so it can give an idea of whether or not patients will respond to certain therapies.

**WHAT'S THE FAVORITE THING ABOUT WHAT YOU STUDY?**

My favorite part is, after I've made a compound and worked to characterize it and determine that it works, to finally do imaging with it and see it actually functioning the way I want inside a live animal. That's really awesome.

**HAS THE TiMe PROGRAM BEEN HELPFUL TO YOUR RESEARCH EFFORTS?**

The TiMe program brings people together from many different scientific backgrounds, and being around different perspectives has broadened my ability to tackle research problems. I really enjoy being able to share my research with people who are not necessarily in chemistry.

**WHAT DO YOU DO IN YOUR FREE TIME?**

I'm from Idaho and enjoy all types of outdoor things like water and jet skiing and fishing. I love spending time with friends and family. Recently, I've gotten into photography, and that's been really fun so far.



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## **HARPAL SINGH, BIOENGINEERING**

### **CANCER SCHOLARS**

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#### **WHAT DREW YOU TO CANCER SCHOLARS?**

I wanted an intensive program over my undergraduate studies where I could develop connections and get a feel for research, basically to get the best research experience I could during my time at the University of Illinois. Cancer is a motivation, too. The program's focus on both coursework and research in this area was important. I'm interested in translational research, and this was a natural fit.

#### **DO YOU HAVE A FAVORITE MOMENT IN THE PROGRAM SO FAR?**

Definitely the community aspect and making connections. It's an ongoing experience where we're all friends, and we can all advise each other.

#### **WHAT KINDS OF RESEARCH INTERESTS YOU?**

My interests lie in doing both basic science research in the lab, as well as seeing my work translated to clinical trials or patient care. I'm also interested in computational interfaces to help expedite research because of the emergence of so much DNA-sequencing technology.

#### **I UNDERSTAND THAT YOU'RE ALSO CURRENTLY INVOLVED IN A SUMMER INTERNSHIP AT THE MAYO CLINIC. HOW IS THAT GOING, AND WHAT ARE YOU DOING THERE?**

The biggest drive when I joined Cancer Scholars was to get involved in research toward the career path I want. The internship with Mayo Clinic is an extension of that. It's a way to get broad exposure in multiple research areas. I was really interested in the internship because I'm interested in more than just basic science. I want to be in clinical translation, too, or at least the feasibility that my research could possibly go into the clinic at some point. The earlier you can get these experiences, the better, so I'm really happy to be a part of it.

#### **WHAT ARE YOUR FUTURE PLANS—GETTING A PhD AND CONTINUE RESEARCHING CANCER?**

I'm leaning toward that. I want to make sure that I have research in my future. Whether it's cancer or another disease, I want to do clinical translation. I'm definitely looking at research professors that have applications in treating cancer.

#### **WHAT ARE YOUR HOBBIES?**

I really like cooking, and I love to be outdoors. I also like climbing trees sometimes—I'm like a tree climbing expert. And I binge watch Netflix. Does that count as a hobby?

**BRINGING RESEARCHERS, SURVIVORS, AND ADVOCATES TOGETHER**

*Panel session at the inaugural Cancer Research Advocacy Day on May 17, 2019.*

Composed of individuals who have been diagnosed with cancer or have a strong personal connection to it, the Cancer Research Advocacy Group (CRAG) provides a vital perspective in the fight against cancer by sharing insights into research, clinical trials, and outreach and education efforts with cancer survivors, researchers, and clinicians. This initiative creates a bench-to-bedside, bedside-to-bench information flow that places patient perspectives at the heart of CCIL efforts.

In May, CRAG hosted the inaugural Cancer Research Advocacy Day, a symposium to represent and share insights and experiences of cancer survivors. The event featured CRAG members; cancer awareness advocates from Georgetown Breast Cancer Advocates, The Leukemia and Lymphoma Society, Lobular Breast Cancer Alliance, and Susan G. Komen; community representatives; and scientists from several university partners.

The event sparked a conversation between researchers and patients and explored how research can be made patient-centered and accessible. Survivors, patients, and advocates also provided a valuable patient perspective, especially involving quality of life issues in studies.

“CRAG promotes evidence-based, patient-centered, translational research through the inclusion of cancer advocates,” said Zeynep Madak-Erdogan, an assistant professor of nutrition and co-leader of CRAG. “This conference was an important step toward fostering and expanding opportunities for advocates in the Illinois research community and beyond.”

## KRUSHING CANCER WITH THE CCIL AND ILLINI BASKETBALL



*Cancer Research Advocacy Group members honored at halftime of the Illinois Men's Basketball game against Wisconsin on January 23, 2019.*

The Cancer Center at Illinois and the Division of Intercollegiate Athletics teamed up on January 23 to draw awareness to cancer.

The CCIL outfitted the Orange Krush and the Marching Illini Band with “Krush Cancer” t-shirts and distributed shirts, bandannas, water bottles, and other materials to fans as they entered State Farm Center. Shortly before the game started, a video featuring the work of CCIL members Paul Hergenrother and Timothy Fan played on the center court screen. The video highlighted their collaboration on PAC-1, an anticancer compound that Hergenrother developed at the Carl R. Woese Institute for Genomic Biology that Fan tested at the College of Veterinary Medicine (view the video at [go.illinois.edu/KrushCancer](http://go.illinois.edu/KrushCancer)).

As the game got underway, CCIL Deputy Director David Kranz took the court during a timeout and showcased his basketball skills as part of a shooting contest, winning \$500 for student scholarships.

At halftime, CCIL Director Rohit Bhargava and Associate Director for Education Rex Gaskins joined the Illini Radio Network for an interview, and Cancer Research Advisory Group (CRAG) members were welcomed to center court. CCIL members Erik Nelson and Zeynep Madak-Erdogan lead CRAG and were also recognized for their work to bring a patient's perspective to CCIL research efforts.

The CCIL was honored to partner with the DIA and the men's basketball program and looks forward to future collaborations.



## ILLINI 4000 WELCOME RECEPTION



*The Illini 4000 arriving on campus, nearly halfway through their annual cross country journey.*

Every year, the Illini 4000 fight cancer on two wheels through a cross country bike ride that raises funds and awareness for cancer research and patient services. The riders also document the American cancer experience through The Portraits Project, an initiative that gives a voice to cancer patients through their personal stories. Since 2007, the group has recorded over 200 stories from cancer patients, survivors, and caregivers and created an enduring portrait of the disease throughout the country.

During this year's trip, two CCIL students—Sisi He, a molecular and integrative physiology graduate student and C\*STAR member, and Erin Tevonian, a bioengineering senior and Cancer Scholar—rode with the group as they began their ride in New York City. They were a part of the 14-member team that was welcomed to campus on June 4th at the Alice Campbell Alumni Center. While celebrating their journey, the event was also a recognition of a recently established partnership between the CCIL and the group. Moving forward, the Cancer Center is officially the campus home of the Illini 4000 and will plan future efforts together to raise support and awareness for cancer research, outreach, and advocacy.

"We're thrilled to partner with the Cancer Center at Illinois and love being welcomed back to campus," said Tevonian. "We hope to be more involved in CCIL efforts over the next year and help advance cancer research at the university."



## **BARRY SCHATZ**

ASSOCIATE DIRECTOR FOR ADMINISTRATION

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In April, Barry Schatz joined the CCIL's team as the new Associate Director for Administration. Barry comes to Illinois from Loyola University, Chicago, where he was the Associate Director for Administration at the Cardinal Bernardin Cancer Center. Schatz holds a Master's of Health Services Administration (MHSA) from the University of Michigan and a bachelor's in hospital administration/psychology from the University of Illinois. In addition to his administrative abilities, Barry is a cancer survivor since June 2000, giving him insight into the patient perspective of treatment.

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## **MARCIA "MARCI" POOL**

ASSISTANT DIRECTOR FOR EDUCATION

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Marcia "Marci" Pool joins the CCIL as the new Assistant Director for Education. Since 2015, Marci has been the director of undergraduate programs for the Department of Bioengineering at Illinois. She has been actively involved in CCIL education programs, such as researchHStart and Cancer Scholars. Her expertise and leadership will be instrumental as the CCIL continues to expand its educational offerings.



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