ANSWERING CANCER’S MOST CHALLENGING QUESTIONS.

2015 ANNUAL REPORT
WENDY STOCK, MD, professor of medicine and director of the Leukemia Program (left), was the recipient of the Anjuli Seth Nayak Endowed Professorship in Leukemia through a generous $3.5 million donation by her former patient ANJULI NAYAK, MD (right), a renowned allergist and immunologist, who received cancer treatment at the University of Chicago Medicine.
Scanning electron micrograph of HeLa cervical cancer cells.
*Credit: National Institutes of Health*
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LETTER FROM THE DIRECTOR

A question: a first step toward discovery. Though curiosity alone does not foster change, it serves as a catalyst for innovation. In asking challenging questions, the University of Chicago Medicine Comprehensive Cancer Center researchers are not simply identifying problems, but accelerating the development of effective ways to prevent, diagnose and treat cancer.

MISSION
We are engaging in innovative and collaborative research to discover the determinants of cancer, to develop cures for cancer, and to prevent cancer.
In 2015, we have worked to answer cancer’s most challenging questions through inquiry, creativity and collaboration. This annual report aims to highlight some of our most impactful accomplishments, which have put us at the forefront of cancer care and discovery.

The first section of the report features our most groundbreaking work, including advances in immunotherapy, metastasis research, individualized treatments, quality of life and cancer screening, sparked by the following questions:

• How do we prevent cancer, especially in the most vulnerable populations?
• How can we match individual patients with the most appropriate treatments?
• How can we harness our immune system to destroy cancer more effectively?
• How do we stop cancer from spreading?
• How can we best improve survivorship for cancer patients after diagnosis and treatment?

Though daunting in their breadth, these questions are the foundation for great invention. Our researchers have embraced the ambitious scope of each challenge, as evidenced by the groundbreaking discoveries born from such pursuit.

In this report, we also spotlight our comprehensive approach to lung cancer prevention and treatment. From early detection and screening to state-of-the-art oncology techniques to robust clinical trials, our lung cancer team is tackling each challenge head-on.

Beyond the laboratory, we have made great strides in community engagement and education. This year we expanded our training programs for the cancer innovators of tomorrow, including starting a new summer research program for high school students. The Office for Community Engagement and Cancer Disparities (OCECD) continues to develop novel programs that increase education and access to care for the populations that need it most.

Through these efforts, we are working to create a cancer narrative that is full of hope. Our inspiring patients, who share their stories within these pages, are just a few examples of the transformative power of the Comprehensive Cancer Center’s emerging clinical technologies.

Each day brings new insight into the way cancer evolves and operates. The diligence and persistence of our researchers continues to move us forward in our efforts to curb this deadly disease. I know such work would not be possible without funding, and would like to thank our generous supporters for their continued investment in cancer research. We are particularly proud to introduce you to the Janet D. Rowley Discovery Fund, supporting pioneering cancer research and honoring the memory of one of our beloved, world-renowned scientists. It is fitting that the Discovery Fund is a cornerstone of the University of Chicago Campaign: Inquiry and Impact, underway for the last year and fueling the discoveries we make every day.

With your help, we continue to find the answers that shape the future of cancer prevention and treatment.

With sincere gratitude,

MICHELLE M. LE BEAU, PHD
Arthur and Marian Edelstein Professor of Medicine
Director, the University of Chicago Medicine Comprehensive Cancer Center
Cancer is complex. Making an impact on cancer requires understanding all aspects of the disease, and answering the toughest questions cancer throws at us.
At the University of Chicago Medicine Comprehensive Cancer Center, we are answering cancer’s most challenging questions through groundbreaking basic, translational, clinical and population research.

Our comprehensive approach to cancer prevention, detection and treatment is at the core of everything we do, and has enabled us to elevate patient care to the next level, beginning at diagnosis and continuing through treatment.

In this report, we present five of those toughest questions and examples of how our research is answering them. These questions are also at the heart of the University of Chicago Campaign: Inquiry and Impact, the most ambitious fundraising campaign in our history.

We aren’t afraid to ask the tough questions—to journey into the unknown. This is the only way to drive discoveries that will improve outcomes for cancer patients. **WON’T YOU JOIN US?**
HOW DO WE PREVENT CANCER, ESPECIALLY IN THE MOST VULNERABLE POPULATIONS?

It is estimated that as many as half of all cancers could be prevented if all of the known, validated cancer prevention strategies were consistently followed. But, access to, and/or understanding of, these prevention practices is challenging, especially for those populations that share a disproportional burden of cancer incidence and mortality. Our physicians and scientists are leading the way in cancer control through innovative research and interventions in prevention.

The Chicago Multiethnic Prevention and Surveillance Study (COMPASS), for instance, is creating a one-of-a-kind population study group representative of the city of Chicago that will uncover the genetic, environmental, lifestyle and health care-related factors that impact chronic diseases, such as cancer, in the 21st century. Led by Habibul Ahsan, MBBS, Louis Block Professor of Public Health Sciences, this rich resource will serve the entire cancer research community and comprehensively address cancer disparities like no other population-based study has been able to do.

Accurately predicting which individuals are at high risk for cancer is a first step toward prevention. For example, infection with hepatitis B virus (HBV), together with its related virus hepatitis C, increases the risk of liver cancer as much as 200 times and is a major health problem worldwide. In an effort to determine the effectiveness of screening for the virus, and how this translates to patient care and reducing the incidence of associated cancers, Karen Kim, MD, professor of medicine and director of the University of Chicago Medicine Comprehensive Cancer Center’s Office of Community Engagement and Cancer Disparities (OCECD), assessed HBV screening in Asian Americans, who make up approximately half of those in the United States living with chronic HBV infection. Her team observed that HBV screening in non-clinical settings, such as community health fairs, reached more patients than in health clinics and was equally effective in helping to guide treatment choices for those who tested positive. The OCECD is using these results to develop community-based programming to effectively screen and treat these patients before they develop cancer.
Like testing for factors that significantly increase risk, screening for early-stage tumors before they have spread is an important tool for cancer control. The United States Preventive Services Task Force recently recommended annual lung cancer screening with low-dose spiral computed tomography (CT) for those individuals deemed at high risk due to their smoking history.

A multidisciplinary team including Fabrice Smieliauskas, PhD, assistant professor of public health sciences, Heber MacMahon, MD, professor of radiology, and Ravi Salgia, MD, PhD, professor of medicine, investigated whether United States health care providers were equipped to handle screenings of all eligible patients. Despite finding that most areas of the country should be able to provide screening capacity, the data indicated that there are likely to be disparities in access, particularly for Hispanic and low-income communities, unless resources are added to some health service areas. Findings like these are used to inform health care policy decisions and address access to prevention and cancer control services.

1 http://compass.uchicago.edu/

COLLEGE STUDENT SURVIVES RARE COLORECTAL CANCER

A normal 19-year-old, Taylor Murphy was enjoying the summer before her junior year of college when she started experiencing irregular bowel movements, and knew something was very wrong. A colonoscopy revealed a malignant mass in her rectum, and Taylor and her family were faced with a startling diagnosis: colorectal cancer.

But, Taylor had immediate confidence in the expertise of her medical team at the University of Chicago Medicine, headed by Konstantin Umanskiy, MD, assistant professor of surgery. “He recommended the best possible treatment, and said that he would take care of me and do everything that he could to get the cancer out of my body.”

Alarmed by her young age, Taylor’s team recommended she undergo genetic testing to determine the cause of her cancer. Tests revealed Lynch syndrome, a rare genetic mutation that significantly increases a person’s chance of developing colon cancer. In the United States, about 140,000 new cases of colorectal cancer are diagnosed each year, according to the National Institutes of Health. Approximately 3 to 5 percent of these cancers are caused by Lynch syndrome.

“When they found out I had Lynch syndrome, my doctors told me it’s often genetic, and was most likely passed down from my Dad or my Mom,” Taylor says. “They told me there was a one percent chance that I developed it on my own. And, wouldn’t you know, neither of them had it. I was the one percent.”

Taylor’s cancer treatment took place in several stages over the course of two years. She underwent radiation and two rounds of chemotherapy, including participation in a clinical trial led by Blase Polite, MD, associate professor of medicine.

On February 13, 2013, Umanskiy removed her colon laparoscopically and then used a da Vinci robot for precise removal of the cancer and an affected lymph node. David Song, MD, chief of the Section of Plastic and Reconstructive Surgery then used the robot to
harvest Taylor’s left side abdominis rectus muscle—the vertical muscle that makes up half of a person’s “six pack”—and used it to close her pelvic floor opening. Both procedures were performed through eight tiny incisions on Taylor’s abdomen. Song’s inventive reconstruction technique was the first of its kind performed in the United States. Taylor completed her treatments in May 2013, and returned to school in August of the same year. Though she has recently moved to California to start a new job, she says she will continue to work with her University of Chicago Medicine team in the future. Lynch syndrome also increases the risk for other cancers, like ovarian and uterine, and Taylor will need to continue to monitor her health closely.

“I’m in California, but I don’t want to leave the UChicago team forever,” says Taylor, who will continue to consult with Umanskiy and Polite. “I’m still going to get my CT scans there, and if anything big happens I’m going to go to UChicago because they know me inside and out, literally.” With a new job and life on the West Coast, Taylor is hopeful for the future.

“I want to say it’s like the best worst thing that’s ever happened to me because it is a humbling experience, and you learn a lot about yourself and your body,” she says. “It kind of gives you this empowering strength. But, it’s also something that I would never want to go through again. But, I am thankful for what I learned from it.”
HOW CAN WE MATCH INDIVIDUAL PATIENTS WITH THE MOST APPROPRIATE TREATMENTS?

Precision medicine requires not only the development of powerful drugs targeting the underlying molecular causes of cancer, but also the tools to identify the best treatment for each patient. It is also critical to maximize how quickly and effectively the personalized treatment is delivered. We are tackling these challenges by collecting and characterizing patient samples for basic and clinical research as well as cancer care, and investigating novel methods for the delivery of drugs tailored to individual patients.

Molecular tests and assays are becoming increasingly more important as precision medicine is adopted in a clinical setting. To advance the field of molecular diagnostics, the University of Chicago launched the Division of Genomic and Molecular Pathology under the leadership of Y. Lynn Wang, MD, PhD, professor of pathology. The first in Chicago, the Division consists of four laboratories, including a next-generation sequencing laboratory and a translational research laboratory for the development, testing and clinical application of molecular diagnostics that will guide our physicians and patients in their decision-making.

Scientists use molecular information about tumors to classify
them more precisely than merely their site of origin in the body or their appearance under the microscope. A more refined stratification allows for the development of more precise treatment plans to improve outcomes. Oncologist Tanguy Seiwert, MD, assistant professor of medicine, participated in a comprehensive analysis of head and neck cancers to characterize genetic alterations as part of The Cancer Genome Atlas (TCGA) project led by the National Cancer Institute.1 This work identified known and new genetic alterations, and showed that some subgroups have distinct clinical outcomes. Extending these findings even further, Seiwert and a team involving Everett Vokes, MD, John E. Ultmann Professor of Medicine; Kevin White, PhD, James and Karen Frank Family Professor of Human Genetics; Ravi Salgia, MD, PhD, professor of medicine; Ralph Weichselbaum, MD, D.K. Ludwig Distinguished Service Professor of Radiation and Cellular Oncology; and Mark Lingen, DDS, PhD, associate professor of pathology, led another multi-institutional project to better classify head and neck cancers based on gene expression profiling, which captures a snapshot of the extent to which specific genes are active in a cancer. Through this approach, they identified five subtypes of head and neck cancer, each with a distinct molecular profile and prognosis.2 Together, these studies will lead to the development of subtype-specific therapeutic strategies and individualized care for patients.

Molecular information from tumors and patients can also be used to predict response to treatment. This helps maximize treatment effectiveness while minimizing the likelihood of patients developing resistance and unnecessary side effects. Bakhtiar Yamini, MD, associate professor of surgery, and Ralph R. Weichselbaum, MD, D.K. Ludwig Distinguished Service Professor of Radiation and Cellular Oncology, are trying to improve the overall response rate of malignant gliomas—deadly cancers of the nervous system—to the chemotherapeutic agent temozolomide. This chemotherapy represents an important advance in treatment of these brain cancers because it prolongs survival in some patients. However, this therapy also has very low overall response due to the common development of resistance. Yamini and Weichselbaum identified a gene called TNFRSF10C, which encodes a protein expressed in tumor cells responsible for protecting them from death upon chemotherapy exposure and conferring resistance.3 Therefore, targeting this cell surface protein may prove a useful strategy to overcome temozolomide resistance and improve overall outcomes.


**Q** HOW CAN WE HARNESS OUR IMMUNE SYSTEM TO DESTROY CANCER MORE EFFECTIVELY?

**A**

Immunotherapies, which fight disease by altering the body’s immune system, are revolutionizing the treatment of some cancers, such as malignant melanoma. In the blossoming field of cancer immunotherapy, there is an urgent need to develop methods to predict which patients will respond to these treatments and to extend immune-based treatments to a broad array of cancer types. University of Chicago Medicine Comprehensive Cancer Center researchers are doing both.

Despite the monumental advances in treating melanoma and other tumors with immunotherapies, some patients do not respond at all or respond initially but then develop resistance. Therefore, as the use of these treatments grows, it is increasingly important to identify both the biomarkers that can predict responsiveness and the cellular pathways that confer resistance. As an example, Thomas Gajewski, MD, PhD, professor of pathology and medicine, discovered that the beta-catenin signaling protein within melanoma cells may be such a marker. Beta-catenin allows tumor cells to evade the immune system and resist the antitumor effects of immunotherapies. Gajewski and his team are exploring how a combination of immune targeting drugs and agents that block beta-catenin may effectively prevent therapy resistance in some patients.

Although several immunotherapies have been approved to treat melanoma patients, they have not been thoroughly tested yet in patients with other types of cancer. One such drug is pembrolizumab, an immunotherapy that targets a protein called programmed cell death (PD-1) receptor, which is produced by tumor cells and triggers the immune system to destroy cancer cells. In a trial led by Tanguy Seiwert, MD, assistant professor of medicine, pembrolizumab was found to have impressive anticancer activity and safety in patients with advanced squamous cell carcinoma of the head and neck. Similar promising results were observed in patients with metastatic triple-negative breast cancer treated with pembrolizumab in an early-phase clinical trial directed by Rita Nanda, MD, assistant professor of medicine. These studies underscore the power of this class of immunotherapeutic agents and set the stage for larger-scale clinical trials, which aim to validate these findings and extend the reach of immunotherapies to many diverse types of cancer.

The deadliest aspect of cancer is metastasis—a process by which tumor cells break away from their neighbors and travel to distant organs. Metastatic cancer remains a major clinical challenge due to lack of accurate predictive tests and limited effective therapeutic options. This translates into lower survival rates at later stages of the disease. The University of Chicago Medicine Comprehensive Cancer Center, in partnership with the University of Chicago Ludwig Center for Metastasis Research, is invested in unraveling the molecular and genetic basis of this process, a key to developing successful treatments tailored to individual patients that will prevent cancer from spreading.

Metastasis is particularly difficult to address in ovarian cancer due to the cancer’s unique biology and propensity to evade diagnosis until it has reached a late stage. Over the last several years, Ernst Lengyel, MD, PhD, Arthur L. and Lee G. Herbst Professor of Obstetrics and Gynecology, and his team have uncovered molecular signals that ovarian cancer cells use to communicate with their microenvironment (the surrounding cells and tissues) and spread. They are now applying these findings to the development of novel therapies against ovarian cancer metastasis. After constructing three-dimensional cell models to replicate the natural, complex...
environment of the tumor cells, Lengyel’s laboratory used a high-throughput screening method to test more than 68,000 drugs using tumor cells collected from patients. This novel approach is identifying drugs that inhibit key steps in the metastatic processes, such as a cell’s ability to attach to and move through a tissue. More importantly, these cancer models may be used in the clinic to rapidly predict which therapeutics will work best to block the spread of a patient’s cancer.

In another example, the Comprehensive Cancer Center has pioneered the treatment of rare cases in which only a limited number of small metastases are observed—termed oligometastases. The leader of these efforts, Ralph R. Weichselbaum, MD, D.K. Ludwig Distinguished Service Professor of Radiation and Cellular Oncology, and his group are extending this work to better understand how oligometastases evolve and behave so that they can be treated even more effectively. In a recent study, they demonstrated that the molecular features, and associated patient outcomes, of oligometastases are different from widespread metastases. Certain genes mediating cell attachment, movement and metastatic growth were silenced in oligometastases through microRNAs—small, non-coding RNA molecules that generally block gene expression. Scientists are beginning to understand the roles of these microRNAs, and the genes they control. This level of molecular detail will enable researchers to interfere with microRNA function and develop innovative ways to combat metastatic disease.


**Q** HOW CAN WE BEST IMPROVE SURVIVORSHIP FOR CANCER PATIENTS AFTER DIAGNOSIS AND TREATMENT?

**A** From the moment of diagnosis, a cancer patient becomes a survivor. Treating a patient is much more than just treating their cancer, as it also involves maximizing their quality of life through the entire spectrum of their care from diagnosis through treatment. Many of our physicians and scientists are addressing the challenges faced by patients, with a particular focus on understanding the often devastating physical and financial side effects associated with cancer treatment.

For survivors of childhood cancers, the risk of developing second cancers due to toxic effects of treatment can be very high and overwhelming. Tara Henderson, MD, is director of
the Childhood Cancer Survivors Center where she works with childhood cancer survivors to understand their risk of second cancers and the long-term health consequences of cancer therapy, and to develop appropriate screening regimens. In addition, her research program is dedicated to understanding the types of second cancers that arise in these survivors, identifying those individuals who are most susceptible and enhancing their care through robust screening and education.¹

The severity of side effects, or toxicities, due to treatment varies dramatically among cancer patients and is greatly influenced by the patient’s genetic makeup. The University of Chicago Medicine Comprehensive Cancer Center’s pharmacogenomics team is an international leader in identifying the changes in DNA sequence, also called genetic variants, which are linked to differences in the sensitivity and side effects of anticancer drugs. In one such pharmacogenomics study, Eileen Dolan, PhD, professor of medicine, and Yusuke Nakamura, MD, PhD, professor of medicine, discovered genetic variants associated with chemotherapy-induced neuropathy—pain and numbness in the extremities of the body due to nerve damage. Their work uncovered variants in two genes tightly linked to the risk of neuropathy in Asian patients treated with the chemotherapeutic agent paclitaxel,² a finding that could help guide treatment decisions.

The staggering costs of cancer treatment can be an added, arduous burden to patients confronting a cancer diagnosis, particularly for those who do not have adequate insurance or face other barriers to health care access. A group of investigators in the Comprehensive Cancer Center focused on cancer economics and health care policy is tackling this issue from many different perspectives. For example, Jonas De Souza, MD, assistant professor of medicine, has developed an online tool—an 11-question survey called COMprehensive Score for financial Toxicity (COST)³—to measure a patient’s risk for financial stress and open the lines of communication between patients and physicians about the financial burden many cancer patients face. In another example, Fabrice Smielauskas, PhD, assistant professor of public health sciences, and a multi-institutional team, has identified the drivers of trends in cost and use of targeted cancer drugs between 2001 and 2014, and found that targeted therapies now dominate drug spending for cancer.⁴ These and other investigators on the cancer economics and policy team, including Blase Polite, associate professor of medicine, and Rena Conti, PhD, assistant professor of pediatrics, are national thought-leaders in efforts to transform health care policy to best benefit cancer patients.

BLADDER CANCER SURVIVOR TURNED PATIENT ADVOCATE HELPS RAISE AWARENESS

A few days after having a mass removed from her bladder in May 2009, Jacqueline Nalls listened in disbelief as her urologist explained the results of the tumor biopsy. “He told me, ‘You have bladder cancer; it’s serious and you need to move quickly,’” recalls the 54-year-old from Richton Park, Ill. “I was shocked.”

The next news came just as hard. Surgery at her community hospital would involve removal of her bladder (cystectomy) and a permanent bag outside of her body to catch urine. Before moving ahead, the urologist suggested she consult with the University of Chicago Medicine Comprehensive Cancer Center’s Gary Steinberg, MD, professor of surgery, calling him the best bladder cancer surgeon in the Midwest.

“Jackie was an excellent candidate for reconstructive surgery,” says Steinberg, director of urologic oncology at the medical center. “Although her cancer had grown into the muscle layer of the bladder wall, it had not reached the fatty tissue surrounding the organ or spread to her lymph nodes or other sites.”

After removing Nalls’ bladder, Steinberg fashioned a new bladder from a portion of her small intestine. Shaped like a spherical pouch, the “neobladder” was connected to the urethra, allowing urine to pass through much like a normal bladder. Steinberg’s team performs more than 150 bladder removals annually and creates neobladders for 45 to 50 percent of patients with bladder cancer who need the organ removed.

Like many women with bladder cancer, Nalls didn’t recognize the symptoms. “It’s not unusual for a bladder cancer diagnosis in a woman to be missed for a year or more,” Steinberg says. “For a woman, the most common symptom—blood in the urine—may not be noticed or may be attributed to a urinary tract infection.”

Steinberg says that although bladder cancer is one of the top 10 most common cancers in this country, knowledge and research funding are low compared to other cancers. In 2005, Steinberg helped create the Bladder Cancer Advocacy Network (BCAN), a national organization dedicated to raising awareness, advancing research, and providing support and education for the bladder cancer community.

In May 2012, Nalls and Steinberg participated in the annual Walk for Bladder Cancer benefiting the BCAN, for which Nalls volunteers as a Patient Advocate. In August of this year, Nalls attended BCAN’s Annual Think Tank in Charlotte, N.C., where she spoke to a group of 200 urologists, oncologists and researchers on the patient perspective. “Jackie epitomizes the bladder cancer survivor today,” Steinberg says. “She is active, going after her goals and living life.”

Throughout her surgery and recovery, Nalls had the unwavering love and support of her husband, Oscar, and her family. She believes that having bladder cancer is both one of the worst and one of the best things to ever happen to her. “Having cancer changed my perspective on life and death and gave me a purpose,” Nalls says. “It taught me how important it is to help others and give back.”
BY THE NUMBERS

2014 CANCER DATA

The Cancer Registry reports on patients who were newly diagnosed and/or received their first course of treatment for cancer progression or recurrent disease at the University of Chicago Medicine. The total number of patients seen with cancer, including all consult visits, is higher.

PATIENT DEMOGRAPHICS

2014 CANCER CASES BY RACE / ETHNICITY

- Unknown
- Asian Indian / Pakistani
- Asian
- Hispanic
- Black
- White

TOTAL 4,287

82 Asian
62 Asian Indian / Pakistani
1,078 Black
196 Hispanic
27 Unknown
2,842 White

NUMBER OF PATIENTS

AGE RANGE

0-29 30-39 40-49 50-59 60-69 70-79 80-89 90-99
PATIENT GEOGRAPHICS

2014 PATIENT RESIDENCE AT DIAGNOSIS

80%
3,449 Patients are from Illinois

ILLINOIS RESIDENTS BY COUNTY
Cook (2,107)
Will (493)
Lake (140)
Kankakee (71)
Kane (69)

20%
838 Patients are from other states or countries

NON-ILLINOIS STATES (828)
AL (3), AR, AZ, CA (4), CO (2), CT, FL (13), GA (2), IA (9), ID, IN (618), KS (2), KY (3), LA, MA, MD, MI (78), MN (3), MO (5), MS (3), MT (2), NC (2), NE (4), NH, NJ, NM, NV (3), NY (5), OH (7), OK, OR, PA, SC (2), TN (3), TX (5), VA (2), WI (35)

OUTSIDE OF THE U.S. (10)
Argentina, China (2), Columbia, India (2), Mexico (2), Saudi Arabia, Puerto Rico
## CANCER INCIDENCE BY TYPE

### 2014 CANCER CASES BY SITE

<table>
<thead>
<tr>
<th>PRIMARY SITE</th>
<th>NEWLY DIAGNOSED</th>
<th>RECURRENT/PROGRESSIVE DISEASE</th>
<th>MALE</th>
<th>FEMALE</th>
<th>TOTAL</th>
<th>% OF TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Digestive System</td>
<td>631</td>
<td>98</td>
<td>403</td>
<td>326</td>
<td>729</td>
<td>17.0%</td>
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<tr>
<td>Male Genital System</td>
<td>492</td>
<td>95</td>
<td>587</td>
<td>0</td>
<td>587</td>
<td>13.7%</td>
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<tr>
<td>Breast</td>
<td>453</td>
<td>54</td>
<td>1</td>
<td>506</td>
<td>507</td>
<td>11.8%</td>
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<tr>
<td>Respiratory System</td>
<td>365</td>
<td>56</td>
<td>203</td>
<td>218</td>
<td>421</td>
<td>9.8%</td>
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<tr>
<td>Urinary System</td>
<td>334</td>
<td>68</td>
<td>264</td>
<td>138</td>
<td>402</td>
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<tr>
<td>Female Genital System</td>
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<td>40</td>
<td>0</td>
<td>234</td>
<td>234</td>
<td>5.5%</td>
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<tr>
<td>Endocrine System*</td>
<td>200</td>
<td>29</td>
<td>76</td>
<td>153</td>
<td>229</td>
<td>5.3%</td>
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<tr>
<td>Lymphoma</td>
<td>181</td>
<td>48</td>
<td>120</td>
<td>109</td>
<td>229</td>
<td>5.3%</td>
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<tr>
<td>Oral Cavity and Pharynx</td>
<td>159</td>
<td>49</td>
<td>140</td>
<td>68</td>
<td>208</td>
<td>4.9%</td>
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<tr>
<td>Leukemia</td>
<td>152</td>
<td>40</td>
<td>120</td>
<td>72</td>
<td>192</td>
<td>4.5%</td>
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<tr>
<td>Brain and Other Nervous System**</td>
<td>107</td>
<td>22</td>
<td>55</td>
<td>74</td>
<td>129</td>
<td>3.0%</td>
</tr>
<tr>
<td>Skin (Excluding Basal and Squamous)</td>
<td>76</td>
<td>24</td>
<td>50</td>
<td>50</td>
<td>100</td>
<td>2.3%</td>
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<tr>
<td>Myeloma</td>
<td>68</td>
<td>29</td>
<td>49</td>
<td>48</td>
<td>97</td>
<td>2.3%</td>
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<tr>
<td>Miscellaneous***</td>
<td>73</td>
<td>22</td>
<td>52</td>
<td>43</td>
<td>95</td>
<td>2.2%</td>
</tr>
<tr>
<td>Soft Tissue</td>
<td>53</td>
<td>1</td>
<td>30</td>
<td>24</td>
<td>54</td>
<td>1.3%</td>
</tr>
<tr>
<td>Mesothelioma</td>
<td>34</td>
<td>17</td>
<td>34</td>
<td>17</td>
<td>51</td>
<td>1.2%</td>
</tr>
<tr>
<td>Bones and Joints</td>
<td>16</td>
<td>2</td>
<td>11</td>
<td>7</td>
<td>18</td>
<td>0.4%</td>
</tr>
<tr>
<td>Kaposi Sarcoma</td>
<td>3</td>
<td>1</td>
<td>4</td>
<td>0</td>
<td>4</td>
<td>0.1%</td>
</tr>
<tr>
<td>Eye and Orbit</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0.0%</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>3,592</td>
<td>695</td>
<td>2,200</td>
<td>2,087</td>
<td>4,287</td>
<td>100%</td>
</tr>
</tbody>
</table>

* Includes benign pituitary adenomas
** Includes benign neoplasms
*** Includes blood dyscrasias, myelodysplastic/myeloproliferative disorders and cancers with other histology/primary site designations
Confocal microscopy of lung cancer cells with labeled mitochondria organelles (red).

credit: Salgia laboratory
During the weekly University of Chicago Medicine chest oncology tumor board conference, a multispecialty team of physicians, nurses and support staff discusses the clinical care of lung cancer patients seen in the clinic. The team of oncologists, surgeons, radiation oncologists, pathologists, radiologists, pulmonologists and others carefully reviews each patient’s health status and test results to devise the best treatment plan possible. It is like putting a puzzle together. It takes a team effort for the complete picture to take shape.

Today, the outlook for someone diagnosed with lung cancer is better than ever because of advances in medicine and research. Yet, the mortality rates for lung cancer illustrate that there is still a lot of work to do. Lung cancer accounts for more deaths than any other cancer in both men and women. In fact, in 2015, as many Americans will die from lung cancer as the next four most deadly cancers (prostate, breast, colorectal and pancreatic) combined.

Among the major challenges faced by the lung cancer team of physicians and scientists are: predicting who is at highest risk, diagnosing the disease before it has spread, identifying molecular abnormalities that drive the growth of an individual’s cancer, developing effective, personalized treatment strategies, predicting which patients will respond to specific treatments, and overcoming resistance to treatment. The innovative “bench-to-bedside” translational research conducted by the lung cancer team at the University of Chicago Medicine Comprehensive Cancer Center is tackling these challenges by applying fundamental basic science discoveries in the laboratory to state-of-the-art care for patients.

ADVANCES IN TREATMENT FOR LUNG CANCER

There are considerable innovative strategies that have been implemented for the treatment of lung cancer. Once a diagnosis is established with various means such as bronchoscopy, computed tomography (CT)-guided biopsy, or surgical biopsy as an example, the multidisciplinary team optimizes the therapy, and each patient’s course of treatment is individualized. There are state-of-the-art radiation oncology techniques as well as robotic surgical approaches available for patients. Comprehensive Cancer Center researchers, including Ralph Weichselbaum, MD, D.K. Ludwig Distinguished Service Professor of Radiation and Cellular Oncology, were the first to define treatment for oligometastatic disease, a term used to describe disease where there has been only limited spread of the cancer from its primary tumor. Everett Vokes, MD, John E. Ultmann Professor of Medicine, pioneered combination
Ansvariying<br>Cancer’s Most Challenging Questions

Chemotherapy and radiation therapy for the treatment of lung cancer. Thoracic surgeon Mark Ferguson, MD, professor of surgery, and others on the team are innovators in using robotics for lung cancer surgery to maximize precision while minimizing patients’ pain, complications and length of hospital stay.

New therapies aimed at specific proteins expressed in lung cancer cells, broadly referred to as targeted therapies, has truly revolutionized the treatment of lung cancer in recent years. Ravi Salgia, MD, PhD, professor of medicine and associate director for translational sciences of the Comprehensive Cancer Center, and his team are directing clinical trials of targeted therapies as well as performing preclinical studies in the laboratory to identify new therapeutic targets.

Molecular profiling of a patient’s tumors to identify mutations that might be driving cancer is now fairly routine due to rapid and cost-effective technology. If drugs are available to target those “drivers,” the patient will be given this treatment, with many patients experiencing a favorable response. However, additional research is necessary to uncover additional “drivers,” find drugs that inhibit known “drivers” and combat resistance to targeted therapies. For example, Salgia’s group has identified several molecular targets in lung cancer, including the EPHB4 protein expressed on the surface of tumor cells. The team discovered new mutations in the EPHB4 gene in patient tumors, uncovered how these mutations control tumor cell growth and spread, and are currently devising strategies to block EPHB4 function.

Lastly, immunotherapy is a promising new approach to treating lung cancer. There are several ongoing clinical trials at the Comprehensive Cancer Center testing drugs that mobilize the immune system to attack cancer cells and are known to be effective in other tumor types.

Early Detection and Screening

Diagnosing lung cancer early—before it has spread through the body—is an important step to improving outcomes and quality-of-life for patients. Until recently, there have been no widely adopted, proven methods for early detection and routine screening, even for high-risk patients.

In December 2013, the United States Preventive Services Task Force, a panel of experts in
prevention and evidence-based medicine, recommended that low-dose CT scans be used for annual screening of adults between 55 and 80 years old with a heavy smoking history. This screening method has been shown to decrease the risk of dying from lung cancer in heavy smokers in nation-wide clinical trials. At the University of Chicago Medicine, annual screening is now available in the Pulmonology Clinic directed by Kyle Hogarth, MD, associate professor of medicine, for those who meet the eligibility criteria.

Despite these advances in diagnosis, there is still an urgent need for improved non-invasive technologies to detect small tumors and to accurately measure response to therapy. Heber MacMahon, MB, BCh, professor of radiology, is a leader in this field and his team is transforming how advanced imaging is used to diagnose, predict and treat lung cancer.

LUNG CANCER RISK AND PREVENTION

Smoking is the most important risk factor for lung cancer and, in the United States, it is linked to approximately 75–85% of all cancers. Yet, not all smokers develop lung cancer, and not all lung cancers occur in smokers. Therefore, it is critical to identify the genetic, environmental, biological and additional lifestyle factors that contribute to the risk of developing lung cancer, especially in populations that face higher rates of lung cancer incidence and mortality.

As an example of a biological factor, epidemiologist Brandon Pierce, PhD, assistant professor
of public health sciences, and a large multicenter team have found that telomeres are linked to the risk of a common type of lung cancer called adenocarcinoma. Telomeres are specialized DNA sequences at the ends of chromosomes that protect genetic material from being damaged when cells divide. In a study of over 50,000 individuals with cancer, the investigators discovered an unexpected association between long telomeres and increased risk for lung adenocarcinoma, and are currently studying how other factors, such as age and smoking history, might also be involved.

Because of the strong association between lung cancer risk and smoking, education and smoking cessation programs serve as the epicenter of lung cancer prevention efforts. Andrea King, PhD, professor of psychiatry and co-leader of the Comprehensive Cancer Center’s Cancer Prevention and Control scientific program, is a leader in tobacco cessation research. Her team has implemented a promising smoking cessation intervention program called Courage to Quit within diverse, urban community sites in Chicago. A focus of her work has been tailoring programs to specific cultural and racial/ethnic groups that have high smoking rates and different responses to cessation treatments, including African Americans and lesbian, gay, bisexual, and transgender (LGBT) populations. Comprehensive Cancer Center investigators Harriet de Wit, PhD, professor of psychiatry, and Daniel McGehee, PhD, associate professor of anesthesia/critical care, are studying the biological basis of nicotine addiction with the long-term goal of developing better cessation tools.

2 Zhang et al., Human Mol Genet [Epub ahead of print], 2015.
A POSITIVE ATTITUDE AND AGGRESSIVE TREATMENT IN THE FACE OF A LUNG CANCER DIAGNOSIS

An almost 10-year lung cancer survivor, Tony Polumbo has a story you don’t hear every day. The Orland Park native had been an avid smoker for years, but when he started to feel extreme fatigue and coughed up blood, he knew something was seriously wrong. Tony saw his community doctor, and after extensive testing, was diagnosed with inoperable lung cancer. He felt hopeless and immediately thought about not seeing his loving wife, children and grandchildren any longer.

Tony was referred to University of Chicago Medicine physicians Mark Ferguson, MD, professor of surgery, and Ravi Salgia, MD, PhD, professor of medicine, for a second opinion. The team agreed that surgery was not a good option for Tony’s cancer. However, Dr. Salgia laid out an aggressive treatment plan, which involved a combination of chemotherapy and radiation, with the goal of curing Tony’s disease. Tony was positive about the proposed course of action because Dr. Salgia was so optimistic. To this day, Tony remembers Dr. Salgia saying, “We’re going to help, not hurt you.” There were difficult times, but Tony credits the entire team with him getting through the extensive treatments, so much so that he even looked forward to his treatments.

But, according to Tony, nothing feels better than when you are told that the treatment plan is working the way that everyone hoped. He sees his team of physicians at regular check-ups and feels like he is visiting family every time.

“It’s just an extraordinary feeling to be told that you are cancer-free,” says Tony, who is happy to share his story. Now, he looks forward to every day, celebrating and living life to the fullest.
ADDRESSING THE CHALLENGES THAT IMPACT OUR COMMUNITY AND PARTNERS

The community that we serve in the surrounding neighborhoods and city of Chicago faces a sobering reality when it comes to cancer. Racial and ethnic minorities and low-income population groups experience higher death rates due to cancer. Reduced access to high-quality, culturally-sensitive cancer care contributes to this increased mortality.

The University of Chicago Medicine Comprehensive Cancer Center’s Office of Community Engagement and Cancer Disparities (OCECD) directed by Karen Kim, MD, professor of medicine, aims to address these obstacles through research, advocacy, education and development of innovative programs. Through a community-engaged approach, OCECD fosters collaborative, equitable partnerships with community stakeholders with the goal to ultimately eliminate cancer disparities. In addition, the OCECD partners with the University of Chicago Institute for Translational Medicine and Urban Health Initiative to conduct community-engaged research focused on cancer disparities among racial/ethnic minority populations.

HIGHLIGHTS OF THE OCECD’S 2015 INITIATIVES AND ACTIVITIES INCLUDE:

• Partnering with Chicago State University (CSU) to further the Chicago South Side Cancer Disparities Initiative (CSCDI) for developing a mentored educational program to increase diversity in research and reduce local cancer disparities.
• Expanding their partnership with the Asian Health Coalition to address the gaps in Asian American health research and data, in conjunction with the Partnership for Healthier Asians (PHA) initiative. A new $3.5 million federal grant will focus on increasing colorectal cancer screening in underserved communities in Cook County.
• Collaborating with the Diverse Participation in Clinical Trials (DPCT) initiative, a multi-institutional collaboration with academic centers and the community-based organization Project Brotherhood.

• Furthering the NCI-funded Community Health Educator (CHE) Program through initiatives such as ENRICH’D™ (Empowering Neighborhood Resources in Combating Health Disparities), ED-U-CATE (Everyone Deserves an Understanding about Cancer Awareness, Treatment and Education), MENTOR (Mentored Education Now Taking on Research), and Walk Through the Cure. A current project involves creating an interactive, virtual Walk Through the Cure learning experience.

• Hosting a “Stop Colon Cancer Before it Starts” informational workshop, which focused on the importance of screening and early detection at Calvary Baptist Church.

• Providing materials and education about preventing breast, colorectal, and cervical cancer at the 20th Annual Black Women’s Expo.

• Participating in an “On the Table” discussion organized by the Chicago Community Trust and hosted by Donna Thompson, CEO of Access Community Health Network, about how to improve community health.

• Joining the Greater Roseland Breast Health Consortium for a Breast Health Summit to improve breast health education, screening, navigation, treatment and survivorship for all women in the Greater Roseland community.

• Partnering with Centro Comunitario Juan Diego to distribute cancer prevention and awareness materials at a Hispanic community health fair.

• Hosting a “Lunch and Learn” workshop for University of Chicago Medicine employees to discuss cancer prevention, treatment and disparities.
ENGAGING THE COMMUNITY THROUGH KEY PARTNERSHIPS

Another way that the Comprehensive Cancer Center extends our reach into the community is through partnerships with cancer-focused non-profit organizations, particularly to promote cancer awareness and raise funds to support innovative research and crucial patient services. Examples of events in which staff, faculty and students participated include:

• National Ovarian Cancer Coalition 5K Run/Walk
• Pancreatic Cancer Action Network PurpleStride Chicago
• Cancer Support Center Walk of Hope
• American Cancer Society Relay For Life of the University of Chicago
• Rolfe Foundation 5K Dash for Detection
• Bonnie J. Addario Lung Cancer Foundation Annual Your Next Step is the Cure 5K
• Melanoma Research Foundation Miles for Melanoma Chicago 5K
• Lymphoma Research Foundation Chicago Lymphoma Walk
• Movember to raise awareness about men’s health and benefit the Prostate Cancer Foundation
• American Cancer Society Making Strides Against Breast Cancer
• Leukemia & Lymphoma Society Light the Night Walk

TRAINING CANCER RESEARCHERS OF TOMORROW

In addition to educating our community about cancer, the Comprehensive Cancer Center is committed to training the cancer researchers and physicians of tomorrow. A team led by Eileen Dolan, PhD, professor of medicine and associate director for education, expanded the Continuing Umbrella of Research Experience (CURE) Program for high school and college students from underrepresented populations, as well as started a new summer cancer research program for high school students called research1Start. A partnership with the University of Illinois Cancer Center and University of Illinois at Urbana-Champaign, this program provided mentored research experiences at all three campuses focused on basic, translational, population-based and engineering-focused cancer research.

CURE and RESEARCH1START students with EILEEN DOLAN, PHD, program leadership and supporters at the 2015 Research Symposium
Immunofluorescence of tissues in a preclinical model of colorectal cancer shows the beta-catenin signaling protein (green) decorating junctions between cells and localizing to some cell nuclei (blue).

Credit: Goss laboratory
OUR TEAM OF EXPERTS

We added nine new experts in basic and clinical research to our team.

ROBERT GROSSMAN, PHD
Professor of Medicine, Bioinformatics

JASON LUKE, MD
Assistant Professor of Medicine, Translational Therapeutic Advances for Melanoma and Immunotherapy

OLWEN HAHN, MD
Assistant Professor of Medicine, Diagnosis and Treatment of Breast Cancer

TAO PAN, PHD
Professor of Public Health Sciences, Statistical Methods for Clustered and Longitudinal Data

DONALD HEDEKER, PHD
Professor of Public Health Sciences, Statistical Methods for Clustered and Longitudinal Data

JEREMY SEGAL, MD, PHD
Assistant Professor of Pathology, Bioinformatics

NEIL HYMAN, MD
Professor of Surgery, Surgical Treatment of Gastrointestinal Malignancies and Inflammatory Bowel Disease

MELODY SWARTZ, PHD
Professor of Molecular Engineering, How Lymphatic Vessels Contribute to Adaptive Immunity

NITA LEE, MD, MPH
Assistant Professor of Obstetrics and Gynecology, Diagnosis and Treatment of Women with Gynecologic Malignancies
PEER-REVIEWED CANCER RESEARCH GRANTS AWARDED TO MEMBERS IN 2015

Research aimed at answering cancer’s toughest questions requires robust investment in basic, clinical, translational and population-based research. Here is a summary of the cancer research grants awarded to the Comprehensive Cancer Center’s faculty in 2015, including those funded by the National Institutes of Health (NIH) and National Cancer Institute (NCI).

$$\text{TOTAL OF PEER-REVIEWED PROJECT DIRECT COSTS}$$
$$\text{$64,674,096}$$
$$\text{(284 Projects)}$$

$$\text{$40,253,416}$$
$$\text{Other NIH Peer-Reviewed Projects (158 Projects)}$$

$$\text{$19,991,726}$$
$$\text{NCI Peer-Reviewed Projects (88 Projects)}$$

$$\text{$4,428,954}$$
$$\text{Other Peer-Reviewed Projects (38 Projects)}$$
CANCER CENTER MEMBERS

MOLECULAR MECHANISMS OF CANCER
Program Leaders:
Suzanne Conzen, MD
Kay Macleod, PhD
Eric C. Beyer, MD, PhD
Suzanne Conzen, MD
Wei Du, PhD
Nickolai Dulin, PhD
Geoffrey Greene, PhD
Tong-Chuan He, MD, PhD
Yu Ying He, PhD
Akira Imamoto, PhD
Jessica Kandel, MD
Shohei Koide, PhD
Stephen Kron, MD, PhD
Bruce Lahn, PhD
Deborah Lang, PhD
Ernst Lengyel, MD, PhD
Anning Lin, PhD
Hue Luu, MD
Kay Macleod, PhD
Marcelo Nobrega, MD, PhD
Tao Pan, PhD
Glenn Randall, PhD
Ilaria Rebay, PhD
Carrie Rinker-Schaeffer, PhD
Bernard Roizman, ScD
Marsha Rosner, PhD
Benoit Roux, PhD
Ravi Salgia, MD, PhD
Michael Spiotto, MD, PhD
Wei-Jen Tang, PhD
Donald Vander Griend, PhD
David Vanderweele, MD, PhD*
Samuel Volchenboum, MD, PhD
Kevin White, PhD
Chung-I Wu, PhD
Xiaoyang Wu, PhD
Yingming Zhao, PhD

HEMATOPOIESIS AND HEMATOLOGICAL MALIGNANCIES
Program Leaders:
Wendy Stock, MD
Lucy Godley, MD, PhD
John Anastasi, MD
Andrew Artz, MD
Beverly Baron, MD
Michael Bishop, MD
Jianjun Chen, PhD*
Jason Cheng, MD, PhD
Jane Churpek, MD
Kenneth Cohen, MD
John Cunningham, MBBCh, MSc
Jill de Jong, MD, PhD
Lucy Godley, MD, PhD
Fotini Gounari, PhD, DSc
Sandeep Gurbuxani, MBBS, PhD
Andrzej Jakubowiak, MD, PhD
Barbara Kee, PhD
Richard Larson, MD
Michelle Le Beau, PhD
Hongtao Liu, MD, PhD
Susana Marino, MD, PhD
Jennifer McNeer, MD
Megan McNerney, MD, PhD
Olatoyosi Odenike, MD
Kenan Onel, MD, PhD
Gordana Raca, MD, PhD*
Sonali Smith, MD
Wendy Stock, MD
Michael Thirman, MD
James Vardiman, MD (emeritus)
Y. Lynn Wang, MD, PhD
Amittha Wickremasinghe, PhD
Todd Zimmerman, MD

IMMUNOLOGY AND CANCER
Program Leader:
Thomas F. Gajewski, MD, PhD
Erin Adams, PhD
Maria-Luisa Alegre, MD, PhD
Albert Bendelac, MD, PhD
Anita Chong, PhD
Marcus Clark, MD
Yang-Xin Fu, MD, PhD
Thomas Gajewski, MD, PhD
Tatyana Golovkina, PhD
Seungmin Hwang, PhD
Bana Jabri, MD, PhD
Justin Kline, MD
Vinay Kumar, MD, PhD
James LaBelle, MD, PhD
Maciej Lesniak, MD
Peter Savage, PhD
Hans Schreiber, MD, PhD
Anne Sperling, PhD
Ursula Storb, MD
Melody Swartz, PhD
Patrick Wilson, PhD
Jerrold Turner, MD, PhD

PHARMACOGENOMICS AND EXPERIMENTAL THERAPEUTICS
Program Leaders:
Walter Stadler, MD
M. Eileen Dolan, PhD
Douglas Bishop, PhD
Elizabeth Blair, PhD
Daniel Catenacci, MD
David Chang, MD  
Steven Chmura, MD, PhD  
Susan Cohn, MD  
Philip Connell, MD  
M. Eileen Dolan, PhD  
Scott Eggener, MD  
Mark Ferguson, MD  
Gini Fleming, MD  
Olwen Hahn, MD  
Daniel Haraf, MD  
John Hart, MD  
Rex Haydon, MD, PhD  
Chuan He, PhD  
Philip Hoffman, MD  
R. Stephanie Huang, PhD  
Edwin Kaplan, MD  
Theodore Karrison, PhD  
Hedy Kindler, MD  
Alexander Langerman, MD*  
Wenbin Lin, PhD  
Marcy List, PhD  
Jason Luke, MD  
Michael Maitland, MD, PhD  
Chadi Nabhan, MD  
Yusuke Nakamura, MD, PhD  
Rita Nanda, MD  
Peter H. O’Donnell, MD  
Navin Pinto, MD*  
Louis Portugal, MD  
Mitchell Posner, MD  
Mark Ratain, MD  
Kevin Roggin, MD  
Charles Rubin, MD†  
Jeremy Segal, MD, PhD  
Tanguy Seiwert, MD  
Arieh Shalhav, MD  
Manish Sharma, MD  
David Song, MD  
Walter Stadler, MD  
Gary Steinberg, MD  
Russell Szmulewitz, MD  
Ronald Thisted, PhD*  
Victoria Villaflor, MD  
Everett Vokes, MD  
Ralph Weichselbaum, MD  
S. Diane Yamada, MD  
Bakhtiar Yamini, MD  
Chun-Su Yuan, MD, PhD  

**ADVANCED IMAGING**  

**Program Leaders:**  
Greg Karczmarz, PhD  
Heber MacMahon, MB, BCh  
Hiroyuki Abe, MD  
Hania Al-Hallaq, PhD  
Daniel Appelbaum, MD  
Samuel Armato, PhD  
Issam Awad, MD  
Bulent Aydogan, PhD  
Chin-Tu Chen, PhD  
Abraham Dachman, MD  
Maryellen Giger, PhD  
Howard Halpern, MD, PhD  
Yulei Jiang, PhD  
Chien-Min Kao, PhD  
Gregory Karczmarz, PhD  
Vani Konda, MD  
Anthony Kossiakoff, PhD  
Patrick LaRiviere, PhD  
Stanley Liauw, MD  
Heber MacMahon, MB, BCh  
Aytekin Oto, MD  
Xiaochun Pan, PhD  
Charles Pelizzari, PhD  
Yonglin Pu, MD, PhD  
Steffen Sammet, MD, PhD  
Charlene Sennett, MD†  

**CANCER PREVENTION AND CONTROL**  

**Program Leaders:**  
Habibul Ahsan, MBBS, MMedSc  
Andrea King, PhD  
Habibul Ahsan, MBBS, MMedSc  
Marc Bissonnette, MD  
Eugene Chang, MD  
Brian Chiu, PhD  
Rena Conti, PhD  
Nancy Cox, PhD*  
William Dale, MD, PhD  
Christopher Daugherty, MD  
Jonas de Souza, MD  
Harriet de Wit, PhD  
Anna Di Rienzo, PhD  
James Dignam, PhD  
David Grdina, PhD  
William Green, PhD  
Raymon Grogan, MD  
Yasmin Hasian, MD  
Donald Hedeker, PhD  
Tara Henderson, MD  
Susan Hong, MD  
Dezheng Huo, MD, PhD  
Neil Hyman, MD  
Nora Jaskowiak, MD  
Karen Kim, MD  
Andrea King, PhD  
Swati Kulkarni, MD*  
Sonia Kupfer, MD  
Nita Lee, MD, MPH  
Yan Chun Li, PhD  
Stacy Tessier Lindau, MD  
Mark Lingen, DDS, PhD  
Martha McClintock, PhD  
Daniel McGehee, PhD  
David Meltzer, MD, PhD  
Olufunmilayo Olopade, MBBS  
Aasim Padela, MD, MSc  
Joel Pekow, MD  
Brandon Pierce, PhD  
Blase Polite, MD  
Iris Romero, MD  
David Rubin, MD  
Fabrice Smieliauskas, PhD  
Irving Waxman, MD  

**NOT ALIGNED**  
Richard Baron, MD  
Yoav Gilad, PhD  
Benjamin Glick, PhD  
Harvey Golomb, MD  
Robert Grossman, PhD  
Thomas Krausz, MD  
Anthony Montag, MD  
Julian Solway, MD  

† deceased  
* no longer with the University or have change of research focus
ENDOWED PROFESSORSHIPS

WENDY STOCK, MD, professor of medicine, has been named the first Anjuli Seth Nayak Professor in Leukemia.

YANG-XIN FU, MD, PHD, professor of pathology, has been named the Fanny L. Pritzker Professor.

BENOIT ROUX, PHD, professor of biochemistry and molecular biology, has been named the Amgen Professor.

FACULTY APPOINTMENTS

JOHN M. CUNNINGHAM, MD, Donald N. Pritzker Professor and interim chair of the Department of Pediatrics at the University of Chicago, has been formally appointed chairman of the department.

SUSAN COHN, MD, professor of pediatrics and dean of clinical research, was appointed as co-director for the University of Chicago Institute for Translational Medicine (ITM).

MITCHELL POSNER, MD, has been named the Comprehensive Cancer Center’s first physician-in-chief.

MEMBER ACCOLADES AND HONORS

SCOTT EGGENER, MD, associate professor of surgery, received the Society of Urologic Oncology’s 2015 Young Investigator Award.

MARYELLEN GIGER, PHD, A. N. Pritzker Professor of Radiology, was selected as the 2015 American Association of Physicists in Medicine’s (AAPM) William D. Coolidge Award recipient.

DAVID MELTZER, MD, PHD, professor and section chief of hospital medicine, was elected to the Association of American Physicians (AAP).

CHUAN HE, PHD, John T. Wilson Distinguished Service Professor of Chemistry, SHOHEI KOIDE, PHD, professor of biochemistry and molecular biophysics, and TAO PAN, PHD, professor of biochemistry and molecular biology, were elected as fellows of the American Association for the Advancement of Science.
IN MEMORIAM

CHARLENE SENNETT, MD
ASSOCIATE PROFESSOR OF RADIOLOGY

Charlene Sennett, MD, an associate professor of radiology and a highly respected clinical specialist in breast imaging, died at the medical center on March 23, 2015, after months of illness. She suffered a stroke while awaiting a heart transplant.

Sennett, 62, was well known throughout the Chicago area as a thoughtful and talented clinician, dedicated educator and fierce advocate for her patients.

Sennett’s work focused on the acquisition and computer-aided analysis of diagnostic images, and she was an expert in breast cancer prevention, detection, diagnosis and therapy. She led many studies evaluating new breast cancer imaging techniques or efforts to combine multiple imaging and diagnostic technologies.

“She was an exceptional doctor and person,” said Greg Karczmar, PhD, professor of radiology and director of magnetic resonance imaging research at the University of Chicago. “She was wonderful with patients—kind, helpful, conscientious and sweet. But she also shared her extraordinary expertise on clinical breast imaging with the research team. When she spoke, we paid attention.”

CHARLES M. RUBIN, MD
ASSOCIATE PROFESSOR OF PEDIATRICS

Charles M. Rubin, MD, associate professor of pediatrics, died while at work on July 17, 2015. He was 62. He had just arrived at the pediatric clinic at the University of Chicago Medicine Comprehensive Cancer Center at Silver Cross Hospital in New Lenox when his heart stopped.

Rubin was a highly respected specialist in the care of children with cancer, and a role model for medical students, residents and even established physicians. An authority on all aspects of pediatric cancers, he had a particular interest in brain tumors and cancer occurring in children with genetic syndromes.

“Chuck was highly respected by his research and clinical colleagues and was a popular mentor, not only for many medical students and pediatric residents, but also for fellows and junior faculty,” said John Cunningham, MD, Donald N. Pritzker Professor and chair of the Department of Pediatrics at the university. “Even his senior colleagues sought his ideas and counsel frequently on complex pediatric oncology and hematology problems.”
This year, the Janet D. Rowley Discovery Fund was established through a generous $1 million donation to the University of Chicago Medicine Comprehensive Cancer Center by Cynthia and Benjamin Chereskin. The fund honors the late Janet D. Rowley, whose pioneering discoveries in cancer genetics at the University of Chicago ushered in the current era of genome-guided research and treatment, the basis for personalized cancer care.

The Chereskin’s unrestricted gift gives the leadership of the Comprehensive Cancer Center the flexibility to allocate funding to the most promising research. The vast majority of cancer research funding is highly restricted, typically directed to individual faculty members or for specific disease areas. Unrestricted funding can support novel thinking and technologies, as well as “team science”—the kind of collaborative research that is characteristic of the University of Chicago.

Since 1997, Cynthia has been involved with the University of Chicago Cancer Research Foundation Women’s Board and now serves as its president. Like most of the women on the Women’s Board, Cynthia feels strongly about supporting cancer research because of personal ties to the disease. Her father, Glen Johnson, was treated for bladder cancer 11 years ago, and her husband, Benjamin, was treated for tongue cancer two years ago. Both cases required innovative treatment, and they knew that the most advanced treatment options available were at the University of Chicago.

“Having had loved ones affected by cancer and going through the whole diagnosis and treatment with them really hit a chord,” Cynthia said. “I feel incredibly lucky to live in Chicago and to have the University of Chicago in our backyard with these amazing doctors who have done so much in the name of research and medical science.”

Each year, the Women’s Board makes significant contributions to the Comprehensive Cancer Center, enabling recruitment of the most pioneering investigators, and the acquisition of state-of-the-art technologies. Their contributions also support investigators as they generate enough research data to compete for federal funding and pursue innovative, collaborative projects. The Women’s Board has chosen to build upon the Chereskin’s gift by allocating an additional $150,000 to the Janet D. Rowley Discovery Fund. Many of the scientists who have received support from the Women’s Board have gone on to make important discoveries throughout their careers.
TEAM SCIENCE

The challenges of modern cancer research demand innovative approaches to science. The University of Chicago Medicine Comprehensive Cancer Center fosters the collaboration of researchers with diverse scientific backgrounds and expertise, working together toward new strategies for cancer prevention, diagnosis and treatment. This multidisciplinary approach, called Team Science, has revolutionized the pace and scope of advances in all aspects of cancer research.

The Women’s Board of the University of Chicago Cancer Research Foundation has funded Team Science awards of $150,000 each for the past two years. In 2013, they supported Tom Gajewski, MD, PhD; Ralph Weichselbaum, MD; and Yang-Xin Fu, MD, PhD, to study the integration of radiation therapy with immunotherapy, and why some patients respond to such treatments when others do not.

Last year, the team identified a protein complex called STING (STimulator of INterferon Genes), which plays a crucial role in detecting the presence of tumor cells and promoting an aggressive anti-tumor response by the body’s natural immune system. The research also found that targeted high-dose radiation therapy dials up the activation of STING.

These exciting results, published in the high-impact journal Immunity in December 2014, are being rapidly translated into new therapies for patients. For example, researchers are collaborating with a small biotech company, Aduro, to develop STING drugs for clinical application. This work also provided the foundation for a new collaborative grant proposal submitted to the National Institutes of Health (NIH) for funding this year.

The Board funded two Team Science projects in 2014. Ravi Salgia, MD, PhD; Yusuke Nakamura, MD, PhD; Everett Vokes, MD; Ralph R. Weichselbaum, MD; Wenbin Lin, PhD; and Hans Schreiber, MD, PhD were supported for the development of novel therapies for small cell lung cancer (SCLC). And, Ernst Lengyel, MD, PhD; Yusuke Nakamura, MD, PhD; and Samuel Volchenboum, MD, were funded to identify drivers of ovarian cancer initiation and progression using proteogenomics.

Salgia and his team aim to identify potential biomarkers for SCLC to determine how certain proteins, enzymes and cell receptors effect tumor growth and metastasis. The group hopes to develop clinical trials around such biomarkers to create more targeted therapeutic treatments.

Lengyel and his team will use proteogenomics (the study of both proteins and the genes that encode them) to identify the drivers of ovarian cancer. Utilizing the ovarian cancer tissue bank at the University of Chicago, the team has identified a unique group of patients who have robust clinical follow-up data. This wealth of information will allow the study of genetic and protein changes over time, beginning with the earliest pre-malignant lesions through progression to ovarian cancer and, ultimately, metastatic cancer.

The Comprehensive Cancer Center is in the process of reviewing Team Science proposals for 2015, with plans for the Women’s Board to fund two more innovative projects.
FINDING ANSWERS THROUGH INVESTING IN RESEARCH

AUXILIARY BOARD

The Auxiliary Board of the University of Chicago Cancer Research Foundation was founded in 1951 by Stephanie Howell. Since its inception, the Auxiliary Board has raised almost $3 million for cancer research for the Foundation. Today’s Board is comprised of 25 women who raise funds to support several investigators each for three years. Two of this year’s recipients are Megan McNerney, MD, PhD, assistant professor of pathology, and Blase Polite, MD, associate professor of medicine.

MEGAN MCNERNEY, MD, PHD

Megan McNerney, MD, PhD, studies myeloid neoplasms, a group of diseases in the blood or bone marrow in which excess cells are produced. Her research focuses on understanding the underlying genetic abnormalities that cause these diseases, which is essential for identifying new treatment options.

“I am thrilled to be a recipient of support from the Auxiliary Board,” McNerney says. “Junior investigators, such as myself, have to compete for research funding at a vulnerable time in our careers. The Board’s philanthropy is enabling my lab to generate a mouse model of high-risk myeloid leukemia, which is an invaluable tool to identify new treatment options for patients with this devastating disease.”

A major goal of McNerney’s work is to use next-generation DNA sequencing to identify cancer mutations to guide patient diagnosis and treatment decisions.

BLASE POLITE, MD

Blase Polite, MD, has expertise in the treatment of gastrointestinal malignancies, with a particular focus on colon, rectal, and anal cancers, and neuroendocrine (carcinoid) tumors.

In addition to his clinical responsibilities, Dr. Polite’s research focuses on understanding racial and ethnic differences in colon cancer outcomes, especially the psychological, social and spiritual needs of each patient.

The Board’s support helped Polite launch a 5-year study to discover the causes of racial and ethnic disparities in colon cancer diagnosis and outcomes. The study aims to understand the role of religious beliefs in influencing the stage at which cancer is diagnosed as well as patient outcomes. The ultimate goal is to place “spiritual care advocates” within the oncology clinic setting to serve as liaisons between patients, the local faith community, healthcare teams and chaplains.
The Associates Board of The University of Chicago Cancer Research Foundation is an organization of young philanthropists dedicated to raising the funds necessary to aid in the prevention and cure of cancer. This energetic group is promoting the importance of philanthropy to young professionals and others. Since its inception, the UCCRF Associates Board has raised over $350,000 for cancer research. The Board supports the work of our faculty in the Immunology and Cancer Program, such as Jason Luke, MD, assistant professor of medicine, and Peter Savage, PhD, assistant professor of pathology.

**JASON LUKE, MD**

Jason Luke, MD, is developing therapeutic advances for melanoma with a specific focus on tumor immunotherapy, which is a powerful treatment strategy that harnesses one’s immune system to destroy cancer cells. Immunotherapy is revolutionizing cancer care, particularly for melanoma. Luke serves as the national Study Chair for the only ongoing national clinical trial for patients with advanced uveal (ocular) melanoma. He is also the principal investigator of several clinical trials of immunotherapy and targeted molecular therapies for melanoma and advanced cancer.

“The Associates Board provides tremendous support to the immunotherapy efforts at the University of Chicago, and especially for early career investigators like me,” Luke says. “Being able to utilize world-class infrastructure and having guidance from thought leaders in cancer and immunology is essential to career growth. Without their support, getting a research program up and running would be all the more challenging.”

**PETER SAVAGE, PHD**

Peter Savage, PhD, aims to understand how the immune system influences the development, progression and metastasis of cancer. His research focuses on the study of cancer-associated T cell populations (a specific type of immune cell responsible for fighting infections), and how these cells impact tumor development. His laboratory has provided key molecular insights into the mechanisms by which groups of T cells in tumors, called regulatory T cells, develop in the body, are recruited into tumors, and promote cancer progression.

“The annual visits from the Associates Board are always a highlight for me,” Savage says. “It gives me an opportunity to meet others in the Chicago area who are passionate about raising awareness and funding for cancer immunology research. It also gives us an opportunity to explain the latest advances in cancer research, and highlight some of the exciting research going on here.”
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