LAB TO LIFE

Pushing the Pace of Personalized Medicine

The University of Chicago Medicine Comprehensive Cancer Center (UCCCC) is at the forefront of personalized medicine, leading the long battle against cancer. We are raising the standards of medical practice by using genetic, social, and environmental factors to predict cancer risk and tailor individualized prevention and treatment strategies for our patients.

Across the continuum of cancer care, from prevention to survivorship, we are transforming the future of medicine.
Focusing on the me in MEDECINE
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“We are poised to transform the future of medicine and reduce the devastating effects of cancer.”
A MESSAGE FROM THE DIRECTOR

At the University of Chicago Medicine Comprehensive Cancer Center (UCCCC), we are committed to fighting cancer from every angle.

Our world-class cancer research program elevates the quality of patient care by offering an unmatched level of expertise. With 210 renowned physicians and researchers, we are harnessing the power of personalized medicine to offer faster, safer, and more effective treatments. Our multidisciplinary teams of experts are committed to developing individualized treatment plans to provide the best possible care for our patients.

We are proud of our tremendous accomplishments, which reflect our mission to translate ground-breaking research into new strategies to prevent and treat cancer. Over the past year, we have expanded efforts to integrate personalized genomic medicine into routine practice, expanded our survivorship resources to support patients, applied the latest innovations in imaging and genomics to advance our understanding of cancer, and constructed new facilities that extend the reach of our comprehensive care, including our new flagship “hospital for the future.”

The next five years will be pivotal as we embark on a bold strategic plan that accelerates basic and clinical research into personalized cancer care. Three major initiatives will focus on prevention, treatment, and survivorship. Through the creation of a large multiethnic cohort of healthy individuals and those at high risk for cancer, our researchers will gain new knowledge about how to prevent cancer for at-risk populations. We are also establishing a new consortium to enhance our efforts to enroll patients in clinical studies to test the most effective treatments and interventions available. Sophisticated tools will be used to link biological and molecular imaging data with clinical outcomes so that we may determine the likelihood of treatment response. On a broader scale, we are leading an initiative to examine the psychosocial needs of our growing population of cancer survivors, and to maximize the impact of our healthcare resources.

The launching of these new initiatives would not be possible without the steadfast support of our donors who continue to devote their time and resources to cancer research. We are grateful for their generosity which has funded some of our most transformative discoveries.

Building on the UCCCC’s legacy of seminal research discoveries, our proven leadership in personalized oncology, and our commitment to delivering the highest quality comprehensive care, we are poised to transform the future of medicine and reduce the devastating effects of cancer.

With heartfelt gratitude,

Michelle M. Le Beau, PhD
Arthur and Marian Edelstein Professor of Medicine
UCCCC Director
TRANSFORMING
THE ROUTINE
PRACTICE
OF MEDICINE
Customized treatment tailored to the individual patient

Personalized medicine takes into account the unique environmental, social, and biological factors—including genetics—of each patient to tailor disease prevention and treatment strategies. Instead of the trial-and-error and “one size fits all” approaches of the past, personalized medicine provides safer and more effective cancer treatment.

The UCCC is a leader in personalized medicine because of our unique strengths in pharmacogenomics research, which predicts an individual’s response to medication based on genetics. We have launched high-priority initiatives to incorporate pharmacogenomics into cancer care, including the creation of a Center for Personalized Therapeutics. The Center’s flagship study, The 1200 Patients Project, is using genetic information to help physicians prescribe the most effective medications with the fewest side effects. Peter O’Donnell, MD, assistant professor of medicine, is leading the study and determining how customized treatment can be efficiently incorporated into routine medical care. The UCCC also implements pharmacogenomics into more clinical trials, for both adult and pediatric patients, than any other medical center and is already using genetics to guide clinical practice. As a result, our physicians can make patient-specific dose modifications and avoid therapies that may cause serious side effects in some patients but not others.

The promise of personalized medicine is being pursued across all fronts of cancer research at the UCCC. Ralph Weichselbaum, MD, chair and D.K. Ludwig Professor of Radiation and Cellular Oncology, discovered a gene signature that predicts the response of breast tumors to radiation and chemotherapy. “If we knew who would respond in advance, we could identify the best treatment upfront,” said Dr. Weichselbaum. Researchers are testing his findings in clinical trials, which may one day be used to optimize breast cancer treatment.

Our researchers are actively exploring new strategies to treat melanoma, known as one of the deadliest cancers. Thomas Gajewski, MD, PhD, professor of medicine and pathology, is an expert in immune therapy, which stimulates the body’s own immune system to fight cancer cells. He has found a biological signature in melanoma that could potentially predict a patient’s response to cancer vaccines. Based on his research and newly approved drugs for melanoma that target specific genetic mutations in the tumor, Dr. Gajewski predicts that the standard of care for melanoma will soon involve routine screening of tumors for specific biological markers to guide treatment decisions.

The work of our experts in hematological malignancies, including James Vardiman, MD, professor of pathology, and Michelle M. Le Beau, PhD, UCCC Director and Arthur and Marian Edelstein Professor of Medicine, changed how the World Health Organization now classifies hematopoietic and lymphoid cancers based on chromosomal abnormalities, informing the selection of risk-adapted therapy. These and hundreds of other research discoveries reveal our rich history in translating research into more effective, personalized cancer care.

Detection of chromosomal abnormalities in a pediatric patient with pre-B-cell acute lymphoblastic leukemia

Dr. Olufunmilayo Olopade and patient

Detection of chromosomal abnormalities in a pediatric patient with pre-B-cell acute lymphoblastic leukemia
My name is Dennis. I love working with my hands and keeping busy. I was diagnosed with melanoma in 1997. Here I am now, still doing the things I love, thanks to the expertise at the UCCCC.
What started out as a bleeding mole on Dennis Hahn’s back in 1997 turned into a long and trying struggle with melanoma. After many surgeries and treatments at various hospitals over the years, the cancer continued to metastasize. That is when his oncologist referred him to the UCCCC, which offers many clinical trials and personalized therapies for advanced melanoma.

The outlook for this aggressive skin cancer is usually poor, but experts at the UCCCC were able to offer Dennis investigational therapies that slowed his cancer without slowing him down. In addition to testing water meters for the city of Goshen, Indiana, the 59-year-old “jack-of-all-trades” fills his free time with a vast array of hobbies and projects, whether it’s entering his homemade maple syrup and apple butter in county fairs or building a primitive cabin practically by himself.

UCCCC investigators are making significant advances in melanoma research. One major goal is to develop new drugs that prevent tumors from evading the patient’s immune system. In the past few years, two breakthrough therapies for metastatic melanoma were approved by the FDA—ipilimumab, an immune therapy targeted against CTLA-4, a protein involved in regulating immune response; and vemurafenib, an inhibitor of the B-Raf enzyme, which is involved in melanoma cell growth. UCCCC researchers contributed to the development of both of these drugs.

At the UCCCC, Dennis has had access to these and other novel therapies through clinical trials. As his doctors learned about the genetic mutations of his cancer, they adjusted his treatment accordingly. Based on the unique features of his melanoma, they used a vaccine to target proteins specific to his tumor, boosted his immune response with ipilimumab, and targeted the tumor’s mutant BRAF gene with vemurafenib.

“More than half of our patients have clinical benefit now with these new therapies, which is extraordinary compared to where we were a few years ago,” said Professor of Medicine Thomas Gajewski, MD, PhD, who is treating Dennis. “By figuring out the reason why the tumor..."
“MY CANCER CARE TEAM NEVER TREATED ME LIKE JUST A BODY. THEY ACTUALLY CARED ABOUT ME.”

— DENNIS HAHN

sometimes sneaks through and becomes resistant, we are learning which new drugs to develop and combine.”

Now, Dennis sees Dr. Gajewski every six weeks and has scans every three months to monitor his disease. He also brings his nurses and doctors gifts, such as samples of his maple syrup and handmade crafts, to show his appreciation for their top-notch care.

Dennis and his wife of 38 years, Margaret, said the experience has taught them to appreciate life and to remain focused on what is most important. Despite his cancer treatments, the couple enjoys a very active lifestyle and are close with their nieces, nephews, and their families, often taking them fishing and camping.

“Times aren’t always easy, but you can’t give up,” Dennis said. “You should always have hope.”

LOOKING FORWARD...
Based on the success of ipilimumab, new antibodies that target a cousin of CTLA-4, called PD-1, are being tested in patients. Early results show that 30% of melanoma patients are responding to this treatment. Researchers are working to find therapeutic biomarkers, to identify patients who will respond to these new treatments, so that physicians can more effectively design personalized treatment plans.
FROM BENCH TO BEDSIDE

Groundbreaking research fuels the development of customized therapies to combat cancer.

The UCCCC capitalizes on the collective expertise of its world-renowned researchers who are dedicated to understanding all facets of cancer. Basic scientists and clinical researchers work together to bridge scientific disciplines and foster translational research, quickly advancing laboratory discoveries into the clinic. These discoveries translate to more effective, personalized comprehensive cancer care, addressing risk, prevention, diagnosis, treatment, and survivorship. The following research studies illustrate how the UCCCC is pushing the pace of personalized medicine to improve the lives of all cancer patients.

GENETIC VARIATIONS FORETELL SECOND CANCERS

Researchers can now predict which women are most likely to develop second cancers resulting from radiation therapy years after treatment for Hodgkin lymphoma. Kenan Onel, MD, PhD, associate professor of pediatrics, found two genetic variants that were significantly associated with increased cancer risk in Hodgkin lymphoma survivors who had been treated with radiation during childhood. These findings will allow clinicians to better identify children who are most susceptible to radiation-induced cancers and potentially modify their care to prevent this disease. (Best et al., Nat Med 17:941-3, 2011)

This work was supported in part by the National Institutes of Health, the Department of Defense, and the American Cancer Society-Illinois Division.

M. Eileen Dolan, PhD
Professor of Medicine

PREDICTING RESPONSE TO CHEMOTHERAPY

M. Eileen Dolan, PhD, professor of medicine, developed a cell-based approach to identify which patients with ovarian cancer will respond poorly to chemotherapy. She discovered 18 genetic markers that predicted treatment outcome in nearly 400 patients with ovarian cancer. These markers will help identify patients at risk for not responding to certain therapies, and allow clinicians to personalize treatment and improve outcomes by administering alternative chemotherapy. (Huang et al., Clin Cancer Res 17:5490-500, 2011)

This work was supported by the National Institute of General Medical Sciences, the National Cancer Institute, and the National Heart Lung and Blood Institute of the National Institutes of Health; the University of Chicago Comprehensive Cancer Center Support grant; and the University of Chicago Breast Cancer SPORE.

KENAN ONEL, MD, PhD
Associate Professor of Pediatrics

Stephen Kron, MD, PhD
Professor of Molecular Genetics and Cell Biology

DISSECTING RADIATION RESPONSE

Stephen Kron, MD, PhD, professor of molecular genetics and cell biology, is leading a collaboration with Ralph Weichselbaum, MD, D.K. Ludwig Professor of Radiation and Cellular Oncology, to understand how radiation affects cancer cells within growing tumors. Although radiation is widely used to treat cancer, tumors often grow back. Combined with techniques in molecular biology, Drs. Kron and Weichselbaum apply advanced imaging and irradiation tools to induce DNA damage and follow its repair in mice. They have discovered that the benefits of radiation therapy can be enhanced by non-toxic drugs that block DNA repair and age cancer cells, and that accumulation of aged cells appears to promote an immune response against tumors. Confirming the roles of cancer cell aging and immune activation in the success of radiation treatment may lead to clinical studies to test these drugs in patients within the next several years. This work is being supported by the National Cancer Institute of the National Institutes of Health and the Ludwig Center for Metastasis Research.

This work was supported in part by the National Cancer Institute of the National Institutes of Health, the Department of Defense, and the American Cancer Society-Illinois Division.

Stephen Kron, MD, PhD
Professor of Molecular Genetics and Cell Biology

Aytekin Oto, MD
Professor of Radiology and Surgery

NEW APPROACH FOR TREATING PROSTATE CANCER

Current treatment options for prostate cancer, including radical prostatectomy and radiation therapy, are associated with complications, such as incontinence and impotence, which decrease quality of life. Aytekin Oto, MD, professor of radiology and surgery, successfully completed a Phase I trial demonstrating the feasibility and safety of a new treatment approach—MRI-guided focal laser ablation of prostate cancer. As a result, Dr. Oto was awarded NIH funding to conduct a Phase II trial in collaboration with Scott Eggener, MD, assistant professor of surgery, to further evaluate the efficacy of this new, minimally invasive approach. As an alternative to more aggressive treatment options, image-guided focal laser ablation has the potential to change the paradigm for prostate cancer therapy for patients with low- and intermediate-risk disease. The research described was supported by the Partnership for Cures Foundation and Visualase Inc.
FROM BENCH TO BEDSIDE

**CLASSIFYING PATIENTS WITH HEAD AND NECK CANCERS**

Tanguy Seiwert, MD, assistant professor of medicine, discovered that head and neck cancers can be classified into five subtypes, each with unique characteristics that may guide the selection of therapies for individual patients.

Using advanced genomic and bioinformatic analyses to profile 134 head and neck tumors, Dr. Seiwert and his team observed that characteristics associated with treatment success were not evenly distributed. For example, human papilloma virus (HPV)-associated head and neck cancer, a group of tumors with a generally favorable prognosis, can be divided into two groups—one with a very favorable response and one with a poorer prognosis. This work, combined with ongoing studies that are examining the mutational fingerprints of each subtype, is advancing personalized medicine approaches for patients with head and neck cancer.

*This work was supported by an ASCO Translational Professorship Award (Dr. Everett Vokes), the Flight Attendant Medical Research Institute, and a grant supported by Grant Achatz.*

**A NEW MODEL OF OVARIAN CANCER**

Ovarian cancer is dubbed the “silent killer” because the disease often goes undetected until it has spread extensively. Ernst Lengyel, MD, PhD, professor of obstetrics and gynecology, discovered that tumors migrate to the omentum, tissue that stores fat and protects abdominal organs, because they are attracted to fat cells (Nieman et al., *Nat Med* 17:1498-503, 2011). He designed a novel 3D model to further study how ovarian cancer cells spread in the abdomen. To construct the model, primary cells were extracted from normal human omentum and combined with cancer cells in a manner that mimics the human body much better than cultured cell lines on plastic, the standard model used to study cell interactions. Dr. Lengyel’s team is now adapting the 3D culture for high-throughput screening with thousands of drug candidates to identify novel drugs for the treatment of patients with advanced ovarian cancer. By halting metastasis, this work may change the paradigm for ovarian cancer treatment, which currently involves debulking surgery and chemotherapy.

*This research described was supported by the National Institutes of Health, the Burroughs Wellcome Fund, and the Cancer Research Foundation (Fletcher Award).*

**OVERCOMING CHEMOTHERAPY RESISTANCE**

Suzanne Conzen, MD, professor of medicine, has discovered a new approach to breast cancer therapy that may soon benefit patients with chemotherapy-resistant tumors. Using a mouse model of human breast cancer, Dr. Conzen combined chemotherapy with a drug that neutralizes the activity of the glucocorticoid receptor, a protein that is involved in stress signaling. Dr. Conzen found that the treatment combination was nearly 50% more effective than chemotherapy alone. Working with Rita Nanda, MD, assistant professor of medicine, this approach is being tested in a Phase I clinical trial evaluating whether inhibition of the glucocorticoid receptor enhances chemotherapy response for estrogen-insensitive breast cancers and for those tumors that are initially classified as “triple-negative”, or lacking HER2, estrogen, and progesterone receptor expression.

*This work is being supported by the National Institutes of Health, the Avon Foundation, and the Susan G. Komen for the Cure Foundation.*

**YOUNG ADULTS FARE BETTER ON PEDIATRIC CANCER TREATMENT REGIMENS**

Wendy Stock, MD, professor of medicine, and her colleagues in the Cancer and Leukemia group B (CALGB) and the Children’s Oncology Group (COG) found that adolescents and young adults with newly diagnosed acute lymphoblastic leukemia (ALL) had significantly improved survival rates when treated on pediatric protocols in comparison to adult regimens (Stock et al., *Blood* 112:1646–54, 2008). This study was the first to identify a surprisingly large disparity in survival for young adults with ALL depending on how and where they were treated, and has led to international efforts to evaluate pediatric-inspired regimens. As a result, the UCCCC created the Adolescent and young Adult (AYA) oncology Program, the first of its kind in the Midwest, to provide specialized care and psychosocial support for this group of patients. Staffed by doctors and nurse practitioners from both pediatric and adult programs, the center offers personalized care to AYA patients with hematological malignancies.

*The research described was supported by the National Institutes of Health.*
EXPANDING OUR REACH

The UCCCC continues to accelerate the growth of our clinical cancer programs through biomedical advances in areas including genomics, imaging, and computation. Driving forward these advances to bring new hope to patients, the University of Chicago Medicine has constructed two new medical facilities that expand comprehensive care to our communities.

CENTER FOR CARE AND DISCOVERY
Nearing completion after three years of construction, the Center for Care and Discovery represents the largest single healthcare investment in the University’s history. At 1.2 million square feet and soaring 10 stories high over two city blocks, the Center for Care and Discovery is a “hospital for the future” devoted to complex specialty care, with a focus on cancer, gastrointestinal disease, medical imaging, neuroscience, and advanced surgical programs. Expected to be one of the most sophisticated hospitals in the world, its design can be easily transformed to meet the rapidly changing needs of patient care and clinical research for decades to come.

Opening in February 2013, the new hospital will equip our physicians and scientists with the most advanced diagnostic tools and surgical technologies to provide exceptional, customized care. For example, patients with lung cancer will benefit from navigation bronchoscopy, a procedure used to sample nodules and masses, which is safer than needle biopsies and reaches deeper into the lung than normal bronchoscopy. The Center for Care and Discovery is the first and one of only a handful of centers in Illinois to offer this technology. Tools such as this and endobronchial ultrasound, which permits lymph node sampling in the middle of the chest without surgery, allow our physicians to formulate personalized treatments more efficiently based on the genetic profile of the patient’s tumor.

With an entire floor exclusively devoted to cancer, the Center for Care and Discovery will expand the UCCCC’s capacity to treat patients from local communities and from around the world with individualized treatments not found in most hospitals. The Center for Care and Discovery serves as an optimal setting for collaborative clinical research and patient care, and is advantageously located across the street from the Gordon Center for Integrative Science and the Knapp Center for Biomedical Discovery, which house our state-of-the-art research laboratories. This proximity bridges our world-class physicians and scientists as they work together to shape the future of cancer care.

COMPREHENSIVE CANCER CENTER AT SILVER CROSS HOSPITAL
The UCCCC marked another significant milestone this summer by opening the University of Chicago Medicine Comprehensive Cancer Center at Silver Cross Hospital in New Lenox, Ill. The brand-new outpatient facility enables adult and pediatric patients living in Will County to receive comprehensive cancer care in a setting close to home. The $21.6 million, 20,000-square-foot facility houses many of the advanced treatment techniques found at our urban medical center, including a linear accelerator that uses image-guided and intensity-modulated radiation therapy to deliver safe and precise treatments.

Our patients experience multidisciplinary care, where our radiation, medical, and surgical oncologists collaborate to determine the most effective, individualized treatment options. Patients in both the urban and community settings have access to the UCCCC’s innovative clinical trials, which offer improved treatments based on our research advances. Equipped with the newest therapies and technologies, we are committed to excellence in patient care.

Above: Silver Cross Infusion Room
Opposite page: Center for Care and Discovery
PLANTING THE SEEDS OF SURVIVORSHIP

Survivorship starts from the time of diagnosis, yet many cancer patients find themselves wholly unprepared for what lies ahead. The UCCCC offers several personalized survivorship clinics and services to our patients and their families as they face the challenges of a cancer diagnosis and beyond.

CHILDHOOD CANCER SURVIVORS CENTER
Cancer survivorship is especially important for children diagnosed with cancer. These patients face a lifetime risk for a host of medical problems resulting from cancer therapy, including secondary cancers, endocrine disorders, and heart and renal problems, as well as issues with growth, development, and fertility. Led by Tara Henderson, MD, MPH, assistant professor of pediatrics, our Childhood Cancer Survivors Center screened 200 patients this year for long-term health problems and second malignancies. The Center, which recently expanded in conjunction with the new Adolescent and Young (AYA) Adult Oncology Program to include all cancer survivors diagnosed with cancer before the age of 30, educates survivors on their health risks and develops individualized recommendations for long-term health maintenance. Our experts address survivorship issues through research, including national studies with the Children’s Oncology Group, a National Cancer Institute-supported program that aims to improve pediatric therapies. Dr. Henderson and other UCCCC physicians also participate in the Childhood Cancer Survivorship Study, the largest national cohort of 14,000 childhood cancer survivors, and are actively investigating the risk factors and impact of surveillance on the development of secondary cancers.
BREAST CANCER SURVIVORSHIP PROGRAM
Breast cancer survivors make up the largest proportion of the 12 million survivors alive today. Our Breast Cancer Survivorship Program offers patients a personalized approach to survivorship from the time of diagnosis through treatment. A multidisciplinary team of specialists, including medical and radiation oncologists, radiologists, surgeons, and psycho-oncologists counsels patients and their families on topics including the long-term side effects of treatment, family history of the disease, fertility issues, nutrition and healthy lifestyles, and warning signs of disease recurrence. “We deliver outstanding care through a team-based approach that considers each patient’s unique set of circumstances,” said Susan Hong, MD, MPh, director of the Program. This past year, the Program supported nearly 250 patients, who are now educated about their disease and better prepared to take action.

PROJECT ECHO
The UCCC has stepped up our efforts in survivorship this year by implementing Project ECHO (Extension for Community Healthcare Outcomes), a unique program that partners our physicians with primary care providers at Chicago community health centers to develop new approaches for providing underserved patients with specialized care. Our institution is the first to apply Project ECHO in an urban setting, and also the first to apply the program toward cancer care. The UCCC implemented the breast cancer survivorship portion of the program, which spans over 6 months and uses teleconference technology, disease management tools, and expertise found only at an academic medical center to deliver didactic lectures to community physicians. The program addresses a wide range of topics, including national guidelines for follow-up care, long-term management of the side effects from cancer treatment, and identification of patients at risk for hereditary cancer syndromes. Funded by the American Cancer Society — Illinois Division, this program extends the reach of our comprehensive care.

CANCER TRANSITIONS™
Among other survivorship resources, the UCCC offers our patients the “Cancer Transitions: Moving Beyond Treatment™” program developed by the LIVESTRONG® organization to support, educate, and empower individuals during the transitional period following cancer treatment. The program enables cancer survivors and their families to develop skills and tools to address exercise, nutrition, emotional health, quality of life, and medical management. This year, the UCCC Office of Community Engagement and Cancer Disparities (OCECD) tailored the program to meet the cultural and linguistic needs of cancer survivors in our local Chinese community by conducting sessions in Mandarin, Cantonese, and English, and featuring lessons in Tai Chi. The program is now offered on a bimonthly basis because of its positive impact within the Chinese community.

PRISM CLINIC
The UCCC’s Program in Integrative Sexual Medicine (PRISM) for Women and Girls with Cancer is the first clinic in Illinois — and one of only a few nationwide — devoted to helping female cancer patients and survivors manage sexual health problems related to their disease or treatment. During and after cancer treatment, women often experience symptoms such as vaginal dryness, painful intercourse, and a lack of interest or pleasure. Staffed by specialists who provide education and support during all stages of treatment and recovery, the clinic uses a team approach that includes discussion with the patient, the patient’s oncologist, and a psychologist. Some patients may benefit from over-the-counter products, while others may need physical therapy or psychotherapy. The clinic is a national model for bringing the sexual problems of women with breast or gynecological cancers to the forefront of survivorship discussions.
My name is Vincent.
I am a nurse in the emergency department.
I use humor to make people smile every day.
My dog Petie is my best friend and keeps me going.
An unexpected hospital stay left quite an impression on Vincent Davenport when he was 18. He remembered being very gently cared for by people walking around in white. This experience inspired him to pursue a career in healthcare. The 58-year-old Chicagoan currently works at the Bernard A. Mitchell Hospital at the University of Chicago Medicine, where he enjoys caring for patients amid the fast-paced action of the emergency department.

Yet, Vincent is once again finding himself on the receiving end of care—this time, as a cancer patient. Three years ago, he noticed occasional abdominal discomfort and fatigue. Several coworkers were concerned about his increasingly thin and pale appearance. By the time he saw his doctor, vomiting had become another symptom. A CT scan showed a tumor in his abdomen. “I guess I wasn’t surprised because I knew something was different with my body,” he said. The next day, Vincent underwent surgery to remove the tumor from his colon, which was discovered to be cancerous. Aware of the outstanding reputation in cancer care, he decided to continue treatment at the UCCCC, where he received chemotherapy.

One year later, the cancer appeared in his liver and lungs. This time, Vincent’s care relied on the innovative therapies offered through the UCCCC’s clinical trials program, which often tailors treatment based on genetic information. Vincent was placed on a clinical trial that adjusted the dosage of his chemotherapy based on his genetic profile. The trial allowed him to receive a 50% higher dose of treatment than what he would have received under standard treatment. As a result, Vincent’s lesions have shrunk.

“I realize that I have a life-threatening illness; my head is not in the sand,” Vincent said. “But I feel comfortable in my doctor’s hands and am taking everything as it comes.”

Vincent may have inherited that resilience from his 83-year-old mother, who survived lung cancer against all odds. He has also talked with his 35-year-old son about surveillance, since having a family member with a history of colon cancer and being African American are two known risk factors for colon cancer.

I’M A SURVIVOR.
Vincent attributed his positive outcome to the high level of care he receives—and not because he is a hospital employee. He noticed all patients are treated with expert care from doctors and nurses who work well together. In addition to family and coworkers who watch him “like a hawk,” Vincent is grateful for his Yorkshire terrier, Petie, gives him something to focus on besides his cancer. “I can feel myself relaxing when he’s around,” he said.

“I’M DOING WONDERFUL, AND I’M THANKFUL FOR EVERY DAY THAT I’M HERE. THE EXPERIENCE HAS HELPED FOCUS ME.

— VINCENT DAVENPORT

Looking forward...

In addition to adjusting chemotherapy dosage based on a patient’s genetics, UCCC researchers are examining whether adjusting the timing of chemotherapy can provide added benefit for patients. In an ongoing trial for rectal cancer, our researchers are testing whether chemotherapy offered earlier in the treatment process is more effective and can prevent the need for surgery. Many patients who undergo surgery require permanent colostomy bags, so avoiding surgery altogether would minimize complications and greatly improve quality of life.
REducing cAncer In our cOmmunity

We help those around us learn about cancer and take charge of their health.

To ensure quality cancer care for our patients, the UCCC Office of Community Engagement and Cancer Disparities (OCECD) identifies emerging cancer issues and engages in outreach activities in our surrounding communities, which are predominantly African American, as well as within the Asian, Hispanic, and Native American communities.

Led by Karen E. Kim, MD, MS, professor of medicine, the OCECD builds strategic partnerships with community, ethnic, and faith-based organizations to develop culturally adapted awareness and screening programs, as well as educational resources to engage patients in research and clinical trials. Each year, OCECD staff meets with hundreds of individuals through numerous community events, ranging from health fairs to cancer support groups to workplace wellness programs.
RAISING AWARENESS
Empowering Neighborhood Resources in Combating Health Disparities (ENRICH’D™) is our signature educational program sponsored in part by a grant from Exelon Corporation. Launched in 2011, the OCECD worked with Chicago public high schools to design culturally and language-adapted resource guides to raise breast and prostate cancer awareness in the African American and Asian communities. Already reaching over 700 community members, the program is closing gaps in healthcare knowledge and encouraging healthier lifestyles.

Complementing these efforts, the OCECD launched a new “Walk Through” program to familiarize community members with medical resources at the UCCC. Showcasing our breast cancer program, participants obtain a firsthand view of cancer screening and treatment options, and learn of the strengths of our UCCC Breast Cancer Survivorship Program.

Also noteworthy is our success in promoting colorectal cancer prevention. Supported by the Illinois Cancer Partnership, the OCECD organized a statewide initiative this year that provided more than 2,000 colorectal cancer screenings to individuals 50 and older in 45 community organizations and hospitals.

ENHANCING EDUCATION
With a newly awarded National Cancer Institute planning grant, the UCCCC is working closely with Chicago State University (CSU), the largest minority serving institution in the Midwest, to enhance graduate student education. Over the next two years, the UCCCC will develop a new cancer curriculum that focuses on outreach and health disparities for incorporation into the CSU’s Master of Public Health program. By disseminating our cancer disparities research and education, we are advancing the training of a diverse public health workforce, as well as learning about our community’s needs and attitudes.

Through these and other programs, we have formed strong community partnerships to help us engage in health disparities research. Our goal is to understand the biological, racial, ethnic, economic, and geographic issues that contribute to cancer health disparities in our surrounding communities through clinical trials and community-based participatory programs. By understanding these barriers, we strive to promote new ways to prevent cancer.

Above (from top): Participants of a colorectal cancer screening initiative in the Korean community sponsored by the OCECD in partnership with the Asian Health Coalition and Hanul Family Alliance; Cancer patient, Natachie, with family
Opposite page: Chicago public high school students participating in the OCECD’s ENRICH’D™ program
SHAPING THE FUTURE OF CANCER CARE

Since its founding in 1973 as one of the first National Cancer Institute-designated Cancer Centers, the UCCCC has developed innovative research and multidisciplinary clinical treatment programs to elevate cancer care. Our challenge over the next decade is to accelerate the translation of research discoveries into personalized care that is efficiently incorporated into medical practice. In pursuit of this challenge, we have launched a bold five-year strategic plan addressing the continuum of cancer care.
SHAPING THE FUTURE OF CANCER CARE

CANCER PREVENTION AND POPULATION RESEARCH
Available data indicates that ~65% of cancers in the U.S. could be prevented. The UCCCC is creating a trans-University Center for Cancer Prevention and Population Research to investigate the causes and risk factors of cancer, as well as the roots of cancer disparities. Our researchers are establishing a unique multi-ethnic cohort of 100,000 individuals who are healthy, at high-risk for cancer, or have been diagnosed with cancer to carry out these investigations from a population perspective. By identifying patients at high risk and developing new interventions and diagnostics for these individuals, the Center aims to make groundbreaking discoveries that translate to sustainable disease prevention programs.

SCIENCE-BASED PERSONALIZED MEDICINE
The UCCCC is implementing cancer care based on the patient’s genome, environmental exposures, and personal behaviors to achieve the best health outcomes. However, cancer has the capacity to evolve and escape even the best targeted therapies. To tackle this formidable challenge, the UCCCC is undertaking three major initiatives to elucidate the molecular and physiological heterogeneity of cancer. In the Basic Science Initiative, UCCCC research teams are evaluating tumor specimens using state-of-the-art technologies to address key challenges in cancer progression and treatment. For example, computational scientists and cancer biologists are working together to develop genetic signatures to identify patients who are more likely to remain metastasis-free following therapy. In the Translational Sciences Initiative, UCCCC researchers are advancing the development of new non-invasive imaging tools for clinical diagnostics and assessment of treatment response, as well as the discovery of new cancer therapeutics, which is driven by the bi-directional flow of science between the laboratory and the clinic.

To advance patient care through its Clinical Science Initiative, the UCCCC has created the Personalized Cancer Care Consortium comprising the University of Chicago and affiliated regional hospitals. The Consortium is enrolling patients in clinical studies to test new cancer interventions. Serving as a clinical and research hub for these studies, the Consortium will enable UCCCC researchers to develop cancer biomarkers to predict therapy response, new imaging strategies to evaluate cancer, and personalized therapeutic approaches to deliver the right treatment at the right time.

IMPROVING SURVIVORSHIP AND OUTCOMES
While advances in cancer treatment promise longer life with fewer side effects, they present profound economic, political, and psychosocial issues. For example, how will the cost of cancer care be affected by new, expensive therapies that are effective in only a small niche of patients? How will major disparities in cancer care be addressed in underserved populations? How will society meet the medical and social needs of a growing population of cancer survivors? To address these questions, the UCCCC is creating a new Cancer Outcomes and Survivorship Program to develop new models of healthcare delivery and reimbursement, as well as social policy to enhance the efficiency and equity of healthcare. Research will span across the cancer spectrum and focus on cancer survivorship, the psychosocial manifestations of cancer, cancer economics, and outcomes research.

Through these initiatives, the UCCCC is endeavoring what no other institution has yet managed. By integrating our institution’s rich academic environment in biological, physical, and social sciences with expertise in medicine, economics, and public policy, the UCCCC is truly tackling cancer from all angles and developing new standards for cancer care.

Opposite page: UCCCC Director Michelle M. Le Beau, PhD and Dr. Habibul Ahsan
A SNAPSHOT OF CANCER CARE
ADVANCING ONCOLOGY SERVICES

Ranked #15 in the nation by *U.S. News & World Report*, the highest ranking institution in Illinois, our cancer program remains steadfast in our goal to provide the highest quality cancer care services to our patients and community.

The UCCCC Cancer Registry provides a full range of oncology data services for our nationally recognized American College of Surgeons (ACoS)-approved clinical cancer program. Since the 1920s, the Registry has collected, maintained, and reported detailed information for patients diagnosed with, and treated for, cancer or benign central nervous system neoplasms. A dedicated team of data management specialists ensures that records are maintained for patients at both the University of Chicago Medicine and the newly opened University of Chicago Medicine Comprehensive Cancer Center at Silver Cross Hospital.

The Cancer Registry provides important data services to advance basic, translational, and clinical research at the UCCCC. All data collected by the Registry can be accessed via an electronic data repository, known as the Clinical Research Data Warehouse (CRDW). Researchers and clinical staff who request access to this resource are provided data in a safe, managed method that is compliant with HIPAA Privacy and Security Rules. Registry data are essential for not only advancing research to improve patient care, but also for cancer program development, community outreach activities, and decision-making in oncology and public healthcare policies.
2011 CANCER DATA\(^1\)

CANCER INCIDENCE BY TYPE

In 2011, 3,660 patients were diagnosed and/or treated at the University of Chicago Medicine for a malignancy or benign central nervous system neoplasm (See Table 1).

Of these, the majority of patients (3,030, 83%) were newly diagnosed, and the remaining (630, 17%) had recurrent or progressive disease. The most frequently seen cancers were of the digestive system (556, including colorectal cancer), male genital system (446, including prostate cancer), breast (337), respiratory system (315, including lung cancer), and urinary system (216, including kidney cancer).

![Figure 1. 2011 Cancer Cases by Gender and Age at Diagnosis](image)

**TABLE 1. 2011 Cancer Cases by Site**

<table>
<thead>
<tr>
<th>PRIMARY SITE</th>
<th>NEWLY DIAGNOSED</th>
<th>RECURRENT/PROGRESSIVE DISEASE</th>
<th>TOTAL</th>
<th>% OF TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Progressive Disease</td>
<td>531</td>
<td>111</td>
<td>642</td>
<td>17.5%</td>
</tr>
<tr>
<td>Digestive System</td>
<td>478</td>
<td>78</td>
<td>556</td>
<td>15.2%</td>
</tr>
<tr>
<td>Male Genital System</td>
<td>372</td>
<td>74</td>
<td>446</td>
<td>12.2%</td>
</tr>
<tr>
<td>Breast</td>
<td>311</td>
<td>66</td>
<td>377</td>
<td>10.3%</td>
</tr>
<tr>
<td>Respiratory System</td>
<td>262</td>
<td>53</td>
<td>315</td>
<td>8.6%</td>
</tr>
<tr>
<td>Urinary System</td>
<td>182</td>
<td>34</td>
<td>216</td>
<td>5.9%</td>
</tr>
<tr>
<td>Endocrine System*</td>
<td>167</td>
<td>34</td>
<td>201</td>
<td>5.5%</td>
</tr>
<tr>
<td>Oral Cavity and Pharynx</td>
<td>137</td>
<td>39</td>
<td>176</td>
<td>4.8%</td>
</tr>
<tr>
<td>Female Genital System</td>
<td>128</td>
<td>38</td>
<td>166</td>
<td>4.5%</td>
</tr>
<tr>
<td>Lymphoma</td>
<td>124</td>
<td>33</td>
<td>157</td>
<td>4.3%</td>
</tr>
<tr>
<td>Leukemia</td>
<td>62</td>
<td>18</td>
<td>80</td>
<td>2.2%</td>
</tr>
<tr>
<td>Skin (Excluding Basal and Squamous)</td>
<td>105</td>
<td>17</td>
<td>122</td>
<td>3.3%</td>
</tr>
<tr>
<td>Brain and Other Nervous System**</td>
<td>46</td>
<td>10</td>
<td>56</td>
<td>1.5%</td>
</tr>
<tr>
<td>Miscellaneous***</td>
<td>42</td>
<td>7</td>
<td>49</td>
<td>1.3%</td>
</tr>
<tr>
<td>Soft Tissue</td>
<td>33</td>
<td>11</td>
<td>44</td>
<td>1.2%</td>
</tr>
<tr>
<td>Myeloma</td>
<td>24</td>
<td>3</td>
<td>27</td>
<td>0.7%</td>
</tr>
<tr>
<td>Bones and Joints</td>
<td>22</td>
<td>2</td>
<td>24</td>
<td>0.7%</td>
</tr>
<tr>
<td>Mesothelioma</td>
<td>3</td>
<td>2</td>
<td>5</td>
<td>0.1%</td>
</tr>
<tr>
<td>Eye and Orbit</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0.1%</td>
</tr>
<tr>
<td>Kaposi Sarcoma</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0.1%</td>
</tr>
</tbody>
</table>

**TOTAL**                             | 3,030           | 630                           | 3,660 | 100%       

\(^1\)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.

* includes benign pituitary adenomas  
** includes benign neoplasms  
*** includes blood dyscrasias, myelodysplastic/myeloproliferative disorders and cancers with other histology/primary site designations
PATIENT DEMOGRAPHICS

More than half of all patients (1,922, 52.5%) were diagnosed between the ages of 50 and 69 years (See Figure 1). Distribution by gender reveals a higher number of male patients (1,947, 53.1%) than females (1,713, 46.8%). Distribution by race (See Figure 2) shows that our patient population is predominately white (2,347 patients, 64.1%), followed by African American (935 patients, 25.5%), and Hispanic (153 patients, 4.2%). These trends are similar to those seen in recent years.

PATIENT GEOGRAPHICS

The majority of patients (2,966, 81.0%) seen in 2011 were Illinois residents (See Figure 3), with the highest number residing in Cook County (1,860, 62.7%) followed by Will County (323, 10.9%), DuPage County (271, 9.1%), and Lake County (152, 5.1%). Nearly 19% (680 patients) of the total number of patients first seen in 2011 lived outside of Illinois, primarily in the neighboring states of Indiana (531, 78.0%), Michigan (58, 8.5%), and Wisconsin (26, 3.8%).

We also served 14 international patients from countries including Israel and Saudi Arabia (three patients each), England, China, Palestine, Kuwait, Venezuela, Japan, Romania, and United Arab Emirates (one patient per country).
I’m Steve.

I love computers, video games, and singing karaoke with my friends.

I had leukemia, but now I’m in remission and my life is almost normal again.
Two years ago, Steve Kegebein couldn’t understand why he was so sick for an entire month with flu-like symptoms. A doctor in Indiana diagnosed Steve, at age 24, with acute myeloid leukemia (AML). His white blood cell counts were so high that he was immediately rushed to the UCCCC, which is renowned for its adult leukemia program and many important contributions to the classification of leukemias, as well as the understanding of genetics and cancer. He remembers the shocked reactions of his family and friends. “They knew I was sick, but nobody expected anything like that,” he said. “I saw a lot of people in tears that I’d never seen cry before in my life—it was strange.”

Steve was first treated in the intensive care unit with a pheresis procedure and chemotherapy to reduce the high number of leukemic cells in his blood. Once he was stabilized, he began aggressive chemotherapy on a clinical trial which controlled the disease, followed by a bone marrow transplant from one out of 400 unrelated donor matches. However, three months later, the leukemia relapsed. Andrew Artz, MD, assistant professor of medicine, then enrolled Steve on a clinical trial for a drug that specifically targets the FLT3-ITD mutation found in Steve’s type of AML. Disease control was accomplished and Steve then underwent a second transplant in conjunction with high-dose chemotherapy adjusted to achieve the exact desired drug exposure; after the transplant, Steve was placed on a different targeted drug. He has remained in remission since then and comes back for three-month check-ups.

The UCCCC has an unmatched record in leukemia research and was among the first centers in the country to test experimental leukemia drugs in clinical trials. UCCCC scientists and clinicians continue to test the newest generation of targeted therapies and develop individualized treatment plans for patients with leukemia.

“It never crossed my mind that something could potentially go bad and that I wouldn’t make it through it,” Steve said, adding his outlook was more like, “What do we have to do to get through it?”
“I LOVE THE UCCCC BECAUSE THEY REALLY TOOK CARE OF me. I WOULDN’T HAVE WANTED TO BE ANYWHERE ELSE.”

— STEVE KEGEBEIN

During Steve’s lengthy hospital stays, many of his loved ones kept him company. He preferred being in the hospital to home because he felt comfortable knowing his nurses and doctors were right there to help him. To pass time, he played video games. “I logged a lot of hours from that hospital bed,” he said. “It helped that I had something to do that I enjoyed.”

Other than reassuring his loved ones he was going to be okay, Steve said the most difficult parts of the experience were the painful bone marrow biopsies and being too sick to eat. Now, Steve is enjoying a lot of the things that remind him of his life before leukemia, including steak and lobster from Japanese hibachi grills. He resumed his job driving and unloading trucks with UPS, which he loves, and plans to return to school for sociology. He regularly sings karaoke with his friends and recently placed third in a contest.

LOOKING FORWARD...

FLT3 is the second most common gene mutation in adult patients with AML. The UCCC is conducting clinical trials to test novel agents that specifically target FLT3, including midostaurin, lestaurtinib, sorafenib, and quizartinib. These agents have not yet been approved by the FDA for the treatment of AML. Researchers hope that using one of these targeted therapies, when combined with conventional chemotherapy, will one day reduce the need for allogeneic transplants altogether.
FOCUS ON COLORECTAL CANCER

Colorectal cancer is recognized as the third most common cancer and the second leading cause of cancer deaths worldwide.

The UCCCC is committed to preventing and reducing the burden of this disease and other cancers. Patients benefit from our high level of comprehensive care for colorectal cancer—our experts are pioneering preventive strategies, improving quality of life, developing new therapies, and educating our community through culturally adapted outreach efforts.

The American Cancer Society estimates that in 2012, more than 73,000 new cases of colorectal cancer will be diagnosed and roughly 52,000 Americans will die from the disease. Over the past five years, the number of patients diagnosed with and/or treated for colorectal cancer at the University of Chicago Medicine has remained relatively stable. On average, we see over 150 newly diagnosed and/or treated patients with colorectal cancer at the University of Chicago Medicine each year.

A TEAM-BASED APPROACH

The UCCCC’s power of collaboration brings together multiple medical disciplines to provide the best care for our patients. For colorectal cancer, a dedicated team of surgical oncologists, medical oncologists, radiation oncologists, radiologists, geneticists, and interventional gastroenterologists uses the most detailed diagnostic imaging scans alongside clinical and biological data to formulate individualized treatment plans, which often revolve around the patient’s quality of life.

According to Blase Polite, MD, MPH, assistant professor of medicine, “When we treat patients, part of our holistic approach is to carefully consider each patient’s life and to address their fears and concerns.” For example, colorectal surgeons are pioneering minimally invasive robotic surgeries for patients with rectal cancer to speed recovery and reduce the number of patients who need permanent colostomy bags.

TRANSLATING RESEARCH INTO IMPROVED CARE

Pushing beyond the standards of care, the UCCCC offers unique treatments for our patients. Our researchers are testing new therapeutic strategies and placing the highest priority on personalized care through innovative clinical trials. For example, researchers have been able to increase the standard dose of chemotherapy by more than 50% in certain patients, using genetic profiles as a guide, without increasing the toxicity of treatment. In an ongoing trial in rectal cancer, our physicians are determining whether offering chemotherapy earlier in the treatment process is more effective, better tolerated, and reduces the complications of surgery. One day we may be able to avoid surgery altogether in some of these patients.

While improving the effectiveness of existing therapies, we are simultaneously developing the next generation of drugs to treat chemotherapy-resistant tumors. Several ongoing clinical trials are testing the effectiveness of new targeted therapies. In one study, our researchers are using a novel monoclonal antibody to deactivate MET, a protein that is associated with poor outcomes in many cancers, in combination with chemotherapeutic...
drugs as a front-line treatment for colorectal cancer. We are also evaluating the safety and effectiveness of combining standard chemotherapy with a monoclonal antibody targeted against the KRAS protein for patients with KRAS mutations. These mutations are associated with worse survival rates in colorectal cancer patients.

To complement these efforts, the UCCCC runs a cancer risk group to support young patients with colorectal cancer and those with extensive family histories of the disease. Our physicians are also developing a colorectal cancer survivors’ clinic to help patients maximize their health after cancer treatment.

**A SNAPSHOT OF COLORECTAL CANCER**

In 2011, the University of Chicago Medicine newly diagnosed and/or treated 212 patients with colorectal cancer. Half of all patients seen were between the ages of 50 and 69, and in this age group, more than half (65, 61.9%) were male (See Figure 4). Analysis of the distribution by race (See Figure 5) shows that our patient population for colorectal cancer is predominately white (133, 62.7%), followed by African American (64, 30.1%), Hispanic (8, 3.7%), and Asian and Pacific Islander (7, 3.3%). The number of African American patients seen with colorectal cancer is significantly higher (30%) compared...
with the national average of 10%, reflecting the predominance of this population in our surrounding community and our commitment to their care.

Figure 6 shows one- to five-year survival rates for patients diagnosed with stage IV colon cancer. At the University of Chicago Medicine, patient survival rates range from 62% one year following diagnosis to nearly 15% five years following diagnosis. Despite treating some of the most complex cases, we are proud that our patient survival rates compare favorably with the national survival rates.

**EXPLORING THE MECHANISMS OF COLORECTAL CANCER**

To understand the factors that contribute to colorectal cancer, UCCCC scientists are exploring environmental and biological factors through basic research studies. For example, Marc Bissonnette, MD, associate professor of medicine, is examining the mechanism by which high-fat diets promote colorectal cancer and how vitamin D acts as a chemopreventive agent. Sonia Kupfer, MD, assistant professor of medicine, is pinpointing genetic variations that may increase the risk of colorectal cancer across different ethnic populations. As another example, Kathleen Goss, PhD, assistant professor of surgery, is studying the mechanism by which the APC tumor suppressor inhibits the development of colorectal cancer. These and other studies underway at the UCCCC provide the foundation to develop improved therapeutics and test new strategies to prevent cancer in clinical trials.

**PREVENTING COLORECTAL CANCER**

UCCCC researchers place a heavy emphasis on tackling colorectal cancer disparities in local neighborhoods and around the world. “Not only are we looking at colorectal cancer at the genetic and biological level, we are also studying the social and environmental factors which may cause disparities,” said Dr. Polite. “We want to make sure our successes in clinical research are being shared by all members of our community.”

Only approximately 60% of Illinoisans 50 and older are screened for colorectal cancer. Among minority populations, screening rates are even lower. In response, the UCCCC launched a statewide initiative in partnership with the American Cancer Society-Illinois Division to provide an equal opportunity for individuals to benefit from colorectal cancer screening. “Many people who can benefit from colorectal cancer screening fail to get screened; this is particularly the case among minority populations who may be challenged by numerous barriers, including access, language, and fear,” said Karen E. Kim, MD, MS, professor of medicine and director of the UCCCC Office of Community Engagement and Cancer Disparities (OCCEED).

The OCCEED has undertaken several initiatives to disseminate colorectal cancer education and expand colonoscopy access to Chicago’s uninsured Southside residents, which include African American and Asian American communities. African Americans have the highest incidence of colorectal cancer and the highest mortality rate for the disease in the U.S. “If we can improve screening rates, we should be able to reduce the number of deaths from colorectal cancer for all populations in the state of Illinois,” said Dr. Kim. The OCCEED has also formed a research task force in partnership with the Asian Health Coalition to study how race/ethnicity and language proficiencies of instructors in community education programs impact colorectal cancer screening in the Korean immigrant population.

**HANDS-ON EDUCATION**

To provide a firsthand view of how our distinguished cancer research programs translate to the clinic, the UCCC launched Project Cancer Education, a program originally developed by the Ohio State University with the Association of American Cancer Institutes. This year, board members of the University of Chicago Cancer Research Foundation attended the program to learn about the necessity and role of research in the clinical care of patients with colorectal cancer.

Participants went on a behind-the-scenes tour of UCCCC research facilities and learned about innovative clinical trials and experiments in progress. They also learned about the submittal process for peer-reviewed scientific journals, as well as research funding sources. “Project Cancer Education allowed participants to step into my shoes for an hour and understand the excitement and challenges of life as a physician-scientist,” said Dr. Kupfer. This successful event was the first UCCCC initiative focused on educating community members on the importance of cancer research funding and the role of research discoveries in advancing patient care.
ENHANCING QUALITY AND ENABLING INNOVATION THROUGH PHILANTHROPY

Year after year, we are left in awe of the commitment, loyalty, and generosity of our volunteers. Without this group of highly motivated and compassionate people, we would not be able to support our eminent researchers as they develop new strategies to diagnose, prevent, and treat cancer.

We thank everyone who has answered the call to donate their time, money, and energy to this very worthy cause. We are happy to report this past year’s fundraising efforts allowed many research projects—especially those focused on personalized medicine—to move forward. The enthusiastic and charitable efforts of our donors place the UCCCC in a position to advance its integrated scientific and clinical initiatives that focus on personalized medicine over the next five years. With your help, philanthropy continues to be a driving force of our mission to individualize cancer care.

Margaret Benjamin
President, Board of Trustees
The University of Chicago Cancer Research Foundation

Mary Ellen Connellan
Executive Director
The University of Chicago Cancer Research Foundation

The University of Chicago Cancer Research Foundation (UCCRF) is a not-for-profit organization founded by Maurice Goldblatt in the 1940s to support basic and clinical research programs related to the treatment and prevention of cancer at the UCCCC. The UCCRF comprises four boards—one governance board (Board of Trustees) and three fundraising boards (Women’s Board, Auxiliary Board, and Associates Board).
Much of the research guiding personalized cancer care at the UCCCC was made possible by the ongoing support of philanthropy. The dedicated staff, active volunteers, and generous donors of the University of Chicago Cancer Research Foundation (UCCRF) worked tirelessly for more than six decades to tap into their networks of family, friends, and colleagues, raising more than $1.5 million in fiscal year 2012 to advance personalized medicine. The UCCRF Women’s Board allocated funds to support the UCCCC’s Human Tissue Resource Center (HTRC), which collects, stores, and distributes research-quality human biospecimens for UCCCC investigators. Over the past two years, the HTRC banked over 200,000 patient samples linked to demographic,
epidemiological, and clinical information. Access to this data from large cohorts of patients is critical for developing more effective personalized cancer treatment and prevention strategies. The Board also supported the creation of the UCCC Personalized Cancer Care Consortium (See page 23) to identify new approaches for delivering personalized care, as well as efforts to discover new therapeutic agents using research informatics to benefit children diagnosed with neuroblastoma. Among a variety of fundraising events, the Board raised over $830,000 at their signature event, the 45th Annual Cancer Ball.

The work of our talented researchers could not be accomplished without the support of the UCCRF, which provides critical start-up funds that are essential for generating data to compete for federal research funding. This year, the UCCRF Auxiliary Board supported the work of three talented clinician scientists, including Jill de Jong, MD, PhD, assistant professor of pediatrics, Peter O’Donnell, MD, assistant professor of medicine, and Michael Spiotto, MD, PhD, instructor of radiation and cellular oncology, who are making strides in advancing personalized cancer care. At one of several successful events, The Board generated nearly $50,000 through their “Leap of Faith” campaign, in which they wrote letters to potential donors using the 2012 leap year to emphasize the importance of an extra day for UCCC researchers to positively impact the lives of patients with cancer.

The UCCRF Associates Board supported the UCCC’s Human Immunologic Monitoring-cGMP Facility, which enables our researchers to conduct novel immunotherapy clinical trials. By manufacturing therapeutic cancer vaccines and measuring biological responses, the facility plays a central role in developing new targeted immunotherapeutics for cancer. The Board engaged donors at several fundraising events this year, including the Valentine’s Karaoke for a Cure and the Ham Jam, an afternoon pig roast with friends and families, which together raised nearly $10,000 in support of UCCC research.

Philanthropy continues to forge the UCCC’s groundbreaking work in personalized cancer care.
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Hi, I’m Natachie.
I’m a minimalist who enjoys the simple things in life.
It’s amazing how good I feel now.
I’m a Survivor

Natachie Goolsby was traveling to her family’s annual reunion last July when she noticed pelvic pain and vaginal discharge. Once home in Chicago, she saw a series of doctors and underwent a variety of tests before receiving the shocking diagnosis of advanced stage IV cervical cancer, which had spread to her lymph nodes and bones. At first, she couldn’t bring herself to tell her family members, but they suspected something was wrong.

Then began what Natachie described as a rollercoaster ride of emotions. When she finally came to terms with her cancer diagnosis, she set her mind on what to do next. The 64-year-old mother of four told her doctor, “I’m going to fight it, with your help, because I have a lot of things I want to do.”

Running out of standard treatment options, the radiation oncologist and medical oncologist at Natachie’s local hospital strongly recommended that she seek the help of Ernst Lengyel, MD, PhD, professor of obstetrics and gynecology, at the UCCC. According to Dr. Lengyel, Natachie faced a poor prognosis because her disease was resistant to chemotherapy. However, given her unusual clinical presentation and pathology, he decided to test her for expression of human epidermal growth factor receptor 2 (HER2), a protein that sends growth signals to cancer cells and for which an approved targeted treatment exists. Natachie tested positive, providing a new therapeutic option. Dr. Lengyel sent her to Gini Fleming, MD, professor of medicine, for treatment with Herceptin (trastuzumab), to block the effects of HER2, paired with Taxol (paclitaxel) chemotherapy. This treatment combination is usually used in women with aggressive HER2-positive breast cancer.

The tumor response was better than anyone anticipated. The tumor shrunk significantly, and the lymph nodes pushing on her neck melted away. Dr. Lengyel calls it the miracle of personalized medicine when the tumor is treated with agents that target its molecular signature; Natachie calls Dr. Lengyel her angel for his encouragement and his willingness to fight with her insurance company to approve the treatment.
“MY DOCTORS AT THE UCCCC ENCOURAGED me. THEY WERE LIKE MY ANGELS.”

— NATACHIE GOOLSBY

Natachie has noticed a big difference as her health continues to improve. For example, she can now do her own grocery shopping. She no longer feels pain in her bones on every bump during car rides. She is back outside gardening and fishing—things she once took for granted before she got sick. The Southwest Chicagoan also enjoys watching her grandchildren grow up.

“I tell them not to worry, that some things are out of our control. We have to live with them as long as we can,” she said, adding that people should never let a cancer diagnosis stifle them to the point where they don’t want to deal with it. “If you give up or give in, I don’t think there’s much hope for you,” she said. “You have to fight.”

LOOKING FORWARD...

While UCCC physicians have successfully used personalized medicine to treat patients with cervical cancer, they are also exploring combinations of chemotherapy with concurrent radiation in clinical trials. For most cases of locally advanced cervical cancer, patients are treated with radiation combined with chemotherapy. Instead of stopping chemotherapy after radiation, our physicians continue to treat patients with adjuvant chemotherapy in hopes of improving survival rates.
OUR MEMBERS
EXPANDING OUR TEAM

The UCCC’s discoveries and innovations in cancer research and personalized care are the result of highly collaborative efforts among our 210 accomplished scientists and physicians. Each year, the UCCC enlists new experts in basic and clinical research to join our dedicated team. In fiscal year 2012, we welcomed 16 new members to strengthen our oncology programs.

Robert Chin, MD/PhD
Assistant Professor
of Radiation and
Cellular Oncology
Targeted cancer therapy

Jonas de Souza, MD
Instructor of Medicine
Cancer outcomes
and economics

Raymon Grogan, MD
Assistant Professor
of Surgery
Cancer biomarkers

Andrzej Jakubowiak,
MD/PhD
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Drug discovery
and clinical trials

Swati Kulkarni, MD
Associate Professor
of Surgery
Cancer prevention

Alexander Langerman, MD
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Cancer diagnosis
and treatment

Hongtao Liu, MD/PhD
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Cancer immunology

Yusuke Nakamura,
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Professor of Medicine
Cancer genomics

Aasim Padela, MD, MSc
Assistant Professor
of Medicine
Spirituality and medicine

Navin Pinto, MD
Instructor of Pediatrics
Personalized therapeutics

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Associate Professor
of Radiology
Cancer imaging

Gordana Raca, MD, PhD
Assistant Professor
of Medicine
Cancer cytogenetics

Steffen Sammet, MD/PhD
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of Radiology
Cancer imaging
and therapy

Manish Sharma, MD
Assistant Professor
of Medicine
Clinical trials

Fabrice Smieliauskas, PhD
Assistant Professor
of Health Studies
Clinical trials and
cancer economics

Xiaoyang Wu, PhD
Assistant Professor in
the Ben May Department
for Cancer Research
Cancer stem cells
UCCCC SCIENTIFIC PROGRAMS PROMOTE TRANSLATIONAL RESEARCH

The UCCCC plays a central role in coordinating the University of Chicago Medicine’s activities in cancer research, patient care, education, and community outreach. Our members, who specialize in all fields of cancer research, are organized into six scientific programs that focus on basic, clinical, and population research. These programs are complementary and promote collaboration among our diverse team of scientists and physicians who are committed to translating research to new diagnostic tests, more effective therapies, and interventions to prevent cancer.

FIGURE 7. UCCCC Scientific Programs Promote Translational Research
RAISING OUR PRESTIGE

The UCCCC has long been recognized as a leader in basic and clinical research, particularly for our contributions in the characterization of hematological malignancies such as leukemia, the development of new therapies for head and neck cancer, tumor immunology, and cancer genetics. In the last decade, we have gained international recognition for our personalized oncology programs, particularly in identifying patients at high risk for cancer and predicting response to cancer drug therapies. Our members are bestowed prestigious awards in recognition of these and other efforts that have brought the UCCCC to the forefront of cancer research. Below is a sampling of distinguished honors highlighting our members’ contributions toward improving patient care.

SUSAN LERNER COHN, MD
Treasurer of the American Society of Clinical Oncology

MICHELLE M. LE BEAU, PHD
Vice President/President-Elect, Association of American Cancer Institutes
Member of the Board of Directors of the American Association for Cancer Research

OLUFUNMILAYO OLOPADE, MBBS
American Association for Cancer Research 2011 Distinguished Lecture on the Science of Cancer Health Disparities

JANET D. ROWLEY, MD, DSC
Ernest Beutler Prize from the American Society of Hematology
Japan Prize for Healthcare and Medical Technology

MICHAEL MAITLAND, MD, PHD
Leon I. Goldberg Young Investigator Award from the American Society for Clinical Pharmacology and Therapeutics

RICHARD L. SCHILSKY, MD
Fellow of the American Society of Clinical Oncology

DAVID RUBIN, MD
Rosenthal Award for Patient Support and Care from the National Crohn’s and Colitis Foundation of America

LUCY GODLEY, MD, PHD
Elected Member of the American Society of Clinical Investigation
FIGURE 8. UCCCC by the Numbers, 2011

#1 RANKED U.S. NEWS & WORLD REPORT CANCER HOSPITAL IN ILLINOIS*

#15 RANKED U.S. NEWS & WORLD REPORT CANCER HOSPITAL IN THE NATION*

*Current Ranking

6200 NEW CANCER PATIENTS
526 PEER-REVIEWED CANCER-RELATED PUBLICATIONS
323 PEER-REVIEWED CANCER-RELEVANT GRANTS
320 THERAPEUTIC CLINICAL TRIALS
210 UCCCC MEMBERS
105 HOSPITAL BEDS DEDICATED TO CANCER PATIENTS
VITAL STATISTICS


- **$41,977,254** NATIONAL INSTITUTES OF HEALTH
- **$4,670,423** OTHER PEER-REVIEWED
- **$1,113,299** AMERICAN CANCER SOCIETY
- **$396,859** NATIONAL SCIENCE FOUNDATION
- **$21,012,067** NATIONAL CANCER INSTITUTE
- **$41,977,254** OTHER NATIONAL INSTITUTES OF HEALTH

**$69,169,902** PEER-REVIEWED CANCER RESEARCH GRANTS AWARDED TO UCCC MEMBERS IN 2011

FIGURE 10. Patients Enrolled in UCCC Therapeutic Clinical Trials by Disease Site in 2011

- **876** PATIENTS ENROLLED IN THERAPEUTIC CLINICAL TRIALS
- **142** STOMACH, PANCREAS AND LIVER
- **174** ADVANCED SOLID TUMORS
- **93** LEUKEMIA, LYMPHOMA AND MULTIPLE MYELOMA
- **104** HEAD AND NECK
- **84** LUNG AND MESOTHELIUM
- **19** SOFT TISSUE
- **14** KIDNEY, BLADDER AND URINARY TRACT
- **16** BREAST
- **6** OTHER

VITAL STATISTICS

**UCCC BY THE NUMBERS**

Addressing cancer from every angle, the UCCC is committed to bringing patients new hope through laboratory research, innovative clinical trials, and population research to prevent cancer. Our successes (see Figure 8) rely on the synergy between scientists and physicians who are dedicated to translating our scientific breakthroughs to state-of-the-art patient care.

**CANCER RESEARCH GRANTS ADVANCE PERSONALIZED MEDICINE**

Scientific discoveries and their translation from bench to bedside require significant investment. In 2011, our researchers received nearly $70 million in competitive peer-reviewed grant funding from the government and private sector to support 323 cancer research projects (see Figure 9).

**OFFERING INNOVATIVE THERAPIES**

The UCCC is a national leader in the development of clinical trials to test new anti-cancer therapies. Our drug development program is unique in the Chicago metropolitan area and is among the largest in the United States. Basic scientists work closely with translational and clinical researchers to conduct clinical trials with a strong focus on personalized therapeutics. Many of our trials incorporate pharmacogenomics, which evaluates how genetics influence drug response. Each year, the UCCC treats 800-900 patients (see Figure 10), who travel from throughout the world, on therapeutic clinical trials.
# Financial Report

**Beginning Balance**: $2,484,415

<table>
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<th>Income</th>
<th>Amount</th>
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<tr>
<td>UCCRF Contributions</td>
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<td>UCCRF Capital Campaign</td>
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<td>Boards/Auxiliaries</td>
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<td>Endowment Income</td>
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**Total Income**: $1,785,363

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<th>Expenses</th>
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<td>Personnel</td>
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<td>Services</td>
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<td>Supplies</td>
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**Total Operating**: $651,625

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<tr>
<td>Women’s Board</td>
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<td>Associates Board</td>
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<tr>
<td>Capital Campaign</td>
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</table>

**Total Allocations**: $1,333,324

**Total Expenses/Allocations**: $1,984,949

**Ending Balance**: $2,284,829

---

Period from 7/1/11-6/30/12
2011–2012
DONORS
We gratefully acknowledge those who have generously supported cancer research, clinical care, and patient-related services. Thank you for helping the UCCCC advance our mission to prevent cancer and personalize patient care. The following alumni, friends, foundations, and corporations have demonstrated their extraordinary loyalty and commitment through their gifts. These gifts include cash, matching gifts, securities, pledges, and pledge payments received July 1, 2011–June 30, 2012.
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MARY ELLEN CONNELLAN, MA
Executive Director, The University of Chicago Cancer Research Foundation

RAJAN GOPALAKRISHNAN, MS
Director, Informatics and Information Technology

HOYEE LEONG, PHD
Director, Scientific Communications and Strategic Partnerships

CHRISTINE MILLER, MA
Director, Finance

SUMATI MURLI, PHD
Director, Clinical Research Operations; Technical Director, Cancer Clinical Trials Office

CREDITS

EXECUTIVE EDITOR
Hoyee Leong, PhD

ASSISTANT EDITOR
Jane Kollmer

CONTRIBUTING WRITERS
Cassie Simon, CTR

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G Thomas Partners LLC, Lemont, Illinois

PHOTOGRAPHY
Serena Dawn Boggs
David Christopher

FOR MORE INFORMATION
+1 773 702 6180
cancer.uchicago.edu