

# FOX CHASE Forward

BROADENING THE CONVERSATION ABOUT CANCER | FALL/WINTER 2018

## A Pioneer of Prevention

Paul F. Engstrom retires  
after nearly 50 years  
at Fox Chase Cancer Center

## FORGING AHEAD

**P**ioneers make their own paths. They go where others have not ventured; they ask what others have not dared.

In their quest to seek new knowledge, to accomplish a goal, or to make a connection, they enrich themselves, but they also lead us all. They show us what is possible by breaking down barriers, opening our minds, and creating new opportunities.

In this issue, you will meet people who exemplify these qualities. They come from different backgrounds and have lived different experiences. What unites them is this: they each possess a sense of purpose that begins with their unique insight into the world around them and compels them to enact change.

They each have a story...

Paul F. Engstrom, the world-renowned physician with small-town roots, who helped build a nationally ranked cancer center and set the standards of modern cancer care.

The woman who turned to the Internet to create a vast community of patients with the same rare

cancer as herself to support each other and to share information.

The couple who appealed the decision of their insurance company based on nationally-accepted treatment recommendations to win the coverage they knew they deserved.

The entrepreneur who developed a software tool to enable others—and eventually, himself—to offer and receive prayers at times of crisis in their lives.

The young high school students who followed their love of science, not knowing where their interests would take them or how they would apply what they learned.

The laboratory scientist and the science educator whose novel approach to mentorship involves real, published contributions by high school students to scientific discovery.

The gardener who persevered through grueling treatments for endometrial sarcoma to show her daughters that it was possible not only to get through it, but to truly enjoy life after cancer.

The researcher who dedicated



her career to helping us understand more about the deadliest of gynecologic cancers, even at a time when women often were excluded from the focus of scientific research.

Join me in honoring these pioneers by reading their stories and carrying forth their message of leadership by example. Their actions reflect our mission at Fox Chase and represent our proud legacy as an institution that dedicates itself to the triumph of people facing cancer.

**Richard I. Fisher, MD**  
PRESIDENT AND CEO

## FOX CHASE Forward

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## FIFTH CONSECUTIVE MAGNET FOR NURSES

The Nursing Department at Fox Chase Cancer Center has successfully achieved its Magnet® designation for nursing excellence from the American Nurses Credentialing Center (ANCC). Fox Chase has held Magnet status continuously since 2000, when it became the first hospital in Pennsylvania to earn it. This is the fifth consecutive designation for Fox Chase.

The Magnet Recognition Program is regarded as the

“Earning Magnet status five consecutive times is a true testament to the nursing staff we have here at Fox Chase, who pride themselves on providing the best patient care day in and day out.”

— ANNE JADWIN, VICE PRESIDENT OF NURSING AND CHIEF NURSING OFFICER AT FOX CHASE

nation’s highest form of recognition for excellence in nursing. Less than 10 percent of hospitals nationwide have attained this designation. Among many areas of performance, applicants must demonstrate high scores on patient satisfaction, nurse satisfaction, adherence to standards for improving the quality of patient care, inter-professional collaboration, leadership of the chief nurse executive in supporting professional practice, and continued

competence of nursing personnel.

Magnet institutions pass a rigorous review requiring months of preparation, during which they must demonstrate superior nursing practice and excellence in patient care. They submit extensive data showing that they meet certain standards in the four key areas of transformational leadership, structural empowerment, exemplary professional practice, and new knowledge/innovation/improvements. ANCC appraisers visit high-scoring hospitals for a three-day assessment. During the site visit, hospital staff—senior management and all levels of

care providers and support staff—share feedback about how well the hospital meets patients’ needs and how well the providers and staff work together.

“Earning Magnet status five consecutive times is a true testament to the nursing staff we have here at Fox Chase, who pride themselves on providing the best patient care day in and day out,” said Anne Jadwin, vice president of nursing and chief nursing officer at Fox Chase. “We are proud to be among an elite group of institutions with this caliber of nursing practice and inter-professional collaboration.”



## FROM DISCOVERY TO LEGACY TO NEW OPPORTUNITY

Nearly 60 years ago, David Hungerford and collaborator Peter Nowell made a discovery that laid the foundation for the field of targeted cancer therapies. Their work ultimately helped transform what had been a universally fatal form of cancer (chronic myelogenous leukemia) into one for which 95 percent of patients are successfully treated. At the time Hungerford was still a PhD student.

Identifying the Philadelphia Chromosome – the first association between a genetic abnormality and

a type of cancer – was Hungerford's best known scientific accomplishment, but not his only one. He made several revolutionary contributions to the field of cytogenetics (the study of chromosomes) that are still used today. These include developing the method of using a small sample of whole blood to culture normal white blood cells and formulating a solution that made it possible to spread chromosomes on a microscope slide and maintain the integrity of their DNA. In 1970 he described how trisomy, the mutation associated with Down's

syndrome, developed in meiosis.

Although he died in 1993, Hungerford continues to be a force in cancer research through the David A. Hungerford Endowed Fund in Basic Genetic Research at Fox Chase Cancer Center. Alice Hungerford, David's widow, was a

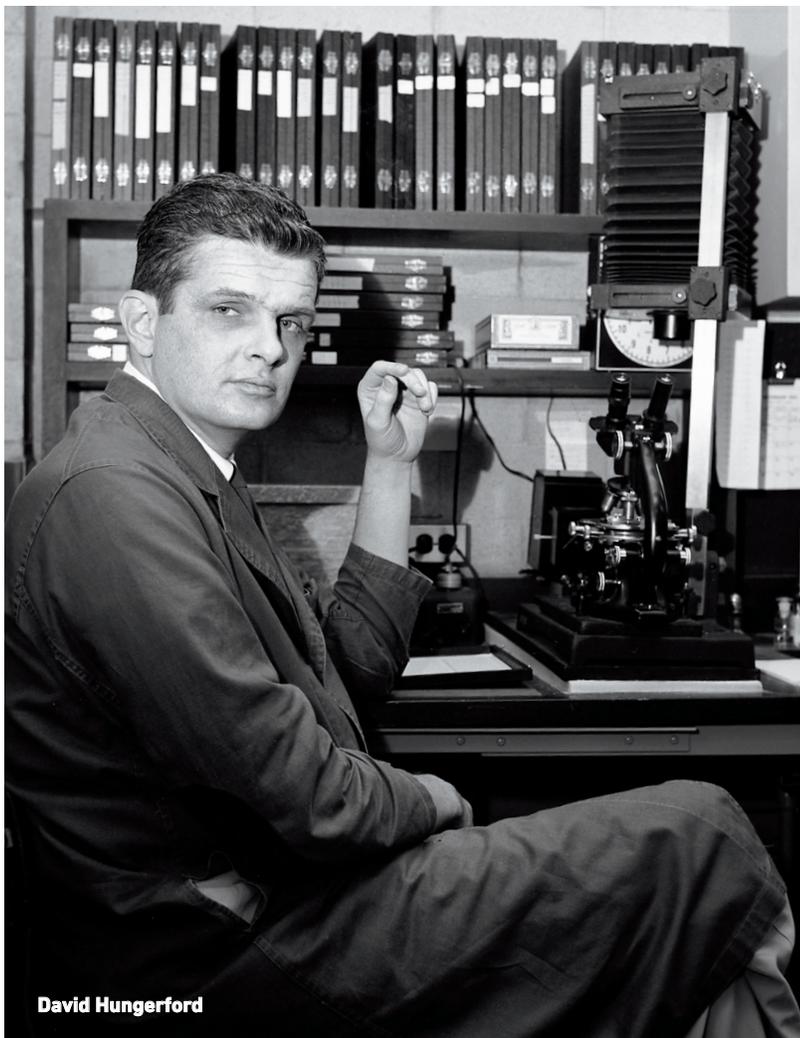
“David's discovery of the Philadelphia Chromosome was the first landmark discovery at Fox Chase, and it's always been important to me to keep his memory alive within the institution.”

— ALICE HUNGERFORD

longtime Fox Chase employee, too, and early in David's retirement she began working to ensure his legacy. She has maintained a continuous connection to Fox Chase through the endowment, which has helped several postdoctoral researchers in their basic science work.

“David's discovery of the Philadelphia Chromosome was the first landmark discovery at Fox Chase, and it's always been important to me to keep his memory alive within the institution,” she said. “Supporting the next generation of scientists at Fox Chase who build on his work is the best way to honor him.”

The microscope David was using when he identified the abnormality that became the Philadelphia Chromosome is on permanent display at Fox Chase.

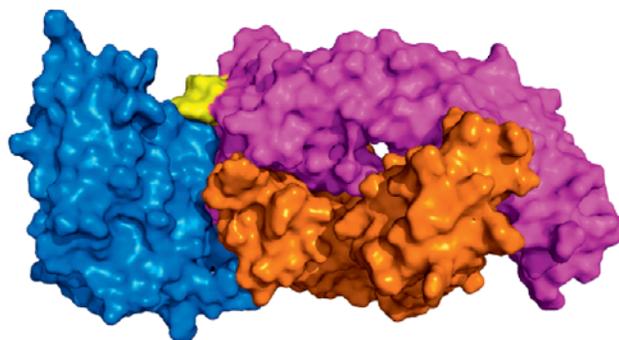


David Hungerford

PHOTO COURTESY OF FOX CHASE CANCER CENTER ARCHIVES

## BUILDING BETTER ANTIBODIES THROUGH CODING

A new computer-based method to design disease-fighting antibodies has been created by researchers at Fox Chase Cancer Center. The approach involved building new software that treats discrete pieces of the proteins as a collection of parts that can be adjusted and combined in new ways to design



“Modeling these interactions on a computer before creating antibodies for bench experiments will make research quicker, less expensive, and more likely to produce better antibodies.”

— ROLAND DUNBRACK, JR.,  
PROFESSOR, MOLECULAR  
THERAPEUTICS PROGRAM  
AT FOX CHASE

antibodies that more effectively attack infections, cancers, and other foreign bodies in the blood.

A paper detailing the method and the results of experiments testing the most promising new antibodies appears in the journal *PLOS Computational Biology*. Senior author Roland Dunbrack, Jr., a professor in the Molecular Therapeutics Program at Fox Chase, led the team, which built the antibody design method within the protein modeling computer platform Rosetta. The new method, already in use by several drug discovery research teams, is called RosettaAntibodyDesign (RABD).

“RABD allows scientists to simulate interactions between

antibodies and the antigens they are known to attack, and to swap in individual components to see if they can improve binding or other measures of effectiveness,” Dunbrack said. “Modeling these interactions on a computer before creating antibodies for bench experiments will make research quicker, less expensive, and more likely to produce better antibodies.”

The new program will greatly accelerate research on new drugs to treat cancer, HIV/AIDS, influenza, and many other diseases and infections. Currently, more than 75 antibody-based drugs are FDA-approved, and many clinical trials are underway.

## UNDERSTANDING THE SHORTCOMINGS OF CYSTOSCOPY IN MUSCLE INVASIVE BLADDER CANCER

Researchers at Fox Chase Cancer Center are seeking to solve a diagnostic dilemma inherent in current treatment recommendations for bladder cancer. Presently, the standard of care for all patients whose tumors have reached the muscle layer is radical cystectomy, the removal of the bladder. However, as many as 30 percent of

patients who undergo this surgery, especially after receiving chemotherapy, do not harbor residual cancer in their bladders.

With current methods and technologies, there is no reliable way to identify which patients can safely avoid the surgery. Cystoscopy is used, but falls short for some bladder cancer patients. The Fox Chase trial is designed to understand

why and how cystoscopy misses some cancers, and to see if there are other diagnostic tests that may work more effectively alone or in combination with cystoscopy.

“Radical cystectomy with urinary diversion is a high-risk, life-changing surgery, and our goal is to find a way to spare patients for whom it is not necessary,” said Alexander Kutikov, chief of the

“Huge opportunities exist to provide more accurate diagnostic evaluation for patients.”

— ALEXANDER KUTIKOV, CHIEF OF THE DIVISION OF UROLOGY AND UROLOGIC ONCOLOGY AT FOX CHASE

Division of Urology and Urologic Oncology at Fox Chase and principal investigator of the study.

This trial marks the first time the true negative predictive value of a normal cystoscopic evaluation is being identified, allowing researchers to establish how often bladder cancer hides under the mucosa and evades endoscopic



diagnosis. The trial remains open for enrollment, and the team is hopeful their findings will make it possible to develop better tools for identifying patients who can avoid

radical cystectomy.

“Huge opportunities exist to provide more accurate diagnostic evaluation for patients,” Kutikov said.

## CILIA ON TUMOR-ADJACENT CELLS CAN IMPACT SIGNALING THAT INFLUENCES CANCER GROWTH

A growing body of research shows that cilia, minuscule protuberances on the surface of some cells, play a pivotal role in determining whether cancer cells grow, spread, and respond to therapy. In a perspective article discussing current research published in the journal *Nature Reviews Cancer*, Erica Golemis, deputy chief science officer at Fox Chase Cancer Center, and co-authors from China and

Russia, report that a new understanding of cilia has implications for the behavior of cancer drugs and tumors.

Golemis noted that some tumors and targeted cancer therapies can manipulate cells to either generate cilia or repress them, and that the unexpected absence or presence of cilia leads to confused communication among the cells, which supports cancer growth.

According to the perspective, because cilia protrude into the extracellular space, they are positioned as spatially restricted hubs that can receive cues from other cells. Several non-cancer cells have important roles in carcinogenesis and can exchange information with cancer cells to alternately promote tumor growth, provide resistance to

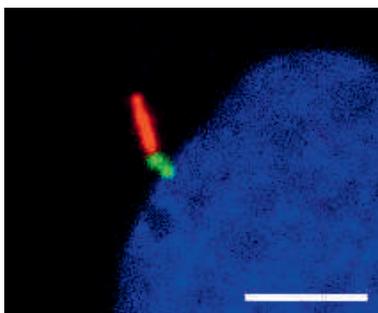
“Understanding the effects of tumors and drugs on ciliation is potentially paradigm shifting.”

— ERICA GOLEMIS, DEPUTY CHIEF SCIENCE OFFICER AT FOX CHASE

environmental stresses or cancer therapies, or support metastasis.

The findings on cilia may eventually be used to help direct clinical decision-making.

“We and others are starting to realize that some targeted cancer drugs and chemotherapies change whether cells in the tumor microenvironment have cilia,” Golemis said. “Understanding the effects of tumors and drugs on ciliation is potentially paradigm shifting.”



COURTESY OF ERICA GOLEMIS





# A Pioneer *of* Prevention

Looking back on the remarkable  
career of medical oncologist  
**PAUL F. ENGSTROM**,  
who retires after nearly  
50 years of service at  
Fox Chase Cancer Center

BY PAIGE ALLEN  
PHOTOGRAPHY BY COLIN LENTON

G

ROWING UP IN RURAL MINNESOTA, the middle son of a tiny town's only physician, Paul Engstrom seemed destined for a career in medicine. The front of the family home doubled as a doctor's office and family vacations were spent at medical conferences.

As a teen, Engstrom would assist his father in sewing lacerations and accompany him to accident scenes. He would pick through the wreckage hoping to find people his father could help.

But he didn't just become a doctor. He became a pioneer, building a legacy in cancer prevention and control, medical oncology, and mentorship that has impacted many thousands of lives. After a lifetime spent serving and caring for others, Engstrom will retire at the end of 2018.

### Seeking *and* Finding

LIKE MANY PEOPLE WHO HAVE ACCOMPLISHED EXTRAORDINARY things, Engstrom didn't set out to shape the field of cancer prevention and control. He was simply searching for solutions to problems and filling in where he was needed. It's what he has always done.

During residency at the University of Minnesota he gravitated toward treating the sickest patients at the institution. While on active duty at Tripler Army Medical Center in Hawaii, he was the only trained hematologist/oncologist, so he

**"Paul's career is exemplary in showing how a person can build and grow, creating new fields, developing younger talent, and doing work that truly matters."**

— BARBARA K. RIMER, DEAN OF THE UNIVERSITY OF NORTH CAROLINA GILLINGS SCHOOL OF GLOBAL PUBLIC HEALTH

led the efforts to care for all the cancer patients. At Honolulu's newly formed medical school, he filled in by teaching clinical science, giving lectures, and visiting with doctors in practice.

At the end of his Army service, Engstrom began looking for a cancer center to join. While visiting Philadelphia for a medical conference, Engstrom toured the Institute for Cancer Research and met its director, Timothy R. Talbot, Jr. .

"Talbot convinced me this small hospital attached to a cancer research center was the future," Engstrom said. "He was right."

With his wife, Janet, and three young children, Engstrom settled in Philadelphia in 1970. Just a few years later, the American Oncologic Hospital and Institute for Cancer Research merged to form Fox Chase Cancer Center.

**"He embodied the principles of fairness and excellence in science and in life. He demonstrated the importance of interacting with people outside of your own world."**

— TIM REBBECK, THE VINCENT L. GREGORY, JR. PROFESSOR OF CANCER PREVENTION, EPIDEMIOLOGY, AT THE HARVARD T.H. CHAN SCHOOL OF PUBLIC HEALTH

### Progress *Through* Prevention

IN 1971 PRESIDENT NIXON SIGNED THE NATIONAL CANCER Act, greatly boosting funding for cancer research. Still, for those on the ground, progress was maddeningly slow. While he and two other medical oncologists cared for their patients in the hospital, Engstrom thought there was more that could be done.

"It was clear to me we weren't making much progress in treating patients with advanced cancers," Engstrom said. "That has, of course, changed now with new science and the development of new treatments. But at the time I saw this need and I saw how we could correct it."

Engstrom began thinking about a summer during medical school when he had a public health fellowship at the California Department of Health. His work had nothing to do with cancer but everything to do with his eventual career in cancer prevention and control. At the epicenter of the mosquito-borne equine encephalitis outbreak, Engstrom's job was to cross-check mosquito levels and death certificates of children who died of suspicious diseases, and pull records to see if any blood tests had been done that would indicate encephalitis. By tracking mosquito levels and zeroing in on populations hit the hardest, it was possible to take precautions to prevent the disease from spreading. He had learned some of the most important lessons in epidemiology, and he wanted to employ that same logic in studying cancer.

At Fox Chase, he focused on cancer screening, creating one of the nation's first cancer prevention and control programs.

"Most doctors and oncologists in the 1970s were training to treat cancer, not necessarily to prevent it," said Carolyn Fang, co-leader of the Cancer Prevention and Control Program at Fox Chase. "He was one of the first to recognize that prevention was important. While this concept may seem obvious today, it was considered ground-breaking 40 years ago."

Engstrom knew that Philadelphia wasn't a level playing field in terms of receiving healthcare, so he tried to reach people in creative ways.

"In Philadelphia there's such a strong focus on medical expertise, cancer research, and care," he said. "It's one of the best places in the world to get medical care. It's also a place where many people do not have access to this care."

Seeing patients diagnosed with advanced cancers who might have been treated more effectively had they



Paul and Janet Engstrom

***“He was a pioneer in cancer prevention himself, and Dr. Engstrom encouraged others to challenge the status quo and pursue new directions in our work.”***

— MARY DALY, PROFESSOR OF CLINICAL GENETICS AT FOX CHASE

been found earlier, Engstrom knew he needed to bring screenings outside of the hospital. He secured grants and developed partnerships with community hospitals to get patients help before their diseases grew out of control. He also developed training programs for doctors at community hospitals and made clinical trials available outside of specialized academic hospitals.

“He was really aware of the need to integrate the community into this work,” Fang said. “He knew that in order for screening programs to be successful, we needed to understand the issues faced by that community and address potential barriers to screening.”

### *Prevention Branches Out*

IN THE FIRST YEARS OF THE CANCER PREVENTION AND Control Program, much of his work focused on smoking cessation and community screening.

Engstrom hired the best and brightest to explore opportunities in other areas of cancer prevention. In 1991 Mary Daly, a professor of clinical genetics at Fox Chase, established the Risk Assessment Program to help people with a family history of breast and ovarian cancer determine their risk and take steps to reduce it. One of the country’s first such programs, it has blossomed to serve more than 12,000 individuals. Over the years it has expanded to include people at risk for gastrointestinal, prostate, kidney, and endocrine cancers.

“Oncology is a lot more than just finding drugs to treat cancer,” Daly said. “You need to understand the origins, find ways to diagnose earlier, and prevent diagnoses altogether. He brought that into the mainstream of oncology.”

Still going strong more than 25 years later, Daly’s program combines Fox Chase’s clinical services and research programs. The goal is to reduce the risk of cancer for individuals, families, and communities. Many participants credit the Risk Assessment Program with saving their lives.

“He recognized the need to move past traditional screening prevention models,” Daly said. “He encouraged me to go forward with my vision, even though it was risky. At any time, he could have said I was barking up the wrong tree. Instead, he let me keep going.”

Engstrom also had the vision to deploy basic scientific research to advance cancer prevention, said Margie Clapper, co-leader of the Cancer Prevention and Control Program at Fox Chase. Under his guidance, she started one of the country’s first basic research programs focused on developing preventive interventions for individuals at the highest risk of cancer and detecting the disease in its earliest stages.

“He was visionary in recognizing the need for the prevention field to expand beyond only community-based behavioral interventions,” she said. “He’s always had his finger on the pulse of whatever was needed. What’s more amazing is his ability to bring his creative ideas to fruition. A vision is nothing without the resources and motivation to get things off the ground. Not only does he have the vision, he works tirelessly to make it a reality.”

As his efforts to integrate cancer prevention into other areas of science and medicine bore success, Engstrom created a blueprint for others to follow. David Weinberg, chair of the Department of Medicine at Fox Chase, met Engstrom during his fellowship to discuss how he could combine clinical epidemiology training with training as a gastroenterologist. He was the first gastroenterology fellow in Philadelphia to receive this combination of training and there wasn’t a clear path forward.

“He was one of the few doing cancer prevention and control work from the perspective of an oncologist and I

was looking to do cancer prevention and control work from the perspective of a gastroenterologist,” Weinberg said. “It was natural to go to him for advice on how to strike that balance.”

## In the Clinic *and* Around the World

AS ENGSTROM’S REPUTATION GREW, SO DID HIS INFLUENCE. As a member of several leading cancer organizations, he helped write the clinical care and treatment guidelines followed by physicians around the world.

He is a founding member of the National Comprehensive Cancer Network (NCCN) Clinical Practice Guidelines Committee, and has served the NCCN as chair and member of several committees through the years. He’s also served on the cancer prevention and screening boards of the National Cancer Institute, the American Society of Clinical Oncology, the American Association of Cancer Institutes, and the American Cancer Society.

“He doesn’t just know the answer. He’s created them and he’s created the standard of care that we all use,” said Crystal Denlinger, chief of the Division of Gastrointestinal Medical Oncology at Fox Chase. “He’s just a different breed of physician. You go to him when you’re stuck because he’s seen it all before.”

Engstrom’s impact has stretched beyond the borders of the United States as well. For three years he participated in a joint research project partially funded by the National Institutes of Health that studied smokers in Russia. He was instrumental in encouraging Russia to adopt some of the most stringent non-smoking policies in the world.

In clinical practice, Engstrom specializes in gastrointestinal cancer and neuroendocrine tumors. His interest in

**“His achievements have uniquely had a major impact on the care of patients across the cancer continuum, from prevention and early detection to treatment and outcomes; no one has done so in a more compassionate and humble way.”**

— MARGIE CLAPPER, CO-LEADER OF THE CANCER PREVENTION AND CONTROL PROGRAM AT FOX CHASE

the latter was sparked by their complex nature and rarity – so rare that many doctors in primary care may only see one in a lifetime. These cancerous growths in the cells of the endocrine and nervous systems can grow into tumors almost anywhere throughout the body, making them elusive and difficult to treat.

**“Paul has set the bar for what it means to be a doctor. He is compassionate, generous, and humble, all while pushing the boundaries of the field of cancer prevention. He leaves Fox Chase with a legacy as a physician, researcher, innovator, and mentor that is unmatched.”**

— RICHARD I. FISHER, PRESIDENT & CEO  
AT FOX CHASE CANCER CENTER

“For a long time, there was no treatment other than surgery, and if the patient didn’t get to a doctor in time for surgery to be an option, we could only treat the symptoms,” Engstrom said. “Unless you’re specifically looking for it, a patient could go years without being treated for it because the symptoms are the only thing being addressed.”

Patients with neuroendocrine tumors have come from around the world for treatment from Engstrom.

“He’s made a huge effort to teach us a lot about diseases we don’t usually see, like neuroendocrine tumors,” Denlinger said. “Not all retiring physicians would take the time to leave a lasting educational legacy to ensure his patient care continues, but that’s the kind of person he is.”

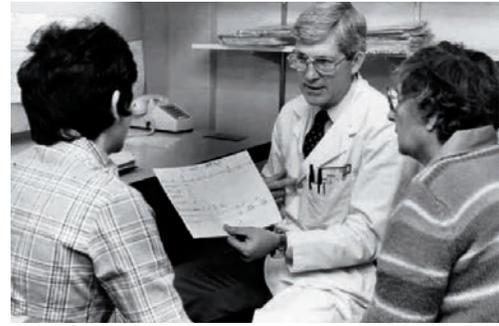
## A True Leader

OVER THE COURSE OF HIS CAREER, ENGSTROM HAS MENTORED dozens of researchers and oncologists. When he started the Cancer Prevention and Control Program an early area of focus was securing educational training grants.

“One of Dr. Engstrom’s most strategic and far-reaching decisions was to mobilize us to apply for the NCI’s most prestigious program project grants at that time, especially the Cancer Prevention Research Unit (CPRU), said Barbara K. Rimer, chair of the President’s Cancer Panel, and dean and Alumni Distinguished Professor of the University of North Carolina Gillings School of Global Public Health. We were awarded the CPRU grant and, suddenly, Fox Chase became one of the leading lights in cancer prevention and control.”

His vision made it possible for medical fellows, biostatisticians, epidemiologists, and behavioral scientists, among others, to collaborate in developing research programs and interventions.

“These were career-making opportunities. We worked together and with Paul in a way I have never experienced since then. There was such camaraderie, and a willingness to provide advice, feedback, and support,” Rimer said. “Together, we created new fields and made significant contributions to improving cancer prevention and control in populations. Paul’s leadership was fundamental to our success. I would not be where I am today without Paul Engstrom and will be forever indebted to him.”



Paul F. Engstrom through the years

**“His humility is impressive. He has strong opinions but he’s not afraid to change his mind or see his views evolve.”**

— DAVID WEINBERG, CHAIR OF THE DEPARTMENT OF MEDICINE AT FOX CHASE

Engstrom has always had a knack for helping others succeed.

“As a mentor, he challenged us to extend beyond our comfort zone, while always leading by example,” Clapper said. “He sees a person’s potential before it is obvious to others, and strategically places individuals in positions to foster their professional growth and optimize their potential.”

Many of Engstrom’s former trainees have gone on to lead cancer prevention and public health programs of their own, which has allowed his influence to benefit even more people.

“A lot of leaders in the field of cancer prevention got their start at Fox Chase under Paul Engstrom,” said Tim Rebbeck, the Vincent L. Gregory, Jr. Professor of Cancer Prevention, Epidemiology, at the Harvard T.H. Chan School of Public Health. “A lot of people left over the years and spread the knowledge they learned from him everywhere they went.

The creation of a whole cadre of investigators who are doing really incredible things, that’s the culmination of a really impactful legacy.”

### *A Family Man*

FOR ALL HE HAS ACCOMPLISHED AT FOX CHASE AND in the world, Engstrom is just as proud of being a husband, father, and grandfather. Like so much of his life, his family traces its roots to a hospital shift. As a medical student in 1960, Engstrom was called to the ICU one night to oversee the placement of an IV. When he arrived, Janet Johnson, a nurse, was waiting. After poking and prodding the patient to no avail, Engstrom turned to Janet, who placed the line perfectly on the first try.

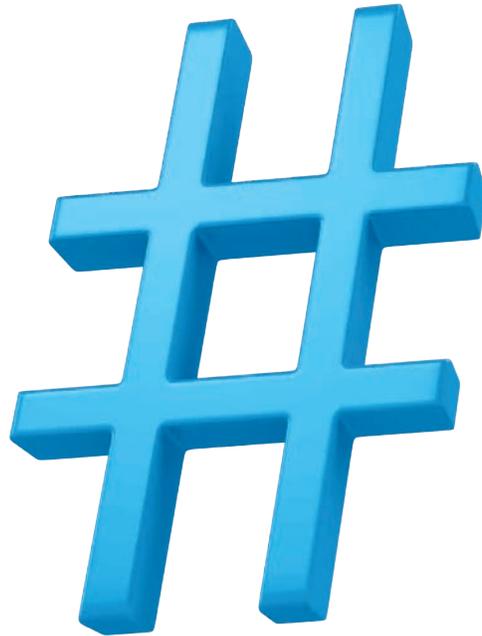
“I thought that anybody who was that good was worth keeping an eye on,” Engstrom said. “Eventually I worked up the nerve to call her and ask her out.”

The couple’s first date was to see a local production of *Kiss Me Kate*, sparking a lifelong love for theater and each other. Over the years they’ve visited nearly every state, cruised down the world’s most famous rivers, and traveled to Sweden and Norway, exploring the areas where his ancestors once lived.

The Engstroms have three children and eight grandchildren. Their daughter Karin and son David are both lawyers, while Maria followed in her father’s – and grandfather’s – footsteps and became a doctor. Two grandchildren are eyeing careers in medicine as well, something he encourages.

“There’s so much they can do in helping people in the field of medicine,” he said. “Medicine is a great career. It is still the most satisfying and the best opportunity to do well but most importantly to do good.” ♦

PHOTOS COURTESY OF PAUL F. ENGSTROM



# cancer

## How Technology Sparked a Medical Revolution

Over the past decade the Internet has changed the way people find music, mattresses, and even mates. It has also transformed cancer.

Nearly 90 percent of Americans spend time online regularly, up from about half in 2000. Health care has moved online along with the public. Patients, doctors, and researchers now have a much easier time finding information – and one another. The online universe has improved the patient experience, though determining which information is reliable and which is not can be challenging.



BY PAIGE ALLEN  
AND ANDREW BECKER



## In the Beginning

When LeAnn Lamb was diagnosed with GIST, a cancer of the digestive system that affects less than half of one percent of cancer patients, she hadn't heard of the disease. She certainly didn't know anyone else who had it.

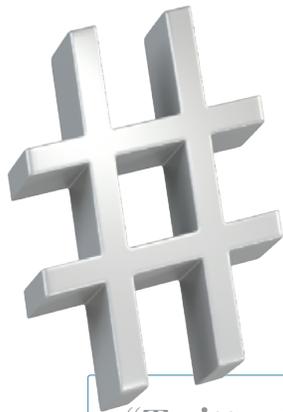
As she began treatment at Fox Chase Cancer Center, she looked for a patient support group but came up empty. It was the early 2000s and she wasn't very computer-savvy, but her husband suggested that she create her own support group online.

"GIST is so rare and very few people know what it is or even where to go," said Rick Lamb, LeAnn's husband. "GIST Support International evolved out of that need."

Within six months, 500 GIST patients had joined. As the Internet became more commonplace, the group swelled. LeAnn later created a Facebook group that now has more than 3,000 members.

"Mom told me about her website ... but I never really knew her impact until she passed," said LeAnn's daughter, Megan Craig.

When Lamb died in September



"Twitter is such an interesting platform because how far your voice goes is potentially unlimited."



DAVID Y.T. CHEN, UROLOGIC SURGEON AT FOX CHASE

2017, her family received an outpouring of support from around the world. Megan was so moved by the messages that she shared some of them at the funeral.

"Up until she lost her ability to speak, she was still trying to talk about her experience and share her journey," Craig said. "She couldn't always remember what day it was but she knew she wanted to communicate to that group. A lot of people have gained a lot of life from this support group."

## The Soapbox Goes Virtual

With the rise of social media, people are finding their voices amplified exponentially. Patients can share personal experiences and post reviews of doctors in the same way they might rate a restaurant or hair salon. Many doctors and scientists use social media to share news and connect with colleagues.

"Twitter is such an interesting platform because how far your voice goes is potentially unlimited," said David Y.T. Chen, a urologic surgeon at Fox Chase.

Chen regularly interacts with other physicians on Twitter, which he likens to a virtual doctors lounge, where meaningful conversations take place as participants rotate in and out. He also belongs to a doctors-only robotic surgery consortium on Facebook that allows him to view surgical procedures and learn ways to improve his technique.

"Somebody out there has seen it before," he said. "In a lot of situations that are rare or uncommon, it's hard to hear how people did or what transpired unless it's been published. With social media, you can put a call out asking if anybody has ever seen this?"

Like Chen, Wafik El-Deiry, deputy cancer center director and head of translational research at Fox Chase, embraces social media. Across Twitter, LinkedIn, and Facebook, he has more than 20,000 followers.

Social media has made it easy to find support and information, but El-Deiry and Chen say doctors and patients should proceed with caution and a healthy skepticism.

"Take the feedback with the level of weight you think is appropriate," Chen said. "For patients, there's a trove of information out there. As physicians, we need to be able to help discern which sites give legitimate information and which ones are less valid."

When patients believe incorrect information, it can create problems in the exam room.

"Google is not your doctor," said El-Deiry. "There's an art to the profession of medicine and doctors spend many years honing their skills. Internet research can make you well informed but it doesn't mean you've figured out your diagnosis or treatment. Medicine is not just fact. There are preferences, and wishes, and judgments that have to be made."

## Information Can Move Mountains

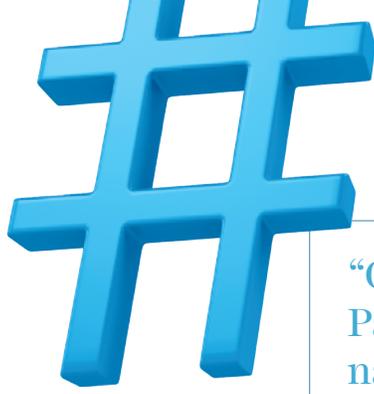
After John Schroettner's stomach cancer diagnosis in 2013, he and wife Danielle found reliable information online that helped influence his treatment options. As John prepared to start chemotherapy, Danielle researched the drugs his doctor prescribed and discovered that neuropathy was a common side effect.

"John already had some problems with neuropathy and he didn't need aggravation," she said. "I mentioned that to the doctor and he changed to a drug that didn't have that particular side effect."

Later, when John needed surgery, the couple wanted to travel from their home in Hawaii to Fox Chase in Philadelphia because they had family nearby. Their insurance company urged them to find an in-network surgeon in Honolulu or Los Angeles.

"Both the American Cancer Society and National Comprehensive Cancer Network recommended that we select a surgeon who has a fairly high volume of doing those procedures," Danielle said. "The surgeon at Fox Chase did between 15 and 20 of these surgeries every year and had done more than 100 over the years."

The fight with the insurance company threatened to delay



John's surgery, so the couple paid out of pocket for the surgery at Fox Chase while appealing the decision. Danielle sent eight pages of research to the company handling the appeal.

"The day after John was discharged, we found out we won the appeal," she said. "The research I did on the Internet helped me to bolster my case and we won."

John eventually died from his cancer, but Danielle has remained connected to Fox Chase despite the distance, making yearly donations and following the Center on social media.

### Intervention via Internet

Beyond facilitating better access to information and support, online communication has driven improvements in patients' quality of life.

Kuang-Yi Wen, an assistant professor in the Cancer Prevention and Control Program at Fox Chase, developed a text message program to help alleviate side-effect symptoms in breast cancer patients undergoing chemotherapy.

"Chemotherapy is a journey," Wen said. "Patients are dealing with nausea, vomiting, hair loss, body changes, and a lot of emotion. Text messaging was a way to connect the gap when they're home."

Patients in Wen's recent study received two text messages every day with content developed from the Fox Chase Resource and Education Center, the American Cancer Society, the National Cancer Institute, and other leading groups.

"They were getting bursts of information over time rather than all at once, and it was always on their phone to go back and look at," Wen said.

Wen said the reaction was overwhelmingly positive. Some asked for a program to guide them through other phases of treatment, including radiation and surgery.

**"Chemotherapy is a journey. Patients are dealing with nausea, vomiting, hair loss, body changes, and a lot of emotion. Text messaging was a way to connect the gap when they're home."**



**KUANG-YI WEN, ASSISTANT PROFESSOR IN THE CANCER PREVENTION AND CONTROL PROGRAM AT FOX CHASE**

"They want to feel supported, empowered, and in control," Wen said. "One patient told us the text messages were a daily support that she did not have otherwise."

### Coming Full Circle Online

In 2007 Lawrence James created an online prayer network for his Philadelphia church. The church had been sending out prayer requests via email, and James knew it wasn't the most efficient method. His company, Connexus Technology, built a software tool to receive prayer requests and distribute them to large groups. When it caught on, they built a more advanced web-based program, called PrayerConnexus, so more churches could use it.

"The church was using it and it spread around the city and around the world," he said. The vision was to unite people around the world in prayer and have a birds-eye view of how to strategically pray for people."

About a year after building PrayerConnexus, James found himself in need of prayers after he was diagnosed with a germ cell tumor. After initially keeping the diagnosis to himself, James went public on Facebook and PrayerConnexus, where he sent his own prayer request.

"In my experience, there's a tipping point when it comes to sharing your diagnosis," he said. "You're kind of guarded and private for a while but at some point, the cancer and what you're going through becomes part of who you are. When I hit that point, I wanted people to know so they could pray for me."

Sharing his experience as a cancer patient with others going through the same thing is something James values greatly.

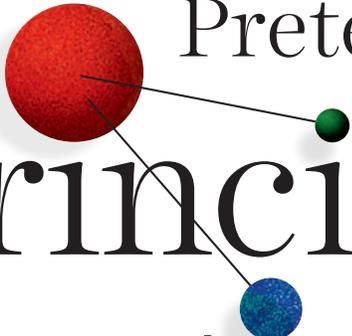
"Cancer can be a very lonely thing. I felt like I was in the same world as everyone else but I was on time out while others moved forward," he said. "If there's anything I can share to help others, I will. I'm a survivor and an advocate for survivors. I will be that forever and I voice that on social media." ♦



**"Google is not your doctor. Internet research can make you well informed but it doesn't mean you've figured out your diagnosis or treatment."**



**WAFIK EL-DEIRY, DEPUTY CANCER CENTER DIRECTOR AND HEAD OF TRANSLATIONAL RESEARCH AT FOX CHASE**



# From Preteen to Principal Investigator

The Fox Chase Cancer Center Immersion Science Program



There are as many different career paths in science as there are ways to interpret the word science itself. Angela Le always thought she would be a doctor, or maybe a researcher. Brian Milenki enjoyed science and math but never had any hands-on experience to know if he would like it outside the classroom. Yagouba Diallo was interested in science but didn't know how to turn broad interest into a career.

The trio attended different high schools and came from different backgrounds, but they bonded in a lab at Fox Chase Cancer Center. Now at Drexel University, each is pursuing a unique path in science and technology, bolstered by their participation as high school students in the Immersion Science Program (ISP) at Fox Chase.

Started by Alana O'Reilly, an associate professor in the Molecular Therapeutics Program at Fox Chase, and Dara Ruiz-Whalen, education director of the program, the ISP prepares high school students for careers in cancer research by getting them meaningfully involved in collecting scientific data on the role of nutrients in cancer signaling. Students learn by doing, and their work builds upon the foundation of O'Reilly's own research into how stem cells are regulated by food and how diet affects health – including cancer risk.

ISP provides opportunities well beyond expos and science fairs, allowing young people to learn and contribute

BY PAIGE ALLEN

ILLUSTRATION BY BRIAN STAUFFER



substantively. Their skill-building work involves building a body of data that may make it possible to design custom diets for cancer patients.

“What is a balanced diet? Every chemical you need for your cells to work together at the same time is a balanced diet,” O’Reilly said. “We’re taking what we did in the lab and are making it large scale as a way to discover the role of chemicals in cancer signaling.”

The combined teaching-crowdsourcing for data collection approach has so far led to the publication of two scientific papers using results generated by the students. More than 15 percent of ISP students have received authorship credit on a scientific paper.

Students have the freedom to study anything that fits the scope of the program. While that opens up a realm of possibilities, O’Reilly said students are often caught off guard by the realization that real-life science doesn’t always have a concrete answer.

“Many labs and expos aimed at students are designed to get the right answer,” she said. “They don’t realize that sometimes you don’t even know what the question is, let alone the answer.”

O’Reilly saw the success of getting students – especially from inner-city schools – interested in science and into the labs while pursuing her PhD at Harvard University. In an industry where careers can be made or broken by the relationship between mentor and mentee, O’Reilly wanted to create a system that allowed more students to flourish while receiving guidance.

Ruiz-Whalen was one of the first to join O’Reilly’s lab at Fox Chase and found that her desire to conduct and teach science meshed perfectly with O’Reilly’s vision.

“My focus has always been science education,” she said. “I took a dual major of secondary education and biology as an undergrad at Temple University. I fell in love with the lab and research but I wanted to teach lab science too. Here I have my dream job. It lets me do enough research while still being an educator.”

The expansive ISP is split into five primary programs, each targeted to a different group of students ranging from middle school to recent high school graduates.

In their programs, O’Reilly and Ruiz-Whalen emphasize collaboration and discourage students from falling into the competitiveness that science can encourage.

“We teach them how to work together because they are each other’s future,” O’Reilly said. “We’re creating a whole new generation of scientists who will do things a different way.”

Perhaps even more valuable than the hands-on scientific skills students learn are the life skills ISP imparts.

“When you’re in the lab, you have to constantly think on your feet,” Le said. “When a problem arises, you have to not only react quickly but also do so in a manner that does not completely destroy your samples. This skill has been tremendous in helping my growth in the lab.”

Contributing to the ever-expanding bank of cancer research is deeply personal to many ISP students. Several have brought parents or grandparents to Fox Chase for treatment and have used that personal connection to motivate their research.

“It makes for an emotional presentation day,” Ruiz-Whalen said. “In the selection process we had one student talk about her dad’s experience with cancer and she spoke from the heart. During her presentation, she was speaking to a whole room but she was really talking to one person, her dad.”

“When a loved one is sick, so many of these kids want to help but they don’t know what to do,” O’Reilly said. “We want to empower the youth and give them the tools to make a difference.”

For Milenki, knowing that he contributed to cancer research at such a young age is overwhelming. His ISP project explored the possibility that aberrant cancer signaling pathways could be corrected through a “hard restart” in which a drug shuts down the gene driving the cancer and normal cell activity is restored by diet modification. Milenki’s work is the subject of a manuscript in preparation and forms the basis of preliminary data for a National Institutes of Health grant in preparation.

“For such a young student to actually give back to the world and have research that can actually mean something is incredible,” he said. “It feels like you belong to something bigger than you and like you contributed something to solving a problem that affects every family in the world.”

“Many of our students are able to publish scientific articles, which allows them to get their ideas into the community and their voices heard.”

— ALANA O’REILLY,  
ASSOCIATE PROFESSOR OF MOLECULAR  
THERAPEUTICS AT FOX CHASE

### Finding Their Way

For Le, participating in ISP opened her eyes to a career trajectory she had never considered. Originally she wanted to be a doctor, but realized it would be too emotional for her. She set her sights on becoming a researcher and thought maybe she could discover something she could name after herself – Le Cure had a nice ring to it. Now at Drexel, she is studying materials science and engineering.

“ISP showed me a way to make my own path,” she said. “I am interested in pursuing a career at the crossroads of



**Alana O'Reilly (right), scientific director of the Immersion Science Program program at Fox Chase, and Dara Ruiz-Whalen (left), education director of the Immersion Science Program**

science and teaching. I hope to combine my love of science and art to teach students in a new, creative way.”

Le’s project focused on improving wound healing for patients on chemotherapy. She developed a process to test nutrients for their ability to enhance or suppress healing.

After participating in the research course, Le came back to ISP as a fellow, meeting both Diallo and Milenki. When they both began at Drexel, Le kept an eye out for them. Another student who Le met in the program, Sonam Saxena, also attends Drexel, and the four have become friends.

“I’ve made such strong friendships and found incredible mentors through this program,” Le said. “The community of ISP scientists I have become part of is so supportive and with the growing STEM movement, has been crucial in spreading the message of how to make a difference in STEM.”

Growing up in North Philadelphia, Diallo didn’t have many opportunities to develop his interest in science. Seeking a summer program that would broaden his experience and understanding, he came to Fox Chase through the recommendation of his biology teacher at The Academy at Palumbo.

“The Immersion Science Program inspired me to achieve greater things,” he said. “My high school was the base but ISP was the catalyst.”

Diallo worked on multiple ISP projects, including one aimed at mapping the precise location of binding of a nutrient derived from soy products to a candidate target protein identified by another ISP student. The pair worked together to develop a project where Diallo did the molecular modeling to understand how the nutrient might alter protein function. Other ISP students have continued to build upon this project.

Connecting with Roland Dunbrack, a professor at Fox Chase who is internationally renowned for his work on computer modeling of proteins, opened another opportunity for Diallo. He worked in Dunbrack’s lab for two years, studying coding and receiving mentoring from the team.

“Because of what they taught me, most of the coding I do for my coursework is easy compared to what I did in the lab,” he said.

Milenki was drawn to science in middle school but never thought he would do anything with it. In high school, he liked science and math classes more than anything else he was studying. At Drexel, he is studying business and engineer-

ing. Though he’s not exactly sure how he wants to use his degree, he credits the ISP with confirming his desire to become a chemical engineer.

“The program is truly one of only a few ways students from our area can get real hands-on experience in a lab,” Milenki said. “This is the first chance that kids actually have to do something, learn something new, pursue an interest. It can give them a passion or a motivation to achieve more than they ever thought they could. It really validated and confirmed my interest in the field of science.”

Milenki is grateful for the numerous opportunities that have opened up as a result of his participation.

“I talked about the ISP during my scholarship interviews, my co-op interviews, and my study abroad essay,” he said. “Thanks to my experience, I received a large scholarship from Drexel, a Drexel fellowship, entrance to the honor college, and a unique perspective. I made many friends and people I can rely on.”

Opening students’ eyes to new experiences and opportunities is what O’Reilly and Ruiz-Whalen hoped for when they began the program. In April 2018, 20 ISP students and teachers were invited by the Genetics Society of America to attend the Annual *Drosophila* Research Conference in Philadelphia. Attending the conference gave students and teachers the chance to participate in workshops, seminars, and poster sessions, and listen to a special lecture by Michael Young, a 2017 Nobel laureate in Physiology and Medicine, who studied fruit flies to uncover the molecular mechanisms that control circadian rhythms and sleep.

“We want students, no matter where they’re from or what school they go to, to know there are doors to a future in science,” Ruiz-Whalen said. “Even if it’s a door to a hallway with more doors, that first door has been opened and that’s so important.” ♦

# SOWING NEW STRENGTH

BY PAIGE ALLEN

**P**eggy McCaughey spends hours in her garden, nurturing blooms, pulling weeds, and pruning shrubs. When she began having chronic back aches a few years ago, she figured it was from all the yard work. Cancer never crossed her mind.

After a hysterectomy in 2010, her pathology reports showed high-grade endometrial stromal sarcoma confined to the uterus wall. She was referred to an oncologist who told her not to worry; the surgery was the only treatment she needed. She just needed to come back in six months for a check-up.

Before that follow-up appointment, the back pain returned. After a routine colonoscopy – her first – she was in such crippling pain she feared her bowel had been perforated. She was rushed to the emergency room, where scans revealed a large tumor leaning on her kidney. Finally, she knew the source of her back pain.

At Fox Chase Cancer Center, McCaughey saw Alexander Kutikov, a urologic surgeon, who quickly realized the tumor was a recurrence of her endometrial sarcoma. He brought in surgical oncologist Jeffrey Farma and medical oncologist Margaret von Mehren, who started McCaughey

on an intense chemotherapy regimen.

“It was tough to keep a positive attitude during all of this,” she said. “I had two daughters at home and I knew I just had to get through it. I always called it the beast, and I was going to get this beast out of me.”

During chemotherapy, McCaughey’s weight dropped to almost 100 pounds and the medicine caused her to have hallucinations. She was scheduled to have six rounds of chemotherapy but couldn’t complete them all. Perhaps most difficult was being away from her family; she needed to be hospitalized for several days during each round of treatment.

Her husband, Hugh, took care of their two daughters at home, and McCaughey’s brother and sister helped care for her.

“When my sister found out I was sick, she stopped working and came to help me. She was my transport to and from the hospital and she would keep me company when I was in the hospital,” she said. “In the evenings after people left, I would be alone in my hospital room and my brother would just show up to keep me company. I was really lucky and blessed with my family.”

The long days in the hospital had McCaughey itching to get

back home and into her garden. She found relief in the compassion of the pastoral staff, who would sit and pray with her, and the nurses, who helped her get her fix of nature in the hospital courtyard.

After months of chemotherapy, McCaughey was disappointed to learn that her tumor hadn’t shrunk enough to be surgically removed. She asked to try radiation with Shelly Hayes, director of Fox Chase’s Buckingham campus, and though her doctors were skeptical, they agreed to try.

Radiation shrunk the tumor just enough that Farma and Kutikov believed they could operate successfully. The surgery took place on a Friday and McCaughey was expecting to hear the results on Monday. She was shocked when Kutikov stopped by her hospital room over the weekend to let her know the surgery had been a success.

“I felt so special that he cared enough to come out and tell me that and not make me wait until Monday,” she said. “It was just the greatest feeling.”

It seemed she was ready to resume her life and return to her garden, until a nagging bump on her leg that she thought was a bug bite changed color. Farma referred her to the dermatology department at Fox Chase. A



“I had two daughters at home and I knew I just had to get through it. I always called it the beast, and I was going to get this beast out of me.”

— PEGGY McCAUGHEY, PATIENT AT FOX CHASE

biopsy revealed sarcoma, leading to another surgery. She still regularly sees nurse practitioner Jill Seely for check-ups on her leg and management of skin issues caused by chemotherapy.

Finally cancer-free, months of radiation and chemotherapy had taken their toll and she had a long way to go in regaining her strength. Hayes had started a group for cancer survivors at the YMCA in Doylestown, and suggested McCaughey join. There, she worked hard with a team of trainers.

“When I finished my treatment, I was very weak. I couldn’t drive or

even walk up the street by myself,” she said. “This program was so great and it was nice to connect with other cancer survivors who were going through the same process.”

Six years later, McCaughey has been back to full strength for a long time. In October 2017, she and Hugh celebrated their 30th wedding anniversary.

They traveled to Ireland so Hugh and his bagpipe band could perform in the St. Patrick’s Day Parade in Limerick.

“To be out with my husband was amazing,” she said. “We were

able to sightsee, visit castles and just explore. We’re both Irish and I’m hopeful that we can make it a family affair next time and bring our girls and our son-in-law.”

Both daughters have been inspired by their mom’s journey. Hannah, who was recently married, changed her major to nursing after seeing the impact nurses had on her mom. Younger daughter Grace – a survivor of childhood brain cancer – is studying art therapy with the hopes of working with young cancer patients.

McCaughey has taken up painting and helps newly diagnosed patients as part of Fox Chase’s new Patient-to-Patient Network. She’s also been able to return to gardening. She spends her time planting herbs, tending to her vegetables, and chasing away the groundhogs that like to munch on her plants. And now she is confident that any back pain is just from hard work.

# BREAKING DOWN BARRIERS

BY PAIGE ALLEN

Although she has worked at Fox Chase Cancer Center for two decades, Denise Connolly doesn't often get to meet the patients undergoing treatment two floors below her lab.

Connolly's research is focused on gynecologic malignancies, specifically ovarian cancer – the most lethal, though not the most common gynecologic cancer. Some of the most fundamental questions about ovarian cancer remain unanswered, including where and how many of the tumors originate.

"Ovarian cancer doesn't behave like other cancers in a lot of ways," she said. "Not understanding the tumor origin, you're kind of behind the 8 ball. Understanding where a tumor is developing may allow us to explore different, more effective treatment options."

Long interested in science and the natural world, Connolly earned her PhD in microbiology. She felt drawn to disease research and completed two postdoctoral fellowships: one in cancer biology at the Mayo Clinic in Rochester, Minnesota and a second in molecular pathology focusing on gynecologic malignancies at Johns Hopkins in Baltimore.

"I grew up in a time when there was a lot of research focus on men," she said. "A lot of women were excluded and I thought it

wasn't fair that our diseases hadn't been studied."

The origin of ovarian cancers has been a subject of intense study for more than a decade. Some cancers that are diagnosed as ovarian actually originate in the fallopian tube. Connolly recently received \$170,000 from the Bucks County Chapter of the Fox Chase Board of Associates to further this work, using unique mouse models developed in her laboratory to look into basic cellular signaling pathways, how those pathways may change, and why cancer cells originating

Connolly has led the way in changing how ovarian cancer is understood. Her lab pioneered the first transgenic mouse model that develops spontaneous ovarian carcinomas, making it easier for scientists everywhere to study ovarian cancers. They also found that what seemed to be ovarian tumors were originating in the oviduct – the mouse equivalent of the fallopian tube.

Dawn Byers is not a scientist, but she has been asking many of the same questions as Connolly. After a string of doctors misdiagnosed her

"I grew up in a time when there was a lot of research focus on men. A lot of women were excluded and I thought it wasn't fair that our diseases hadn't been studied."

— DENISE CONNOLLY, ASSOCIATE PROFESSOR IN THE MOLECULAR THERAPEUTICS PROGRAM AT FOX CHASE

in the fallopian tube travel to the ovary and present as primary ovarian cancer.

"Why do these cells have such a strong tendency to travel to the ovary and present as primary ovarian cancer?" Connolly said. "With the grant we're exploring ways to further understand the biology of the fallopian tubes."

symptoms as menopause, Celiac disease, and even a prolapsed uterus, Byers finally came to Fox Chase, where she was diagnosed with ovarian cancer. After starting treatment two floors below Connolly's lab, Byers learned her ovarian cancer had originated in the fallopian tube.

Frustrated by the meandering path that led to her diagnosis, Byers



Denise Connolly

knew she wanted to help others.

“I don’t want any other woman to have a late-stage diagnosis like I did,” she said. “I vowed I would spend the rest of my life finding a way to make sure other women don’t go through that.”

Byers called Connolly out of the blue to see if they could help each other. After that first phone call, Connolly invited Byers to tour her

lab and see first-hand how she and her team try to better understand cancer and ultimately make it possible to develop more effective treatments.

The Byers family has long supported the Bucks County Chapter of the Board of Associates. When Byers was diagnosed in 2017, the Chapter had already decided to fundraise for Connolly’s ovarian

cancer research. So Byers turned to friends and family, and together with the Board members, they raised enough money to support the project for a full year.

“It’s going to get her to the next level,” Byers said. “We know that some of the answers and solutions we seek may still be years away. But if you don’t start, you’ll never get there.”

# HELPING DONORS HELP THEMSELVES

BY LISA BROIDA BAILEY

When asbestos insulator Pat Eiding approached Fox Chase Cancer Center researcher Joseph R. Testa in 1991 about funding his mesothelioma research, neither could have predicted how much they would help each other – or the friendship that would ensue for more than two decades.

Serving as president of the International Association of Heat and Frost Insulators and Allied Workers Local 14 – who work with asbestos on a daily basis – Eiding noticed that some of his co-workers were becoming deathly ill. In the 1960s and 1970s, researchers had made the connection between prolonged exposure to asbestos fibers and mesothelioma, an aggressive cancer of the cells lining the chest and abdominal cavities that kills 3,000 Americans each year.

“I was curious as to why it was affecting some of our members’ families and not others,” Eiding said. “As President of the Local Union 14, I felt compelled to help my fellow workers and get to the bottom of this. To honor the many members we’ve lost - 64 in the last eight years alone – we created a memorial page on our website. It is heartbreaking.” With a strong conviction, he started a small fundraiser in 1991 at the Union hall to raise money for mesothelioma research.

With his humble earnings in hand, Eiding approached researchers at several Philadelphia institutions who were studying mesothelioma. “All but one turned me away,” he said.

Testa, the Carol & Kenneth E. Weg Chair in Human Genetics and chief of Genomic Medicine at Fox Chase, had a soft spot for these proactive, hard-working men, and agreed to help them.

“All of the men in my family worked as operating engineers or construction workers, and I recently lost an uncle due, in part,

raise the bar on their fundraising efforts and held their first annual golf outing in 1994. Over the next 23 years, they convinced sister locals in the mid-Atlantic region to host golf outings to support Testa’s lab, including the Laborers’ District Council of Philadelphia, the New York-New England Insulators Conference, the Baltimore-Washington Insulators, Harrisburg Local 23, Newark Local 32 and Wilkes-Barre Local 38.

“Having their support has been crucial to the success of my lab,”

“As President of the Local Union 14, I felt compelled to help my fellow workers and get to the bottom of this.”

— PAT EIDING, PRESIDENT OF THE INTERNATIONAL ASSOCIATION OF HEAT AND FROST INSULATORS AND ALLIED WORKERS LOCAL 14

to asbestos exposure in the Navy and as an operating engineer. In fact, I was the first person in my family to graduate from college,” Testa said. “These guys are the salt of the earth. The most genuine people you could meet.”

Mesothelioma often presents with no symptoms, so by the time it is diagnosed, it is usually too late to treat successfully. After learning more about the disease and the progress in Testa’s lab, the Local 14 members began to

said Testa. “Government funding is very competitive, and without it, many labs are forced to shut down or reduce staff. Funding from the Local 14 has ensured job security for the members of my lab and allows us to focus on research rather than constantly worrying that there might be a lapse in grant funding.”

Since its first golf outing, Local 14 has raised more than \$2.4 million for mesothelioma research at Fox Chase. “This is truly



**Joseph R. Testa (middle), with Local 14 Union officials, Pat Eiding (left) and Stephen Pettit (right)**

incredible when you consider the folks raising this money. They are operational engineers – not fundraisers,” Testa said. In addition to philanthropy, the Union members also donated their own tissue samples to his research.

“In 2011, my lab published results of a study linking the inheritance of a mutated gene, BAP1, to the risk of developing mesothelioma,” said Testa. With this information, he finally had something new to offer the Union members who had provided so much support to his lab over the years. Working with Fox Chase, he arranged to offer free genetic testing to the Union members.

He now screens Local 14 workers for both BAP1 mutations and serum marker levels. The blood draw is held at the Union Hall, and the goal is to learn if any members are at

increased risk of mesothelioma due to a genetic alteration, or have early signs of disease onset based on the levels of specific serum markers.

“Dr. Testa is one-of-a-kind. Most researchers would accept our donations to fund their research, but he took it one step further. He spent time getting to know our members, educating them on mesothelioma research and offering them the opportunity to learn if they were at increased risk,” Eiding said. “With increased education by our partners, mesothelioma rates are declining due to better safety measures and informed engineers.”

In 2001, Eiding took a new position as President of the Philadelphia Council AFL-CIO. When he stepped down from his role with the Local 14, he turned over the reins to Marty Campbell, who was later replaced by Stephen Pettit, the business manager for Local Union 14. “Our relationship with Dr. Testa and Fox Chase is rock solid and we will continue to support his work for as long as we can – or until we find a cure,” Pettit said. The Local 14 hosted its 24th annual golf outing on September 28, 2018.

*For more information on how to support their efforts, visit [www.local-14.org](http://www.local-14.org).*

#### SUPPORT OVER THE YEARS

With funding from the Local Union 14 over the years, Testa’s laboratory has:

- Uncovered the genetic hallmarks of mesothelioma, which may lead to new targeted therapies.
- Discovered a critical genetic factor, BAP1, for screening asbestos workers and certain cancer-prone families to identify those individuals at increased risk of mesothelioma and other tumors.
- Determined that certain anti-inflammatory drugs can help prevent or slow down the onset of mesothelioma.
- Created mouse models of mesothelioma that are beneficial in rapidly identifying which therapies are more likely to work in humans, since few hospitals have sufficient numbers of mesothelioma patients to run clinical trials.

## REMEMBERING GERALD E. HANKS

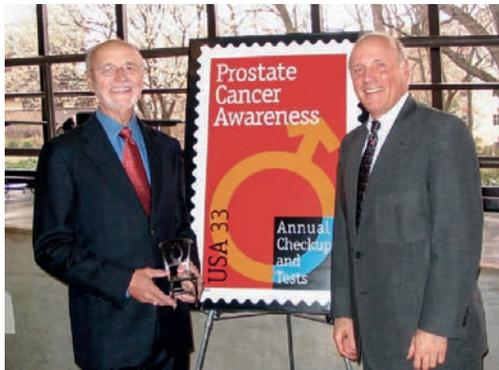
**G**erald E. Hanks was a giant in the world of radiation oncology and oncology in general, which can't be said about just anyone. He died in December 2017 at the age of 83.

For those who were privileged to know him, work with him, learn from him, and call him a friend, he will truly be missed. For many, caring for patients and

**“His legacy continues with the many residents and faculty he trained and mentored and whose careers he promoted, as well as the many men who benefited from his innovative and visionary clinical research.”**

hopefully curing their cancer is more than enough for their careers. But for Hanks, this was just the beginning.

Hanks was born in Ellensburg, Washington. He graduated from Washington State College with a basketball scholarship and received his medical degree from Washington University in St. Louis. At the time of his medical



Gerald Hanks (left) with Bob Young

education, radiation oncology was not a separate medical specialty. Students who were interested in treating cancer with radiation received training to become therapeutic radiologists.

Hanks became one of the first three residents in the United States to be trained specifically as a radiation oncologist at Stanford University. During his career, Hanks held academic faculty appointments at Stanford, the University of North Carolina, the University of California-Davis, the University of Pennsylvania, and Fox Chase Cancer Center.

Beginning in 1985 he served as chairman of the Department of Radiation Oncology at Fox Chase for 16 years, until he retired from medicine in 2001. He is credited with establishing the department's

national prominence, and was honored by Fox Chase with the creation of the Gerald E. Hanks, MD, Endowed Chair in Radiation Oncology, which is held by Eric M. Horwitz, chair of the Department of Radiation Oncology at Fox Chase.

At Fox Chase, his technological advancements included the first

routine use of CT and MRI in planning radiation treatment in the United States and the use of ultrasound to improve the accuracy of each daily treatment.

Hanks devoted his medical career to improving outcomes for men with prostate cancer. His legacy continues with the many residents and faculty he trained and mentored and whose careers he promoted, as well as the many men who benefited from his innovative and visionary clinical research.

He is survived by his wife, Barbara Fowble, four children, 10 grandchildren, and one great-grandchild.

In March 2018 a symposium was held in his honor at which colleagues from Fox Chase and around the country gathered to pay tribute.

## FOX CHASE CANCER CENTER NURSES GO TO HAITI

In addition to their duties caring for patients, many Fox Chase Cancer Center staff volunteer their time to those most in need. Recently, two nurses and a doctor made a volunteer medical trip to Haiti, where they provided an array of medical services to those in desperate need of care. Nicole Seeley and Sandi Wetherbee from Fox Chase spent a week working with an occupational therapist, a special needs teacher, and three other nurses, providing mobile medical clinics in Onaville, a town outside of Port-Au-Prince that was established for displaced people who had lost everything in the 2010 earthquake. They spent two additional days caring for children who had been rescued from slavery, and another day performing routine well baby check-ups. On their plane ride home, they ran into Philip Abbosh, a urologic oncologist at Fox Chase who had been in Haiti training urology surgeons.



The Fifth Annual *In Vino Vita* Wine Auction



## IN VINO VITA SUCCEEDS FOR A FIFTH TIME

On April 21, 2018, more than 550 individuals, including industry leaders and philanthropic champions of the Philadelphia community, gathered at Vie in Philadelphia for Fox Chase's signature fundraising event, *In Vino Vita*. The event raised \$1.7 million to support efforts to revolutionize the delivery of patient care at Fox Chase. One of the hallmarks of *In Vino Vita*

is the special pledge, in which attendees band together to support a worthwhile project. This year the special pledge focused on advancing patient care. Funds will be used to acquire new equipment, technology, treatment, and facilities to further improve the patient experience. Some of these funds have already been used to purchase Auris Health's Monarch™ Platform, a robotic bronchoscopy technology.

## FOX CHASE CANCER CENTER OPENS OUTPATIENT ONCOLOGY CENTER

Fox Chase Cancer Center East Norriton – Hospital Outpatient Center began operations on May 8 in Montgomery County. This dedicated cancer center, which is located on the campus of Suburban Community Hospital at 2701 Dekalb Pike, offers patients a broad range of cancer care services in Philadelphia's densely populated western suburbs.

It offers radiation oncology and medical oncology services for a variety of cancer types, as well as

surgical consultations for most cancers. The new center also offers access to nurse navigators, who make sure patients are seen by the appropriate cancer care specialists, clinical genetics services, and access to support services.

The East Norriton location has two full floors of recently constructed space, including a linear accelerator for radiation treatments, with seven exam rooms, an infusion center with seven infusion chairs, and a peaceful garden where patients and caregivers can relax.



**Robert Uzzo** received the SUO medal from the Society of Urologic Oncology.



**Eric Tetzlaff** received the 2018 Publishing Award from the American Academy of Physician Assistants.



**Sanjeevani Arora** received a Career Development Award from the Department of Defense.



**Paul F. Engstrom**, received the Lifetime Achievement Award for Cancer Prevention from the Prevent Cancer Foundation.



**Margaret Bellerjeau** received the Lifetime Achievement Award from the American Society for Blood and Marrow Transplantation.



**Anna Marie Skalka** received the William Procter Prize for Scientific Achievement.



**Phillip Abbosh** received the Bladder Cancer Advocacy Network's 2018 BCAN Young Investigator Award.



**Joan Font-Burgada** received the 2018 Alumni of Excellence Award from the Institute for Research in Biomedicine Barcelona.



**Jennifer Reese** was named a Putnam Scholar by the Academy of Communication in Healthcare.

# CREATING THE MODERN CANCER CENTER

BY KAITLYN OBERG

Fox Chase Cancer Center's Talbot Research Library is named in memory of Timothy R. Talbot, Jr. but his true legacy is the entire cancer center. In fact, the notion of a comprehensive cancer center was Talbot's innovation.

In 1957 Talbot succeeded Stanley P. Reimann as director of the Institute for Cancer Research. He guided the Institute for the next 20 years, culminating in the merger with the American Oncologic Hospital that created Fox Chase Cancer Center. He then became the new cancer center's first leader.

Talbot was a visionary whose mark on the world of cancer continues to grow even 30 years after his death, and it almost didn't happen. He initially enrolled in college with plans for a career in engineering. As an undergraduate he discovered his passion for biology, and decided to become a physician. In 1941 the newly minted doctor entered the U.S. Naval Reserve, where he conducted medical research. Following his service, Talbot embarked on a cancer research career that led him to stints at Memorial Sloan-Kettering and a predecessor of Boston University Medical Center. In 1951, he returned to Philadelphia to join the University of Pennsylvania School of Medicine and settle down in the suburbs with his wife, Mary.



In 1956, Talbot received a National Cancer Institute fellowship to study chemotherapy in London. During his fellowship, Anthony H. Whitaker, president of the board of the Institute for Cancer Research, recruited him to replace Reimann, who was retiring.

As director, Talbot planned for a future which largely remains in place today. Years into his tenure he said, "I don't think I would have come to this campus if I didn't have this rather fuzzy but persistent dream of basic biomedical researchers and clinicians working together in an interdisciplinary community to study the problems of cancer."

In addition to building a

**Timothy R. Talbot, Jr. (far left), unveiling plans for the new American Oncologic Hospital building**

community that encouraged interdisciplinary collaboration, he emphasized the importance of institutional character. He endeavored to create an environment that nurtured creative science and the innovative spirit of individual researchers. Beatrice Mintz, the Jack Schultz Chair in Basic Science, said that Talbot's, "quiet encouragement set the tone of the institution and fostered an appreciation of originality and quality over mere productivity."

While building his ideal cancer center, Talbot was also



Timothy R. Talbot, Jr.

“I don’t think I would have come to this campus if I didn’t have this rather fuzzy but persistent dream of basic biomedical researchers and clinicians working together in an interdisciplinary community to study the problems of cancer.”

— TIMOTHY R. TALBOT, JR., FORMER PRESIDENT AND CEO OF FOX CHASE

spearheading the development of national cancer research and prevention efforts. In 1958, he helped found the Association of American Cancer Institutes, a group of cancer research centers dedicated to reducing the burden of cancer. He served two terms as the association’s president. He also collaborated with other top

scientists and Congress to enact the National Cancer Act of 1971. The law allowed for expanded authority and funding for the National Cancer Institute, a National Cancer Program, and National Cancer Advisory Board. He served on the National Committee of the International Union Against Cancer, and also played a major role

in the Pennsylvania Cancer Plan.

Talbot served as president of Fox Chase from its founding in 1974 until 1980. He remained an active leader of the Fox Chase board of directors until 1983. When he retired, Fox Chase named him president emeritus. He retained an office at the Center, and was active in its continued growth and development until he died of cancer in 1988 at age 72.

Friends and colleagues honored Talbot’s legacy by establishing the Timothy R. Talbot Jr. Chair in Cancer Research, an endowed chair that supports an outstanding leader in cancer research who represents the highest standards of excellence. It is currently held by Mary Daly, the founding director of the Risk Assessment Program.



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