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PATHWAYS is a publication of the Cancer Community at Illinois at the University of Illinois
at Urbana-Champaign. Each issue highlights the interdisciplinary and translational work being
done within the community by faculty, staff, students, and our partners.

ON THE COVER: Multiphoton fluorescence image of HeLa cells stained with the actin
binding toxin phalloidin (red), microtubules (cyan) and cell nuclei (blue). NIH-funded work at the
National Center for Microscopy and Imaging Research. Photo credit: Tom Deerinck
FROM THE COORDINATOR

The 2013-14 academic year has been exciting! As with each year, we welcomed new faculty and staff to the community. I hope that you have been able to interact with them fruitfully over the year and that the new members of our community feel welcomed. Many of our colleagues bring new research directions and educational offerings to campus.

In October 2013, we held our Annual Cancer Community at Illinois Planning Meeting. We used this opportunity to discuss specific opportunities for enhanced community success and the development of a cancer initiative to leverage our research, education, community engagement, and economic development resources in a manner that makes us collectively more successful as a campus than efforts by individual colleges, departments, units, instructors, or investigators. Our thanks go to all the participants for lively discussions and special gratitude to those who have subsequently led campus-wide efforts toward research center and educational grants.

I am pleased to report that we have achieved or are on track with all the initiatives discussed at the meeting. Please save October 15, 2014 for our fall meeting this year. We look forward to updates from activities of last year, as well as discussions of new efforts.

It is also very heartening to note that the campus has identified “Cancer” as one of its priorities for cluster hiring. We await further developments on that front. Progress with Carle has been very rapid with a number of joint efforts, patient-oriented and translational studies, as well as inspiration from our clinician colleagues. Similarly, we look forward to forging new links via the Mayo-Illinois alliance. Our partners were crucial contributors to our community and remain an integral part of our educational and research efforts going forward. The launch of the Frontiers in Research Speaker Series by the Graduate Cancer Community brought Drs. John Condeelis and Charles Perou to campus as inaugural speakers.

Members of our community have also had a very productive year. Many of our members were recipients of prestigious awards, received various funding or grants, and published articles in noteworthy journals. We will continue to examine ways in which we can contribute to the work being done in an effective and collaborative manner.

To our many faculty, staff, undergraduate, and graduate students, student groups, external partners, and other supporters, THANK YOU for a wonderful year, and I look forward to working with you in future community activities.

-Rohit Bhargava

COMMITTEE

Milan K. Bagchi  Stephen A. Boppart  Timothy M. Fan  Barbara Fiese  H. Rex Gaskins

Illinois researchers are making strides to improve cancer detection, prevention, diagnosis, therapy, and quality of life.

**CANCER COMMUNITY AT ILLINOIS** provides resources to access cancer-related activities across campus and nucleate new programs and activities to advance cancer research progress.

Leveraging campus research, education, engagement, and economic development resources for collective success, we focus campus attention on cancer to build an environment that enables faculty, staff, and students to achieve goals in this area.

We also catalyze large projects, specifically focused on applying advanced Science and Technology to cancer, to bring together unique strengths on campus and mount challenges that are greater than individual efforts; outcomes include program project grants and training programs and development of centers and larger projects.

Additionally, we use strengths in science and technology to make cancer care accessible to cater to socially and economically under-served populations. The community strives to address cancer research and care disparities, while improving multidisciplinary ties on campus to impact both research and education while forming needed alliances with external partners.

The Cancer Community at Illinois is a program of the Interdisciplinary Health Sciences Initiative receiving support from the Beckman Institute for Advanced Science and Technology and the Department of Bioengineering.

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**WELCOME NEW MEMBERS**

- **Sayeepriyadarshini Anakk**
  Molecular and Cellular Biology
- **Michael DeLisio**
  Kinesiology and Community Health
- **Hillary Klonoff-Cohen**
  Kinesiology and Community Health
- **Hyun Joon Kong**
  Chemical and Biomolecular Engineering
- **Dipanjan Pan**
  Bioengineering and Carle Foundation Hospital
- **An Ruopeng**
  Kinesiology and Community Health
- **Laura Selmic**
  Veterinary Clinical Medicine
More than 70 Cancer Community at Illinois researchers, physicians, postdocs, and graduate students gathered in October at the Beckman Institute for Science and Technology for a grant planning symposium to discuss cancer research at Illinois. The focus was future cancer-focused grant collaborations on campus and throughout the community.

Rohit Bhargava, professor of bioengineering, led the symposium with a discussion on cancer research and education at Illinois. Kendrith Rowland, director of cancer research at the Carle Cancer Center, discussed the Center’s intent to apply for a National Cancer Institute Community Oncology research grant. He explained the need to expand into cancer care delivery research and to further the collaborative relationship with the university. He also gave the group of researchers an overview of clinical resources available through the Cancer Community’s partnership with Carle.

Several symposium speakers, including Timothy Fan, associate professor of veterinary clinical medicine; Rashid Bashir, department head of bioengineering; Rex Gaskins, professor of animal sciences; Taekjip Ha, professor of physics; and Brendan Harley, assistant professor of chemical and biomolecular engineering, shared their progress in cancer research, as well as grant opportunities that were underway.

Conversation throughout the symposium centered on the unique strengths that both the university and its clinical partners bring to the cancer research arena. Symposium attendees were in agreement with the need to combine efforts in computation, molecular biology, and engineering to apply for large-scale funding for continued interdisciplinary research.

Bhargava encouraged attendees to continue meeting and having conversations about projects in order to keep future grant collaborators in mind, especially for SPORE (P50) type grants. These specialized center grants support multi-project, interdisciplinary, translational research. SPORE grants are historically awarded to proposals that favor technology and public health — two educational strengths at Illinois. Since the Fall 2013 meeting, community members have pursued several of the funding opportunities that were discussed, in addition to others.

The next Cancer Community at Illinois planning meeting is scheduled for October 15, 2014 at the Beckman Institute.

Spring 2014 Working Group Meetings
Building Relationships & Cultivating New Research Ideas

The spring 2014 semester was ripe with activity as Illinois faculty, staff, postdocs, students and Carle physicians and staff came together at the Khan Annex/Huff Hall to explore collaborative research opportunities in the areas of nutrition, physical activity, and cancer survivorship.

Working group meetings, led by a senior faculty member, were scheduled to continue campus discussions on interdisciplinary cancer research and education. Edward McAuley, professor of kinesiology and community health, kicked off the series by moderating the working group on physical activity on March 31, 2014. John Erdmann, professor emeritus, chaired the nutrition meeting on April 14, 2014; while Hillary Klonoff-Cohen, director of the Master’s in Public Health program in the Department of Kinesiology and Community Health, facilitated the session on cancer survivorship on May 1, 2014.

Each meeting outlined group strategies to further the Illinois-Carle collaboration. Three distinct, yet related, action plans were developed, highlighting areas of interest and future research, resource needs, and next steps. Each group also explored ways to bring new researchers, clinicians, and additional disciplines into the discussion.
During Spring Break 2014, Sarah Holton and two of her peers participated in a personalized M.D./Ph.D. job-shadowing experience made possible by the Mayo-Illinois Alliance. She describes her experience, what she learned, and how she hopes to use the information.

What are your current research interests?

I am interested in the reasons that make certain breast tumors aggressive and refractory to treatment. In particular, I focus on the way breast tumor cells interact with their local environments and how these interactions lead to more invasive and aggressive cancer phenotypes.

Why was this job-shadowing experience important to you?

The experience at the Mayo Clinic was important to me because it is the preeminent translational research institution in the country. I attended the Individualizing Medicine Conference held there in 2012, and again in 2013, and was amazed at the collaborative research initiatives taking place in the Center for Individualized Medicine. I knew I wanted to have an extended experience at the Mayo Clinic, primarily to satisfy my curiosity of how everything operated. The Mayo-Illinois Alliance was also a very exciting prospect for me. While we have incredible research infrastructure and resources at Illinois, we do not have the patient populations that the Mayo Clinic sees. For example, they have a biobank that contains specimens from over 30,000 healthy donors. Partnering with them seems like a very logical way to test many of the research discoveries made on campus, whether it is a novel gene signature for a certain disease or applying a new optical technique to 1,000 patient samples.

What cancer-specific/related activities did you do during this experience? What did you learn?

While we were at the Mayo Clinic, we saw several of the research labs, core facilities, and the hospital. One of the most rewarding experiences was sitting in on two board meetings, the Genomic Tumor Board (GTB) and the Genomic Odyssey Board (GOB), which are great achievements within the Center for Individualized Medicine. Both boards discussed a few cases similar to other tumor boards held by hospitals, however the patients discussed had their genomes sequenced. For the GTB, the patients had failed several rounds of standard therapies, and now their physicians were looking for the specific mutation harbored by the patient’s tumor in order to precisely target the pathway(s) involved. This is a very new and exciting branch of medicine, and it was an honor to hear about it firsthand. The GTB and GOB were also unique in that individuals from every discipline involved were present, from scientists and genetic counselors to bioinformaticians and medical ethicists. To watch the different groups interact to figure out the immense problem that is genomic medicine was very inspiring. I have always loved science at the interface (of medicine, of engineering, of two fields coming together), and attending the GTB was very exciting for me. I felt like I was experiencing the future of the medicine/research interface.

What short and long-term impact will this experience have on your research/work? How will you use the knowledge from this experience?

In the short-term, I have identified potential research mentors at the Mayo Clinic with whom I can lay the foundation for a clinical translation of my doctoral work. I have a list of things that I would love to do with my data! As part of the Medical Scholars Program, I will have the opportunity to take almost 16 weeks of elective credit, and I hope to use this opportunity to participate in a research project at Mayo.

The time I spent at the Mayo Clinic was wonderful. I was able to get a closer look into the world of bench-to-bedside-to-bench research. It was so inspiring to see the community of physicians and research scientists work together on exciting medical challenges. I will carry this experience with me as I move forward in my career.
Selected Cancer-Related Courses

Fall 2014

» BIOE 199: FCR: Frontiers in Cancer Research

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<tr>
<td>FCR</td>
<td>63911</td>
<td>NA</td>
<td>Noon – 1:50 p.m.</td>
<td>F</td>
<td>DCL 1265</td>
<td>Bhargava, R.</td>
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This discovery course will provide students with overviews of important topics in cancer research and how engineering education is needed to solve each problem. The weekly talks will be TED-style and designed to introduce students to a topic that helps them seek further knowledge. This is a limited enrollment course.

» BIOE 298: Nanotechnology for Environment & Human Health: Risks and Promises

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<td>Pan, D.</td>
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Nanotechnology offers great promise for the early detection of a disease and facilitates delivery of drugs in cardiovascular, inflammatory, cancer and neurological disorders. Myriad innovation has shown that at ‘nano’ scale (1-100 nm), unique chemical, physical, and optical properties evolve, which can be exploited to derive applications in biology and medicine.

» BIOE 498: Application in Cancer and Mechanobiology

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<td>BNM</td>
<td>58781</td>
<td>LCD</td>
<td>3:30 – 4:50 p.m.</td>
<td>TR</td>
<td>1105 Siebel Center</td>
<td>Smith, A.</td>
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The course will provide an introduction to basic concepts in applications of nanotechnology in mechanobiology and in cancer. This is a highly interdisciplinary field of research where knowledge from various disciplines needs to be presented and integrated.

» BIOE 498: Computational Cancer Biology

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<td>JM</td>
<td>56513</td>
<td>LCD</td>
<td>2 – 3:20 p.m.</td>
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<td>ARR Digital Computer Lab</td>
<td>Ma, J.</td>
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The course will explore basic biology of cancer, the mathematical modeling of cancer, and computational biology problems in cancer genomics.

» CHLH 575: Chronic Disease Prevention

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<td>59589</td>
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Advanced course in population-based approaches to chronic disease prevention, with emphasis on policy and environmental strategies affecting lifestyle risk factors. Provides an understanding of common diseases, screen tests, community assessment, systematic evidence reviews, and evidence-based community interventions.

» FSHN 480: Basic Toxicology

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<td>C</td>
<td>37665</td>
<td>LEC</td>
<td>1 – 1:50 p.m.</td>
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<td>132 Bevier Hall</td>
<td>Biehl, M.</td>
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Emphasizes the physiology, biochemistry and pharmacokinetics of absorption, distribution, metabolism and excretion of topic compounds, drugs, non-nutrient dietary supplements and other compounds foreign to the body. An introduction to the process of cancer, how foreign compounds can initiate, enhance, or prevent the process is also included.
EDUCATION

» FSHN 510: Epigentics: Human Health & Nutrition  
Credit: 1 hour

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<td>A</td>
<td>34614</td>
<td>LEC</td>
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<td>393 Bevier Hall</td>
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<td>B</td>
<td>34610</td>
<td>LEC</td>
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<td>393 Bevier Hall</td>
<td>Chen, H.</td>
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Combined lecture and in-class discussion of epigenetic mechanisms of mammalian gene regulation, including DNA methylation, histone modifications, genomic imprinting, epigenetic reprogramming, and how loss of epigenetic control is related to human diseases.

» FSHN 510: Topics in Nutrition Research  
Credit: 1 hour

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<td>34617</td>
<td>LEC</td>
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<td>107 Animal Sciences Laboratory</td>
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Inflammation, systemic effects of inflammation, and nutrition-related factors that may increase or decrease inflammation.

» MCB 400: Cancer Cell Biology  
Credit: 3 hours

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<td>31654</td>
<td>LEC</td>
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The course will provide students with an introduction to primary scientific literature to develop their scientific reasoning through the use of specific experimental examples, and to expand their understanding of a number of basic concepts pertaining to cancer cell biology.

Spring 2015

» BIOE 498: Imaging & Therapeutic Agents  
Credit: 1 hour

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This course will introduce the principles and prerequisites for clinical (MRI, CT, US, PET-SPECT) and pre-clinical (PAT, Optical) imaging modalities and chemical strategies to develop exogenous probes for the early detection of molecular changes responsible for disease pathogenesis, such as cardiovascular, inflammatory, cancer and neurological disorders.

» CHLH 502: Cancer Epidemiology  
Credit: 4 hours

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<td>Huff Hall – Room TBD</td>
<td>Rosenblatt, K.</td>
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The class will address the investigation of the descriptive and analytic epidemiology of cancer. It will include information on the development of malignancy and characteristics of tumor cells. The advanced investigation of the relationship between various risk and protective factors and the development of different types of cancer will be discussed in an epidemiologic context. The role of primary prevention and secondary prevention (screening) will also be covered.
The Graduate Cancer Community at Illinois is a student group designed to bring together students and researchers involved in cancer research from across various disciplines, as well as to bridge the gap between on-campus research and the greater community as a whole.

The Pioneers of Cancer Research Seminar Series, a new initiative from the group, brought two cancer researchers who have engaged in transformative work in their respective fields.

The speakers were identified by students as doing research that is highly multidisciplinary and translational, often generating an impact that has changed the way the global cancer research community thinks about the disease. By inviting speakers to share their experiences with multidisciplinary approaches to cancer research, members from all across the campus and community were presented with unique viewpoints and opinions.

Charles Perou, University of North Carolina Chapel Hill presented Breast Cancer Genomics: From the Individual to the Population on April 17, 2014 at the Beckman Institute Auditorium.

John Condeelis of the Albert Einstein School of Medicine presented The Tumor Microenvironment of Metastasis (TMEM) as an Emergent Behavior Required for Breast Cancer Dissemination on April 23, 2014 at the Micro and Nanotechnology Laboratory.
Phi Gamma Nu (PGN) member Dustin Stern launched Compete for a Cure on May 1, 2010 after the death of his mother, Pam Stern, to lung cancer.

The plan was to provide “a day of philanthropy and entertainment” by encouraging community members to transform a negative situation into motivation for a meaningful cause.

In 2014, PGN began its partnership with the American Lung Association and has received sponsorship from Deloitte, KPMG, PwC, EY, Potbelly Sandwich Shop, Grosvenor Capital, The Jaffee Family, and The Landgren Family — helping them engage many more University of Illinois students through PGN’s signature event.

PGN and the Pam Stern Legacy of Hope Foundation donate a percentage of the proceeds from the event to the American Lung Association.

“This year, we have raised over $21,000 in which 25 percent of the overall proceeds will be going to the American Lung Association and 75 percent will go towards the Pam Stern Legacy of Hope Foundation,” Stern says.

Incredibly, the group has raised more than $80,000 within five years.

Phi Gamma Nu’s innovative charity event has brought a diverse range of individuals together to channel their passion and energy into the fight against cancer.

Colleges Against Cancer (CAC) stands out among the over 400 cancer organizations nationwide through its dedication to creating experiences that inspire college students to contribute their talents toward eradicating cancer. The core areas of focus of the Illinois chapter include cancer education, survivor and caregiver support, and the annual fundraiser Relay For Life.

Throughout the journey of “finding a cure to cancer,” the organization is “inspiring other students to want to volunteer to understand what the American Cancer Society does,” says Kyle Polke, president of CAC Illinois Chapter.


The event offers college students a way to contribute through an organization that is one of the largest and most powerful advocates in fighting against cancer. “[They] channel their energy, inspiration, [and] passion,” says Kyle.

The organization raised over $142,000 for the American Cancer Society through their signature event. It attracted 1,400 community members to volunteer their time and effort in raising cancer awareness and research funds.

The organization recruited university students to write cards for children who are fighting cancer.

During nutrition week, CAC established booths on the University Quad to educate college students about nutrition and healthy eating.

Through these efforts, CAC is helping to build a community of stronger and healthier individuals.
ILLINI 4000 Battles Cancer on Two Wheels

Riding a bike across the nation may seem like a big challenge, but to the bikers of Illini 4000, the 4,500-mile bike trips are steps that help reach their ultimate mission — to end cancer.

The Illini 4000 started when two Illinois students, Anish Thakkar and Jonathan Schlesinger, decided to bike across the United States for this meaningful cause. Their initial goal was to raise $50,000 in funds for cancer research, but as the organization developed, their target goal increased to $150,000. To date, Illini 4000 has donated more than $700,000 to cancer research and patient care.

In 2014, the Illini 4000 aims again to raise $150,000 for cancer research efforts through their bike ride. The riders will be traveling an estimated 2,906 miles on two wheels.

The group dedicates 75 percent of funds raised to cancer research and the remaining 25 percent to patient care.

Illini 4000 reaches out to not only community members battling cancer, but the family members of these patients. The riders have donated over $62,500 to Camp Kesem, a camp that empowers the children of cancer patients to cope with their situations.

Illini 4000 allocates their funds to assist a diverse range of the populations affected by cancer. This allows “everyone affected by cancer to get involved and fight back,” says director of marketing Kenny Shaevel.

Portraits Project

Going beyond fundraising, Illini 4000 president Tory Cross leads her team in the Portraits Project. This project features stories about people dealing with cancer who the Illini 4000 members meet on their annual bike ride. These stories feature caretakers, teachers, and people of various backgrounds who have been affected by cancer.

Illini 4000 hopes to build a community of inspiration, bringing individuals who are affected by cancer together to share their stories and create a network of support. Cross says, “What makes it beautiful is that [the] portraits are varied, but also connected.”

Some portraits depict heart-breaking losses, while others celebrate the glorious victories throughout a survivor’s battle against the disease.

On April 6, the organization held its Spring Portraits Gala, which raised funds for cancer research, as well as awareness at the University of Illinois. The gala displayed numerous cancer stories that the Illini 4000 group helped to create.

For more information on Illini 4000, visit www.illini4000.org and www.portraitsprojects.org.
PARTNERSHIPS

Meet the Carle Cancer Center Research Team

As the relationship between the University of Illinois at Urbana-Champaign and Carle grows, it is important to know the people behind the partnership. Let us introduce you to key administrative members of the Carle Cancer Center Research team. These professionals work with university faculty and student researchers to foster medical discoveries, improve educational opportunities, enhance access to clinical and translational research trials for patients, recruit specialty physicians to downstate Illinois, and provide an environment that supports collaboration.

Dr. Kendrith Rowland, Jr., MD:
Director of Carle Cancer Research, Medical Oncologist
Dr. Rowland divides his time between patient care and overseeing the various cancer-related clinical and translational studies at Carle. Dr. Rowland leads the rest of the Carle Cancer Research team and is a physician sponsor for clinical trials.

Melissa Phillips, RN, MSN, MHA, OCN:
Director of Oncology
Melissa facilitates operations throughout Carle Cancer Center. This encompasses managing the people and processes of the comprehensive breast cancer center (Mills Breast Cancer Institute), medical oncology, radiation oncology, nutrition, genetic counseling, social work services, and research.

Sally Shipley, BS, CCRP:
Research Coordinator, Business Operations Lead
To most research professionals, dealing with funding proposals, budgets and contracts are considered an albatross. Not to Sally. She handles all financial aspects, grant submissions and general business functions for the cancer research team. Sally also serves as a resource to billing and regulatory teams, keeping research funded and operating.

Betsy Barnick, BS, CCRP:
Research Coordinator, Clinical Operations Lead
Betsy, a certified clinical research professional, has been with the Carle research team for 13 years. She evaluates all areas of potential studies and ensures they meet physician researchers’ needs. She also oversees research study details like participant eligibility, possible side effects and toxicity, and regulatory reporting.

Janet Iverson, BS, CCRP:
Research Coordinator, Illinois-Carle Clinical Trials
Janet is the Carle point person for the wide range of Illinois-Carle oncology projects. She interfaces with community members and researchers, helping coordinate logistics, research participation, and data flow on concurrent studies.
In total, the Carle Cancer Research team includes nearly 20 dedicated staff members to monitor clinical trials and participants.

“It takes a huge team to create a seamless approach to cancer research and care. We want superior medical outcomes while maintaining a high level of quality of life. Ultimately, we want to give every patient the highest level of care possible,” says Phillips.

According to the Carle team, thanks in large part to work with Illinois researchers, providing the “highest level of care possible,” is looking more and more like a local reality in coming years.

Without a doubt, the shared resources and teamwork increases the potential funding portfolio for both institutions. The collaboration of great minds also gives patients—many of whom are University of Illinois alumni, employees or retirees—more confidence in their cancer care.

Shipley, who assesses funding proposals for the Carle Cancer Research Team, says she's seeing a shift at the National Cancer Institute (NCI) from being solely focused on treatment to being concerned with better care delivery, reevaluating the ways various health care professionals are involved in treatment, and determining the best ways to communicate with patients.

“One project [we are] very close to launching is with Dr. Rashid Bashir in the Department of Bioengineering, looking at the development of a point-of-care biochip device for our cancer patients,” says Iverson. “The idea behind this study is similar to how a glucometer for diabetic patients is used at home. Carle oncology patients who consent to participate in this trial will undergo a one-time blood draw in the clinic to assist in the testing and development of this device. If the technology proves itself reliable and accurate, the outcome will lead to much needed blood diagnostics occurring in a home-based setting, potentially leading to a reduction in travel to the clinic for blood draws. In many cases, this could be a huge cost-and time-savings for our patients,” she says.

Researchers across campus, including Susan Schantz, Barbara Fiese, Stephen Boppart, Edward McAuley, Hillary Klonoff-Cohen, and others are enrolling study participants from Carle and accessing medical technology and equipment, human blood and tissue samples, lab space and services, and research staff to help translate their research from bench to bedside.

Phillips stresses Carle’s mission and responsibility to serve the community in the best ways possible. “We want more projects. We want more opportunities for our community to participate in clinical trials,” she says. “We want to be recognized as a team that is bringing innovative cancer studies, trials, and initiatives to the region.”

The Interdisciplinary Health Sciences Initiative (IHSI) works closely with the Carle Cancer Center to facilitate cancer-related studies being conducted by Illinois researchers. For more information about working with the Carle Cancer Center Research Team, contact the IHSI at biomedical@illinois.edu or call (217) 244-8480.

**U of I, Carle Create Simpler IRB Process**

Further strengthening this local affiliation, the Illinois IRB Office and Carle’s Human Subject Protection Office signed a Memorandum of Understanding regarding Institutional Review Board (IRB) approval and oversight of human subject research at both campuses.

The agreement, effective January 2014, means that both organizations' offices recognize unified documentation and can now designate one institution as the “IRB of record” for the entire lifespan of the research protocol. University investigators seeking Carle's clinical resources may no longer need to work with both review offices for approval, though this isn't a blanket policy.

“For researchers, this agreement really lessens the administrative burden of getting studies off the ground,” says Kyle Galbraith, Manager of Human Subject Protection at Carle. “Of course, there may be certain factors that require both IRB offices to review, but our goal is to partner with investigators while ensuring studies are done safely and within compliance.”

Contact the Illinois IRB Office at (217) 333-2670 or irb@illinois.edu with any questions on the new agreement.
The Center for Healthy Living, part of Presence Covenant Medical Center (PCMC), and American Cancer Society partnered to host an entertaining and educational event as part of the Center for Healthy Living’s Powerful Living Series.

Dr. William O’Brien, Jr., professor emeritus at the University of Illinois at Champaign-Urbana, served as one of the event presenters on March 13, 2014. He gave the audience a glimpse into their medical futures which included a reduction in the use of costly MRIs, harmful X-rays, and painful biopsies.

A more positive medical future is what Dr. O’Brien and his team have been working toward for the last 10 years. Rather than using MRIs, X-rays and biopsies, his team uses quantitative ultrasound, a specialized ultrasound technique, to establish differentiations and characterizations among tissue types to image cells. The images, in turn, are used to create detailed models of single cells, pellets and tumors to aid in early cancer diagnoses. Findings show that quantitative ultrasound is yielding data very close to that obtained through MRIs.

O’Brien says his team is still in the early phases of this application of ultrasound imaging, but he has high expectations for its future. The team is also in early discussions with two technology companies, Siemens and SuperSonic Imagine, to develop additional clinical trials.

Ultimately, O’Brien would like to see patients around the world have access to ultrasound examinations that would be useful in early detection of different diseases.

“Often most diseases will manifest themselves in some way with the change in the tissue properties and that’s what we see with ultrasound. It won’t be good for everything, but it will be good for a lot of things.” He went on to say, “It’s not like we’re trying to eliminate biopsies, we’re trying to use them properly.”

Charlene Baylis of Champaign was one of several cancer survivors at the meeting. After undergoing treatment for thyroid cancer and dealing with the recent death of her mother from cancer, Baylis found Dr. O’Brien’s talk an important resource. “I just want [information] to be aware of what’s going on in my body.”

Linda Tauber-Olson, supervisor for the Center for Healthy Living at PCMC, and Katie Champion, senior representative with the American Cancer Society, felt the collaboration was a success.

JULIA VALLIANT: Enhancing Community Engagement

Julia Valliant (Ph.D., M.H.S.) joined the Cancer Community at Illinois as a public health researcher in spring 2014. Valliant’s appointment focuses on community outreach and engagement. She will help facilitate conversations within the organization and with institutional partners and stakeholders. One of her goals includes identifying strategies and actions to parlay the community’s assets into greater place-based capacity for collaborative cancer research and care.

Valliant she says she hopes to continue to foster channels and occasions for people to talk to one another, operate as a team, and continue to generate the cross-disciplinary relationship with one another on campus.

Directly informing her role at the University of Illinois is work she completed with Central Highlands Appalachia Cancer Network (CHACN), one of the Special Populations Networks of the National Cancer Institute. While working with CHACN, Valliant coordinated cross-disciplinary relations among researchers, clinicians, public health providers, and cancer advocacy organizations across 119 rural coal-mining counties in Kentucky, Tennessee, and Virginia to streamline and add value to one another’s efforts to address unmet cancer needs. This experience will directly strengthen her work with the Cancer Community at Illinois.
Taking sportsmanship to a whole new level, Coaches vs. Cancer aims to engage and empower local communities to fight against cancer. The organization joins the American Cancer Society in working to transform coaches and teams into advocates for cancer awareness. Together as a team, participating members nationwide have successfully raised over $87 million in funds for the fight against cancer.

Beyond fundraising for cancer research, Coaches vs. Cancer engages local communities by having some participants serve as local or national spokespersons for cancer awareness, while others attend fundraising events. Coaches vs. Cancer aims to build “personal experiences, community leadership, and professional excellence of coaches nationwide. The program seeks to increase cancer awareness and promote healthy living among students, faculty and staff, fans, and the community at large,” says Amanda German, community events specialist. Through collaborations with the National Association of Basketball Coaches and the American Cancer Society, the program spreads awareness to a broader audience.

The Coaches vs. Cancer program has not only made great contributions, from fundraising and awareness to patient care, but has successfully engaged a diverse range of community members in contributing to the cause. What makes Coaches vs. Cancer at Illinois unique is its Annual Coaches vs. Cancer Dinner & Auction, which truly brings out the Illinois spirit. German explains, “This event is a great way to show support for Illinois athletics, while also supporting a great cause.” The 2nd Annual Dinner & Auction took place April 15 and attracted 315 attendees. The cocktail hour consisted of a photo opportunity with Coaches Beckman, Bollant, and Groce, a silent auction with over 50 items, and more. In addition, key highlights of the event included words from Athletic Director Michael Thomas and auctioning the items of guest speaker and former Illini football player David Diehl. The dinner and auction raised $41,500.

According to Thomas, organizations such as Coaches vs. Cancer are important. He explains that to support the efforts and goals of the Coaches vs Cancer program, “Our coaches and their teams participate in awareness efforts, advocacy programs, and fundraising activities.” He continues, “In some way, this dreaded disease has touched the lives of everyone in the Division of Intercollegiate Athletics, from student-athletes and their families to administration and staff. As a unified team, we want to do all we can to move the needle forward in cancer research to hopefully discover a cure sooner, rather than later.”
Cancer Community at Illinois steering committee member Stephen Boppart has received the 2014 Innovation Transfer Award for developing medical instruments and technology that will change the way primary care doctors and cancer surgeons treat patients. The award recognizes an individual or group from the University of Illinois whose invention or work has been successfully transferred into the public sphere.

Boppart is the director of Imaging at Illinois, a campus-wide initiative, and head of the Biophotonics Imaging Laboratory in the Beckman Institute for Advanced Science and Technology. He is an Abel Bliss Professor of Engineering, with joint appointments in Electrical and Computer Engineering, Bioengineering and the College of Medicine. He is also affiliated with the Micro and Nanotechnology Laboratory, the Institute for Genomic Biology and Illinois' Neuroscience Program.

His company, Diagnostic Photonics, employs a technology in the operating room called optical coherence tomography (OCT) that lets doctors and surgeons microscopically evaluate human tissue (including cancer cells) in real time. The imaging technology allows doctors to immediately check for any tumor cells that might have been missed during initial surgery. Until now, more than 30 percent of women who undergo lumpectomies for breast cancer must have subsequent surgeries because of tumor cells that are left behind. Boppart utilizes the university’s relationship with Carle Foundation Hospital in Urbana, as well as other leading cancer research centers like Johns Hopkins University, to demonstrate the effectiveness of the technology.

Boppart says scientists typically work on translational research to allow for practical applications of their findings. Translational research strives to convert laboratory findings into new therapies for patients. The process of translating discoveries into new treatment and devices is typically lengthy. However, Boppart focuses on what he calls “transformational research.”

“I think what we do, and what this award means and symbolizes, is that we’re all very good at being creative, being innovative and using new ideas and research for investigating fundamental principles to really make an impact on society. It’s one thing to transfer an idea from the lab to a patient, but how can we transform it, to take it first to the patient and then to the population?”

Diagnostic Photonics started with state support from Illinois Ventures and has grown with help from the University of Illinois Research Park. The technology has been CE marked, which means it has been approved for use in Canada, Europe and Australia. Food and Drug Administration (FDA) approval in the U.S. should be coming soon, and the company has worked with the American Medical Association to establish reimbursement codes for the clinical use of its products. Diagnostic Photonics is also pursuing more funding to expand its medical trials around the world.
Selected Honors & Awards:

**Ryan Bailey**
- Named to the 2014-2015 Defense Science Study Group, Institute for Defense Analysis/DARPA
- Arthur F. Findeis Award for Achievements by a Young Analytical Scientist, Division of Analytical Chemistry, American Chemical Society, 2013

**Rohit Bhargava**
- Meggers Award, Society for Applied Spectroscopy, 2014
- Craver Award, Coblentz Society, 2013

**Stephen Boppart**
- Fellow, American Institute for Medical and Biological Engineering (AIMBE), 2014
- Innovation Transfer Award, Illinois Office of Technology Management, 2014
- Fellow, American Association for the Advancement of Science (AAAS), 2013
- PhotoniCare, Inc. Start-up Awards: Chicago Innovation Mentors, NSF I-CORP, Research Park I-START, 2013

**Timothy Fan**
- Dr. Gordon and Mrs. Helen Kruger Research Excellence Award, 2013

**Brendan Harley**
- Young Investigator Award, Society for Biomaterials, 2014
- Everitt Award for Teaching Excellence, University of Illinois College of Engineering, 2014
- NSF CAREER Award, 2013

**Princess Imoukhuede**
- Collins Fellow, University of Illinois, 2013
- Engineering Council Award for Excellence in Advising, College of Engineering, University of Illinois at Urbana-Champaign, 2013

**Auinash Kalsotra**
- Travel Award, Myotonic Dystrophy Foundation Conference, Washington, DC, 2014

**Kristopher Kilian**
- Kavli Fellow, 19th German-American Frontiers of Science Symposium, 2014

**Hyun Joon Kong**
- Centennial Scholar, College of Liberal Arts and Sciences, University of Illinois at Urbana-Champaign, 2013-2016

**Edward McAuley**
- Distinguished Research Mentor Award, Society of Behavioral Medicine, April 2014
- Visiting Scientist, Jacobs Center for Life Long Learning, Jacobs University, Bremen, Germany, 2013
- Outstanding Career Achievement Award in the Behavioral and Social Sciences, University of Illinois at Urbana-Champaign, 2013
- Taylor Travel Award, 2013

**Richard Perry**
- Midwestern Universities Analytical Chemistry Conference, 2013-2014

**Gabriel Popescu**
- New Venture Award finalist with Phi Optics, 2014

**Gregory Underhill**
- Young Investigator Award, Georgia Tech Frontiers in Bioengineering Workshop, 2013
- List of Teachers Ranked as Excellent By Their Students, University of Illinois at Urbana-Champaign, 2013
MEMBER ACHIEVEMENTS

Selected Grants:

**Rohit Bhargava**

**Wawrzyniec Dobrucki**
- University of Illinois Cancer Center (Pilot Grant), “Targeted Imaging of Receptor for Advanced Glycation End-Products (RAGE) in Prostate Cancer”, 2/1/2014 – 1/31/2015.

**Barbara Fiese**

**Paul Hergenrother**

**John Katzenellenbogen**

**Kristopher Kilian**

**Edward McAuley**

**Ann Nardulli**

**Dipanjan Pan**

**Partha Ray**

**Kendrith Rowland**

**David Shapiro**

**Andrew Smith**
Selected Collaborative Publications:


ANNUAL PLANNING MEETING

SAVE THE DATE
Cancer Community at Illinois

October 15, 2014
9 a.m. - 4 p.m.
Beckman Institute for Advanced Science and Technology
Visit us at cancer.illinois.edu