FOX CHASE HODE ADDENING THE CONVERSATION ABOUT CANCER | SUMMER/FALL 2023

The Complicated Intersection of Cancer & Fertility

Preserving Fertility While Undergoing Treatment Presents Challenges for Young Cancer Patients



FORWARD THINKING

LEADERSHIP MESSAGI



PRESERVING OUR PATIENTS' OPTIONS

hen faced with a cancer diagnosis, a patient's priority is, of course, to get well. But what consideration is given to other aspects of this patient's health, their hopes, their plans, their life?

Cancer is not an isolated event. It is a life-changing experience that affects

many other parts of our patients' lives, along with their sense of well-being.

In this issue of *Forward*, we will explore some of the challenges that coexist with cancer and how our physicians and other healthcare professionals are guiding and supporting our patients through their experience.

For example, fertility preservation may not enter one's thoughts when consumed with news of a cancer diagnosis, but it can be a serious concern for any patient of childbearing age. Our oncofertility team supports patients through this process. Oncofertility is a specialty that combines the fields of oncology and reproductive endocrinology to help patients with cancer, who dream of starting or expanding a family, to preserve their ability to have children. Our team also addresses potential barriers, such as lack of awareness of the effects of cancer treatment on fertility, the perceived lack of time in addressing fertility concerns after a cancer diagnosis, how to access the proper resources, and the cost involved in receiving fertility treatments.

But what happens when a patient is diagnosed with cancer and then becomes pregnant? Through our collaborations with colleagues from various specialties within Temple Health, we care for these patients and their unique needs to address the urgency of their cancer with the safest treatment approach while helping them to maintain a healthy pregnancy. Timing is a critical factor, as is the input of professionals from multiple disciplines. In these pages, you'll read the story of one of our patients and what she describes as her miracle pregnancy.

Much more common than cancer during pregnancy, fatigue can be one of the more difficult side effects to assess and treat. One of the most common side effects of cancer and its treatment, such fatigue varies widely from patient to patient. It reflects a level of exhaustion that differs from the experience of simply feeling tired. Communication with our patients is vital to understanding their experience and to helping them find relief. Our clinical staff is skilled in providing a number of ways to help patients cope.

While we see cancer every day, we also see how the cancer experience is personal in so many ways. We tailor our approach because every patient who comes to us has their own story. We are honored that you choose us to be a part of it.

Jonsthan Chem

Jonathan Chernoff, MD, PhD CANCER CENTER DIRECTOR

Robert Uzzo, MD, MBA, FACS PRESIDENT AND CEO





6

The Complicated Intersection of Cancer and Fertility

Patients with cancer who are of childbearing age and want to have children must think several steps ahead to preserve their fertility. Speaking with an oncologist about fertility preservation options can be the first important step.

12

It Takes a Healthcare Village

Women who are pregnant while they are diagnosed and treated for cancer can feel secure in their treatment plans with oncologists at Fox Chase and high-risk pregnancy specialists at Temple Health working closely together.

16

Breaking Free From Cancer-Related Fatigue

Although common, cancer-related fatigue can be a complex condition to diagnose and treat. To help lighten the load, specialists at Fox Chase offer patients palliative care, physical therapy, and counseling.





DEPARTMENTS

3 FOCUS

Around Campus

New Urologic Institute | Understanding Protein Structures | "Trojan Horse" for Targeted Drug Delivery

20 CLOSE-UP PATIENT PERSPECTIVE: Riding On and Giving Back

Steve Pietrzak underwent emergency surgery for a stage 4 gastrointestinal stromal tumor. After a complicated but successful GI reconstructive surgery, he's a foodie again.

22 CLOSE-UP FACULTY PERSPECTIVE: Where Stress Meets Culture

Exploring the effects that stress and adapting to a new culture have on an immigrant's physical health has been the focus of Carolyn Fang's career.

24 MAKING A DIFFERENCE A Legend Lives On Through Endowed Chair

A large endowment from the estate of legendary Fox Chase researcher Beatrice Mintz will fund the new Beatrice Mintz Chair in Cancer Research.

26 REVIEW

News of Note Special Events | Honors & Awards | Notable Accomplishments

28 REWIND PAUL GROTZINGER: A Father Figure for Fox Chase's Clinical Program

A pioneering leader, surgeon Paul Grotzinger is remembered for cultivating strong relationships not just with his patients, but between surgeons and scientists.



Patrick McGee Editor Marian Auriemma Staff Writer Sarah Hughes Editorial Coordinator B&G Design Studios Design Brilliant Graphics Printing Contributors Jill Horne Inquiries editor@fccc.edu

LEADERSHIP

Jonathan Chernoff Cancer Center Director Robert Uzzo President and CEO of Fox Chase Cancer Center Joel Helmke Chief Operating Officer Charles Soltoff Senior Vice President and Chief Marketing Officer, Temple University Health System Jeremy Moore Associate VP, Communications Patrick McGee Publications Manager Inquiries: editor@fcc.edu

EDITORIAL ADVISORY BOARD

Andrew Becker Director of Donor Relations George Beschen Senior Director of Individual Giving Margie L. Clapper, PhD Cancer Prevention & Control Martin J. Edelman, MD Hematology/Oncology Erica A. Golemis, PhD Deputy Chief Science Officer Joel Helmke, MSHP, FACHE Chief Operating Officer Shawn Kleitz Chief Development Officer Joshua E. Meyer, MD Radiation Oncology Andrea S. Porpiglia, MD, MSc Surgical Oncology Amanda Purdy, PhD Director, Academic Affairs Camille Ragin, PhD, MPH Associate Director, Diversity, Equity, and Inclusion Glenn F. Rall, PhD Chief Academic Officer Jennifer Barsky Reese, PhD Cancer Prevention and Control Anna Liza Rodriguez, MSN, MHA, RN, OCN, NEA-BC Chief Nursing Officer Rosalia Viterbo, MD Urology David Wiest, PhD Scientific Director of the **Research Institute of Fox Chase Cancer Center**

BOARD OF DIRECTORS

Lewis F. Gould Jr., Chair; Christopher W. McNichol, Vice Chair; William J. Federici; Edward A. Glickman; Amy J. Goldberg, MD; Sandra Harmon-Weiss, MD; Thomas W. Hofmann; Solomon C. Luo, MD; David G. Marshall; Joseph W. Marshall III; Donald E. Morel Jr., PhD; Leon O. Moulder Jr.; Tina M. Pidgeon; Carl A. Sottosanti; Michael A. Young

FOUNDATION BOARD OF DIRECTORS

Donald E. Morel Jr., PhD, Chair; Louis E. Della Penna Sr., Vice Chair; Jonathan Chernoff, MD, PhD; Elaine Daniels; William J. Federici; Edward A. Glickman; Lewis F. Gould Jr.; Thomas W. Hofmann; Barbara Ilsen; Margot Wallace Keith; Peter Kreindler; Philip E. Lippincott; Solomon C. Luo, MD; David G. Marshall; Barbara O'Donnell; Anna Marie Ahn Petersen; Tina Pidgeon; Kenneth Shropshire; Michael Smolenski; Thomas R. Tritton, PhD; Robert Uzzo, MD, MBA

FORWARD magazine is published twice a year for friends of fox Chase Cancer Center by the communications department of Fox Chase. One of the leading cancer research and treatment centers in the United States, Fox Chase was founded in 1904 as one of the nation's first cancer hospitals, and was among the first institutions to be designated a National Cancer Institute Comprehensive Cancer Center in 1974. Fox Chase joined Temple University Health System in 2012.

Temple Health refers to the health, education and research activities carried out by the affiliates of Temple University Health System (TUHS) and by The Lewis Katz School Temple University School of Medicine. TUHS neither provides nor controls the provision of health care. All health care is provided by its member organizations or independent health care providers affiliated with TUHS member organizations. Each TUHS member organization is owned and operated pursuant to its governing documents.



JACEYTEC

333 Cottman Avenue, Philadelphia, PA 19111-2497 foxchase.org, 1-888-FOX-CHASE

TEMPLE HEALTH LAUNCHES NEW FOX CHASE-TEMPLE UROLOGIC INSTITUTE

ox Chase Cancer Center and Temple Health have launched the new Fox Chase-Temple Urologic Institute, a groundbreaking initiative that will concentrate on both benign and oncologic urology. With over 20 urologists on faculty, the institute will provide services at multiple locations throughout the greater Philadelphia area.

"Our urologists have experience treating some of the most complex and advanced oncologic and benign urologic conditions. As leaders in the field, our urologists not only stay on top of the latest changes in medicine but often lead the development of new treatment advances and surgical techniques," said

"Our urologists have experience treating some of the most complex and advanced oncologic and benign urologic conditions."

-ROBERT UZZO, PRESIDENT AND CEO

Robert Uzzo, President and CEO of Fox Chase and Executive Director of the institute.

The new institute's executive management team includes Alexander Kutikov, Chair of the Department of Urology at Fox Chase; Jay Simhan, the department Vice Chair; Jack H. Mydlo, Chair of Urology at the Lewis Katz School of Medicine at Temple University; and Daniel Eun, Professor and Director of the Robotic Urologic Surgery



Clinical Fellowship Program at the Katz School of Medicine.

Beyond general urologic care, the highly experienced benign urology team specializes in less common procedures such as advanced perineal and abdominal reconstruction, prostate enucleation, bladder augmentation and urinary diversion, complex bladder pathology, and vaginal reconstruction. The Fox Chase-Temple Urologic Institute will offer patients access to cutting-edge clinical trials, targeted therapies, immunotherapies, and advanced radiation therapies for the treatment of urologic cancers. The institute's team will leverage their extensive experience as one of the largest fellowship-trained

genitourinary cancer teams in the country.

The institute is designed to provide a seamless transition for patients with urologic cancers who require treatment for benign urology conditions following cancer therapy. These services, as well as many others, will be offered at multiple locations.

"With the creation of this new urologic institute, Temple Health and Fox Chase will now be able to extend our exceptional, cutting-edge care to patients closer to their homes," said Uzzo. "We are committed to providing our patients with the quality and convenience they deserve from their healthcare providers."

NEW DATABASE HELPS FURTHER UNDERSTANDING OF HOW PROTEINS FIT TOGETHER

or decades, scientists focused on studying individual proteins as causes of cancer. However, it is now appreciated that many or most proteins function with multiple partners, forming complexes that control cell functions. Developing strategies to specifically block the functions of cancer cells while not causing toxicity to normal cells requires an exact understanding of how proteins fit together in complexes.

To meet this need, Roland L. Dunbrack Jr., Director of the Molecular Modeling Facility and Professor in the Cancer Signaling and Microenvironment Research Program at Fox Chase, has developed ProtCAD, the Protein Common Assembly Database.

Dunbrack is an internationally

ProtCAD is a searchable database designed to help with one of the unsolved problems in structural biology: How to determine the correct higher-order assembly for proteins.

recognized expert in the biophysical analysis of protein structure and has devoted much effort to collaborative studies with colleagues seeking to understand the significance of cancer-associated mutations.

Supporting this goal, ProtCAD is a searchable database designed to help with one of the unsolved problems in structural biology:



How to determine the correct higher-order assembly for proteins. Proteins often form dimers, which contain two proteins, or tetramers, which contain four, or other assembly forms. Sometimes these assemblies contain different proteins or multiple copies of a single protein type.

ProtCAD mines and assembles data from a large online resource of crystallographic structures from the Protein Data Bank to help accurately define precisely how parts of dimers and tetramers contact each other. When searching ProtCAD, scientists will have a straightforward view of various possible assemblies and the experimental sources of those assemblies.

"This type of information can be important to know because there could be a mutation in a cancer cell that disrupts the formation of a dimer, tetramer, or other multimer. Such mutations can prevent a protein from functioning properly or produce an overly active form of the protein," Dunbrack said. "Knowing if this is happening can help us understand how to better target some cancers."

USING NANOENGINEERED STEM CELLS AS 'TROJAN HORSE' FOR TARGETED DRUG DELIVERY

n ongoing challenge of cancer treatment is finding a way to use powerful chemotherapies to attack tumor cells while minimizing toxic side effects. A study by researchers at Fox Chase and the Lewis Katz School of Medicine at Temple University has demonstrated a potential new way to avoid this problem by using nanoengineered stem cells as a drug delivery system.

Nanoengineering refers to the use of stem cells on the nanoscale, which is used to measure some of the smallest objects—one nanometer is one billionth of a meter.

Previous clinical trials of mesenchymal stem cells (MSCs) found they were safe but not effective as

a tool for cancer drug delivery because they didn't target tumors efficiently. But the new study identified a different way of nanoengineering and loading the cells that improves their ability to home in on the tumor site and successfully deliver their drug payload.

"Based on what has been found in prior clinical trials with naive MSCs, which are not engineered in the way ours are engineered, we believe our MSCs will work better," said Swayam Prabha, lead author on the study and an Associate Professor in the Cancer Signaling By acting as a "Trojan horse" and delivering drugs directly into the tumor, these MSCs could open the door for lower doses of toxic medications like paclitaxel.

and Microenvironment Research Program at Fox Chase and the Fels Cancer Institute for Personalized Medicine at the Katz School of Medicine.

Prabha and her research team loaded MSCs with paclitaxel, a powerful chemotherapy drug that is a common frontline treatment for lung and other cancers, but which can have toxic side effects due to the high doses required if it isn't targeted specifically to tumors.

"Importantly, the engineering strategy we used also protected the engineered MSCs from paclitaxel-induced damage and also improved their tumor-homing ability," she said.

By acting as a "Trojan horse" and delivering drugs directly into the tumor, these MSCs could open the door for lower doses of toxic medications like paclitaxel. In future work, Prabha and her team hope to further enhance the potency of MSCs, making them more effective for multiple tumor types.





Preserving Fertility While Undergoing Treatment Presents Challenges for Young Cancer Patients

By Marian Auriemma • Illustrations by Juárez Casanova





Recent studies suggest there has been a dramatic increase in cancer rates among people under the age of 50. This fact is particularly relevant for patients who are of childbearing age and want to have children. In most cases, these patients require specialty care known as oncofertility, a combination of oncology and reproductive endocrinology focused on helping cancer patients preserve their ability to have children.

Oncofertility patients are often faced with unique challenges. In the midst of a cancer diagnosis that consumes their present, they must also be thinking several steps ahead to preserve the possibility of having children. But during such a stressful and emotional period, it's possible fertility may nev-

er even cross their minds. Or perhaps they have considered this issue but pushed it aside in favor of focusing on their cancer treatment first.

Shelby Hurley, 46, is familiar with the complicated intersection of cancer and fertility. A lump in her left breast after a year of breastfeeding her daughter prompted Hurley to see a doctor in 2014. At 37, she was diagnosed with breast cancer that had spread to her lymph nodes.

"I was stunned when I was diagnosed. I had a 22-month-old

daughter. I wasn't supposed to have cancer too," said Hurley. "My husband and I knew we wanted to have more children, but when I was diagnosed I didn't immediately think about the effects this would have on that possibility. There was just so much going on."

Fertility Not an Immediate Concern

With so much involved in cancer treatment, it's not surprising that many patients who are of childbearing age don't immediately think about the effects their treatment could have on the possibility of creating or expanding a family.

Many standard treatments such as chemotherapy,

radiation, surgery, bone marrow transplants, and hormone therapy can affect fertility for both men and women. Several factors play a role in whether a patient's fertility is affected, including baseline fertility, age at the time of treatment, the type of cancer and treatment, drug dosages, and other factors.

For women, chemotherapy can have a significant effect on ovary function. Ovaries may stop releasing eggs and estrogen, a condition known as primary ovarian insufficiency (POI), which refers to women whose ovaries stop working normally before the age of 40. POI can sometimes be temporary, but it may also cause permanent damage and lead to infertility. This is especially true for treatments involving high doses of chemotherapy or radiation such as bone marrow or stem cell transplants.

According to Daniel Geynisman, a medical oncologist at Fox Chase who specializes in testicular cancer, chemotherapy can also damage sperm, making sperm banking ahead of treatment a crucial step for men whose fertility is at risk due to cancer treatment.

"When treating young individuals with cancer, fertility is a critical issue because it can affect the rest of their lives. So in testicular cancer, this is something we discuss with every patient. We also ask that every patient bank sperm prior to chemotherapy," said Geynisman.

"Typically, fertility issues are temporary, and over time

to have more children, but when

I was diagnosed I didn't

immediately think about the effects

this would have on that possibility.

There was just so much going on."

-SHELBY HURLEY,

BREAST CANCER SURVIVOR AND MOTHER

sperm production recovers," said Alexander Kutikov, Chair of the Department of Urology at Fox Chase. "Usually, "My husband and I knew we wanted however, sperm banking is encouraged to make sure that if fertility doesn't return, patients still have options to father children."

> According to the National Cancer Institute, radiation therapy may also pose risks to fertility, particularly when administered near the pelvis, spine, abdomen, or reproductive organs. Radiation administered to the brain may

also cause fertility issues by harming the pituitary, a small endocrine gland located at the base of the brain that produces hormones important for controlling a number of bodily functions for men and women. These include growth, sex organ function, blood pressure, testosterone and sperm production, breast milk production, thyroid gland function, and stimulation of uterine contractions during childbirth.

In addition, cancer treatments that involve hormone therapy can disrupt the menstrual cycle for women and decrease the production of sperm in men. For this reason, the American Society of Clinical Oncology recommends healthcare providers speak with patients as early as possible before



treatment about its effects on fertility so that patients can have the widest array of options.

"The most important thing for patients to remember is to speak to their physicians about fertility preservation or ask any questions about fertility that they may have. Don't be shy about discussing it, even during the first appointment," said Geynisman.

Post-Treatment Challenges

For a patient like Hurley, that early conversation meant looking into the possibility of freezing embryos for use after finishing treatment. Hurley came to Fox Chase in May of 2014 and met with Efrat Dotan, a medical oncologist. "I told her that my husband and I were planning on trying to get pregnant later in the year, and she told me that if I even remotely thought I wanted more children, I needed to get my eggs out before starting chemotherapy," said Hurley.

With less than a month before a treatment that could not be delayed, Hurley and her husband went to a fertility specialist to have over 30 eggs retrieved and have her embryos frozen.

Hurley's cancer treatment took over a year, and once she finished chemotherapy in July 2015 she was cleared to try for pregnancy as early as spring 2016 following her radiation treatment. When she returned to her fertility specialist, she discussed having a biopsy done on the embryos.

"I was surprised to find out that I had the CHEK2 mutation,

which increases the risk of breast cancer. My concern was that I didn't want to knowingly pass that on," said Hurley. "So I had almost all of my embryos biopsied. When all was done, we had five viable embryos and three had the CHEK2 mutation. One male and one female did not have the mutation."

Hurley decided that with no history of male breast cancer in her family, it was safer to choose the male embryo.

However, the day before her embryo transfer, she was notified that the male embryo did not survive. The fertility specialist told them, however, that the surviving female embryo looked fine. "I thought, 'Thank God,' because it was my last one and I could not bring myself to use the ones that had the CHEK 2 mutation," said Hurley.

"This is a medically necessary treatment for a side effect of cancer treatment. We think that because of that, it needs to be covered by insurance."

> -JOYCE REINECKE, EXECUTIVE DIRECTOR, ALLIANCE FOR FERTILITY PRESERVATION

On May 22, exactly

three years to the day that Hurley found out she had breast cancer, she gave birth to her second daughter.

Roadblocks to Preserving Fertility

While many men and women are able to successfully start or grow a family following cancer treatment like Hurley, that doesn't mean that there aren't significant challenges. As Hurley's experience attests, it can be challenging to focus on the future when the present monopolizes most of a patient's time, attention, and emotions.

Yet another barrier, according to Gina Mantia-Smaldone, a gynecologic oncologist at Fox Chase, is the misconception that there is simply not enough time to go through the process. "In reproductive-aged patients, the reproductive and fertility specialists that we refer them to often can get their eggs retrieved and preserved within a two-week period," she said.

Patients may also not ask about fertility simply because they do not realize that their treatment can impact fertility. Joyce Reinecke, executive director and former president of the Alliance for Fertility Preservation (AFP), a nonprofit that advocates for patient access to fertility services, was

one of those people.

When Reinecke was in her 20s, she was diagnosed with leiomyosarcoma, a rare cancer occurring in the smooth muscle of organs such as the stomach, intestines, bladder, and blood vessels. As unexpected as her cancer diagnosis was, what came as an even bigger surprise was that her treatment could affect her ability to have children.

"My cancer was in the lining of my stomach, so it never occurred to me that it would affect reproduction in any way," said Reinecke. But there is no way to guarantee that chemotherapy and radiation used to attack cancer cells don't incidentally affect healthy cells. That's why treatments like these always carry a risk of affecting fertility, even when the cancer and its treatment don't specifically target the reproductive organs.

"We scrambled and were able to create embryos and opted for a surrogate because I was still being very actively treated. I now have twin daughters," Reinecke said.

But even if a patient does know to ask about fertility-sparing options, there are barriers that can prevent them from taking advantage of them. Perhaps most significant is the price tag.

According to the AFP, fertility service costs are widely variable. For women, they can be upwards of \$15,000, depending





on the type of preservation, plus storage costs that can range anywhere from \$300 to \$600 per year.

For men, these costs are less but still potentially significant. The average cost of a sperm banking service is between \$500 and \$1,000, plus anywhere from \$150 to \$500 per year for storage, according to the AFP. These costs increase for options that require more than just sperm banking. Preservation methods such as testicular sperm extraction, which is a microsurgical procedure to collect sperm from the testes, ranges from \$7,500 to \$10,000. Other, more involved methods can cost more still—between \$10,000 and \$12,000.

Additionally, these services are frequently not covered by insurance. On its own, the cost can be burdensome, but coupled with the cost of cancer care, these prices can be a major deterrent.

"The coverage has started to take hold. There are now 16 states that have passed some form of coverage. But most of the bills have only gone to large group insurers because that's who the legislature is able to reach," said Reinecke. "But we hope that that's raising the floor. This is a medically necessary treatment for a side effect of cancer treatment. We think that because of that, it needs to be covered by insurance."

Fertility Preservation Resources

With all of these factors in mind, it can be difficult to know where to start. Speaking with an oncologist about fertility preservation options can be the first important step.

In addition to options such as freezing embryos or ovarian tissue, women may also be candidates for ovarian suppression or ovarian transposition, depending on their type of cancer. Ovarian suppression involves injections that are taken throughout cancer treatment that prevent eggs from maturing in an effort to protect them from chemotherapy.

With ovarian transposition, surgeons move the ovaries out of the area of radiation treatment to preserve their function. Additionally, there are several surgical options that may be available for women with early stage gynecologic cancers that could aid in preserving fertility.

To help patients through this sometimes intimidating process, groups such as the AFP and Fox Chase's own Oncofertility Committee can help guide patients toward specialists and resources that can help them make the best decisions.

Eileen Seltzer, who heads the committee, said it plays a vital role in not only educat-

ing patients on their options but directing them to fertility services in their area where they can be prioritized for services based on their cancer diagnosis.

"Providers here at Fox Chase are able to refer patients to the Oncofertility Committee. One of the members of the committee then contacts the person and lets them know about their cancer treatment, how it can affect their future fertility, and what their options are to preserve their fertility," said Seltzer, who is also a Transplant Nurse Coordinator in the Department of Bone Marrow Transplant and Cellular Therapies.

In addition, the committee will discuss the expected out-of-pocket costs for the patient and what they can expect from their fertility procedures. They also try to follow up with patients who go to these consultations and ask them about their experience and whether they got the resources that they needed.

"Our goal is to be able to follow up long-term and find out what their outcomes are down the line," said Seltzer. "It is such an important thing for our patients and their families to have this resource and service provided to them. It serves as a way of providing hope for the future."

It Takes a Healthcare Village

Multidisciplinary Approach Helps Cancer Patients Deliver Healthy Babies



takes a village to raise a child," has been repeated so often that it has become a meme. But its sentiments, albeit with slightly different wording, could not be more relevant when applied to women who are not only expecting a child, but simultaneously—and many times unexpectedly—faced with a cancer diagnosis. In cases such as this, it turns out, "It takes a healthcare village to birth a healthy child."

Because these cases are so unique, their treatment plans require input from doctors and other healthcare providers in multiple specialties who can address not only the urgency of a patient's cancer diagnosis, but the preservation of life at its most vulnerable stage.

"Working together with physicians at Fox Chase Cancer Center is and will continue to be such an integral part of caring for our patients facing a cancer diagnosis during gestation," said Jack Ludmir, Interim Chair of Obstetrics, Gynecology, and Reproductive Sciences at the Lewis Katz School of Medicine at Temple University and Chief Physician Executive of the Temple Women and Families Campus.

"While Fox Chase physicians are able to focus on cancer, we offer expertise in monitoring these high-risk pregnancies. That partnership is what allows us to provide high-quality care to patients at a time when it is most crucial."

By Marian Auriemma • Photography by Peter Freed

Angela Kaewell gave birth to a healthy baby girl after undergoing treatment for breast cancer during her pregnancy. MAR CHER

ne woman who is intimately familiar with the complex web of cancer and pregnancy is Angela Kaewell, 41, of Northeast Philadelphia. Kaewell started treatment for breast cancer in the summer of 2019 with Allison Aggon, a surgical oncologist at Fox Chase.

Kaewell had previously undergone treatment for lymphoma when she was in her 20s, which helped her develop a keen awareness of changes in her body. After finding a lump in her breast that became more pronounced over time, she reached out to her primary care physician. She was then referred to Fox Chase and had a breast biopsy performed. She later learned she had estrogen- and progesterone-positive breast cancer.

As she went through the process of attending appointments and undergoing tests, she began to feel exhausted and attributed it to the cancer and stress. When her doctor told her she would have to take a pregnancy test, she barely considered the possibility of being pregnant, since she had received chemotherapy at a young age and had given birth to her son only after receiving fertility treatments.

"I was falling asleep and taking naps, which is very unlike me, so I asked my husband to get me a pregnancy test. Sure enough, after taking four tests, a faint second line showed up indicating I was pregnant," said Kaewell.

"I had this preconceived notion that once I told people I was pregnant and had cancer, they would expect me to end my pregnancy. I was expecting that response not only from healthcare providers, but from friends and family as well," she said.

She was pleased to find that she did not encounter that reaction. After doing some research online and finding patients who went through cancer treatment while pregnant, Kaewell decided that she could too.

A "Miracle" Pregnancy

t that point I decided it was a miracle that I was pregnant, and if this baby was meant to be, this baby and I are going to go through treatment together and everything is going to work out," she said.

Kaewell then began working with Aggon to determine the safest treatment approach for her and her baby. As the first pregnant patient that Aggon would be operating on, Kaewell's treatment required a great deal of consultation with numerous other professionals, including other oncologists, an obstetrician, and maternal-fetal medicine specialists — physicians



specializing in high-risk pregnancies.

Kaewell decided to have a mastectomy, a surgery to remove a breast, followed by chemotherapy. She underwent treatment similar to that of patients who are not pregnant, with the exception of a few small alterations that had to be made for the safety of her child.

Kaewell gave birth to a healthy baby girl and named her Allison, after Aggon, who keeps her birth announcement hanging above her desk.

An Uncommon Event

ancer during pregnancy is an uncommon event, occurring approximately once per 1,000 pregnancies annually, according to the American Cancer Society. The most common types of cancer found during pregnancy are also those most commonly found in younger women. They include breast, cervical, thyroid, colon, and ovarian cancers, as well as melanoma, lymphoma, and leukemia.

With a multidisciplinary team of experts, many patients who are diagnosed with cancer while pregnant like Kaewell are able to receive cancer treatment and deliver a healthy baby.

But while some studies have shown that outcomes for pregnant and non-pregnant women are about the same, it is still an understudied area. In addition, pregnancy can complicate circumstances by making cancer harder to find, diagnose, and treat, according to the American Cancer Society.

Pregnancy often masks the signs and symptoms of cancer because physiological changes that occur in the body during pregnancy often overlap with cancer symptoms. These include bloating, nausea, or headaches, or a shift in breast size and texture for breast cancer patients. This can result in cancer being misdiagnosed or even being found at much later stages, making a carefully planned treatment timeline even more crucial.

Timing Treatment

ne key area of this timeline is the surgery schedule. While it is typically considered safest during the second and third trimester, surgery can be done any time during pregnancy, depending on the situation.

"We typically have a multidisciplinary meeting with members of the oncology teams at Fox Chase as well as anesthesia, and one of the major things we discuss is timing of surgery, and in particular, not delaying surgery due to pregnancy. In women who are pregnant, if their fetus is further along and viable, during surgery we would do fetal monitoring. If it's early in pregnancy, that's not indicated," said Emily Oliver, a maternal-fetal medicine physician at Temple Health who regularly works with physicians at Fox Chase to treat pregnant cancer patients.

While surgery is an essential part of many women's treatment plans, it is often also necessary to follow up with

Understanding Treatment Options

he precision care carried out by doctors at Temple Health and oncologists at Fox Chase allow pregnant patients undergoing cancer care to feel secure in their treatment plans.

"Chemotherapy, radiotherapy, surgery can all potentially have impact on the developing pregnancy," said Oliver. "There are, however, many treatments that can be given during pregnancy. Our goal in treating pregnant patients is not to interrupt cancer treatment and to stay as close as possible to the standard of care they would receive outside of pregnancy."

Certain therapies are rarely recommended for a patient who is pregnant and will be delayed until after delivery, including immunotherapy, hormone therapy, and targeted drug therapy. Radiation is typically not given during pregnancy because it could cause birth defects, miscarriage, and increased risk of childhood cancer. However, in certain situations, it could be considered for treatment if it is being administered to parts of the body that are not near the fetus. In these cases, careful calculation of the radiation affecting the fetus, with the help of radiation oncologists and medical physicists, can assist in optimizing treatment while minimizing fetal effects.

While treatment goals remain the same regardless of pregnancy, multiple factors, including the type and stage of cancer, how far along in the pregnancy a person is, and other

"I decided it was a miracle that I was pregnant, and if this baby was meant to be, this baby and I are going to go through treatment together and everything is going to work out."

-ANGELA KAEWELL, BREAST CANCER SURVIVOR AND MOTHER

chemotherapy. Studies have shown that chemotherapy poses the greatest risk to a developing child during the first trimester, when fetal development occurs. When chemotherapy is administered in the second or third trimester, however, the risks of severe problems for the fetus are lower. According to the American Cancer Society, chemotherapy is generally not recommended after 35 weeks of pregnancy or within three weeks of delivery because it can lower the mother's and baby's blood cell counts. This will also depend on the type of chemotherapy.

"It is particularly important in these circumstances to be working with a multidisciplinary team. For some patients we'll have one or two meetings during pregnancy with all the providers, but we could have them monthly or much more frequently depending on the complexity of the case," said Oliver. "Working together to determine these timelines is really the most crucial thing in getting the best outcome." personal factors like overall health and preferences, all play an important role in developing a treatment plan. What may be the best approach for one patient may not be the most effective for another, which is why it is important for patients to discuss all risks and treatment options before beginning cancer therapy.

Additionally, it is recommended that patients who are at high risk continue to get their regularly scheduled screenings both during and after pregnancy.

"If they do feel a mass, they should get it looked at because they can also get treatment while they're pregnant," said Aggon. "There are many women who come to get treatment assuming they are going to have to terminate their pregnancy, and that simply isn't the case. It's not a situation where they have to delay anything either. Most patients can still be successfully treated for their cancer and still maintain a healthy pregnancy."

BREAKING F R O M CANCER RELATED FATIGUE

IT'S MORE THAN JUST FEELING TIRED

hen patients are being treated for cancer, they typically expect some unpleasant side effects from their therapy. Difficulties like weight loss, nausea, anxiety, and even depression are widely discussed as side effects of treatments like chemotherapy, immunotherapy, radiation, and others. The presence and severity of side effects can also differ widely from patient to patient. But when cancer-related fatigue enters the picture, everyday life can often feel like being in lockdown. Cancer-related fatigue is one of the most common side effects of cancer and its treatment, including all cancer types and affecting anywhere

> BY MARIAN AURIEMMA ILLUSTRATION BY BENEDETTO CRISTOFANI



from 40% to 100% of patients. While tiredness is a big part of the picture, there are a number of other aspects to it that can affect many parts of a patient's life, making them feel as if the load is too much to bear. To help, specialists at Fox Chase Cancer Center offer patients guidance through palliative care, physical therapy, and counseling to help manage this challenge.

"There is definitely physical tiredness, but there is also an emotional component to it, a cognitive component that makes a patient feel mentally tired. A big part of our role is to first validate that it is real," said Jean Kozempel, a physical therapist at Fox Chase.

SYMPTOMS OF CANCER-RELATED FATIGUE

atients being treated for cancer frequently experience events such as surgery and changes in hormone levels and blood counts — not to mention immense stress — that can cause fatigue. While most patients experi-

ence fatigue in some form, when it lasts for weeks and interferes with daily life, patients need to talk to their healthcare providers about the fatigue so they can be referred to specialists who can help them.

Cancer-related fatigue is characterized as an excessive feeling of exhaustion that interferes with a person's daily life. While it is an extremely common side effect, the degree to which a person is affected can vary widely. This fatigue not only persists even after a good night's sleep, but can sometimes be accompanied by feelings of weakness, low energy, or a heavy feeling in the arms and legs that makes simply moving difficult.

But an extreme feeling of tiredness is only part of a much more complicated web of symp-

toms that can include confusion and an inability to concentrate. When all of these are combined, it can be difficult for a patient to feel well enough to go to work or even follow their prescribed care plan.

"For some patients, it can get to a place where even getting up to get a drink of water requires a herculean effort. Or it may be that they are unable to see people and do the things they enjoy, which can lead to an immense feeling of loss," said Pamela Handelsman, a health psychologist at Fox Chase.

A TRICKY DIAGNOSIS

A lthough common, cancer-related fatigue can be a complex condition to diagnose and treat. "Fatigue is quite possibly the symptom we feel the least equipped to treat because it doesn't respond very well to medications," said Leigh Kinczewski, a nurse practitioner for the Supportive Oncology and Palliative Care Program at Fox Chase.

"I always try to share with patients how common fatigue is and let them know that it's not 'just them' and they're not doing something wrong," said Kinczewski. "Typically, we will ask patients to rate their fatigue on a scale of one to 10 because people who are fatigued can look like they normally do and not show external signs of fatigue."

It can be helpful for patients to describe their fatigue by how long they have been dealing with it, how it has affected their daily life, if any factors tend to change its severity, and whether it has gotten progressively worse.

Aside from blood tests to determine other possible

causes for fatigue, there are no physical tests that can determine whether a patient is struggling with cancer-related fatigue. For this reason, doctors have to rely on patient communication to diagnose and assess the condition. However, it can be difficult for patients to explain their symptoms, particularly if they believe their fatigue is just an expected part of their cancer treatment.

"When we look at fatigue in cancer patients we always look into what some of the contributing factors may be other than the cancer itself or the treatment so that we can find a potential remedy," said Kinczewski. "For example, if a patient has anemia, we may be able to find some nutritional supplementation that would help. Or if they're depressed or anxious, they may benefit from getting treatment for that."

Additionally, a healthcare professional might ask about a patient's eating or sleeping habits, any medications being taken, and whether they have any other side effects.

COPING WITH FATIGUE

ortunately, specialists at Fox Chase are able to help patients who are dealing with cancer-related fatigue and provide them with strategies for coping. For example, although it may appear counterintuitive, studies have



-JEAN KOZEMPEL, PHYSICAL THERAPIST



shown that physical activity during and after treatment can significantly help with fatigue. "Any movement is good movement," said Kozempel.

To keep track of how a patient is progressing, physical therapists and other palliative care specialists can measure their starting points by doing a six-minute walk test or other physical analysis for endurance and strength. They can later test the patient again to check for any changes.

"We like to test again because when you have something that's chronic and overwhelming, sometimes it's hard to see that you're making any progress. It's important to see and document when it happens," said Kozempel.

This and other measurements of fatigue can help physical therapists come up with a plan based on the patient's condition that allows them to exercise safely.

"I recommend that patients do about half of the activity that they think they can tolerate. By doing this, it's enough to challenge yourself and keep yourself moving without overdoing it. Some popular activities for this are walking or yoga, whatever a patient enjoys," said Kinczewski.

While physical activity is an important method for dealing with fatigue, mental and emotional coping mechanisms are equally important. Patients can often feel disappointed or frustrated with themselves when they no longer feel able to participate in activities that make them happy.

The expectations of family and friends who don't understand what a patient is going through can also cause stress. "On the days that they're feeling well, we urge patients and their loved ones to make the most of it. But we also remind them that they have to accept that there will be days where they don't feel as well and adjust accordingly," said Kinczewski.

In addition to physical therapy, patients may also be referred to different specialists, including social workers and psychologists, who can help with the cognitive or emotional effects of fatigue.

GETTING BACK TO NORMAL

Because of how differently fatigue affects individual patients during their cancer journey, there is no onesize-fits-all solution. While some patients experience fatigue and see it decrease upon completing treatment, other patients can continue to experience cancer-re-

lated fatigue for weeks, months, or even years afterwards.

"The problem we sometimes see is this compound effect where because the patient hasn't been moving around, they become fatigued and then that fatigue makes them want to move around even less and the body gets de-conditioned and more fatigued," said Handelsman. "So the origination of it can be attributed to cancer, but then it can be maintained through de-conditioning."

To avoid this issue, Handelsman said cognitive behavioral therapy may help by supplying patients with behavioral strategies they can use long after treatment ends.

"If motivation is the problem, we can do motivational interviewing and tie it to something that's important to the patient. It's not always easy to motivate yourself to get up and do the dishes, for instance. It's a lot easier to get yourself up to take a walk with your grandchildren."

Some other methods Handelsman recommends include pacing social, physical, and mental tasks, which involves breaking activities into manageable chunks of time. Patients may also benefit from strategies like energy conservation, logging feelings of fatigue, and prioritizing important tasks for earlier in the day.

"I say this a lot to my patients, but one of the hardest parts is accepting that you have the energy you have. If you push yourself to give one hundred percent and you just don't have it, you're going to struggle," said Handelsman. "It's really important to just be patient and kind to yourself."◆

CLOSE-UP

RIDING ON AND GIVING BACK

BY LEAH LAWRENCE

teve Pietrzak's memory of finding out he had a tumor in June of 2021 is a little fuzzy. He woke up one morning with excruciating pain in his abdomen. Initially, he thought it might be indigestion or heartburn, or possibly diverticulitis, which he had experienced 20 years ago. He decided to go to the emergency department at a nearby hospital to get some antibiotics or pain medication.

"I thought I would be feeling fine by the next day. That's not what happened," he said.

When he arrived at the hospital, the ED doctors performed scans, and by mid-afternoon, they broke the news: He needed emergency surgery.

They told him he had a tumor that had been growing in his abdominal cavity for an unknown period of time and had perforated his stomach. Gastric juices were leaking into his abdominal cavity and he was septic.

During his emergency surgery, Cherie P. Erkmen, a leader in thoracic surgery and Professor of Thoracic Medicine and Surgery at Fox Chase and Temple Health, was called into the operating room to remove the part of his stomach and esophagus with the perforated tumor.

Afterwards, Pietrzak had to work through adjusting to his new life, which included receiving his nutrition through a feeding tube as well as a bag near his neck to divert everything he swallowed away from the healing surgery site. It was a hard adjustment to make.

"I'm an active person who enjoys

evidence of disease. He still takes the drug today and will continue to do so.

When Pietrzak got the good news about imatinib, Erkmen and he began looking ahead to the goal of reconstructive surgery for his digestive system so he could eat again. About this time, Erkmen consulted with Jeffrey Farma, a

"Today, I'm as normal as I can possibly be. I had to give up my hobby of scuba diving, but other than that there isn't much that I can't do physically."

-STEVE PIETRZAK, GASTROINTESTINAL STROMAL TUMOR SURVIVOR

being outside. I ride a Harley, travel, go to the beach, play golf, and enjoy the gym," Pietrzak said.

During his treatment, he was hospitalized for 30 days, which is when he also found out that he had a stage 4 gastrointestinal stromal tumor, otherwise known as GIST. The good news was that there is a targeted treatment for GIST called Gleevec, which is also known by its generic name imatinib. He started taking it daily in August 2021 and by March 2022, there was no skilled Fox Chase surgical oncologist specializing in GIST tumors and abdominal surgery, to plan the reconstruction of a new stomach and esophagus using a portion of Pietrzak's colon.

"The surgery was much more complicated than I ever could have imagined," Pietrzak said.

The surgical team performed a colonic interposition, a procedure in which the remaining portion of his esophagus was connected to the colon, which was then connected



to the small intestine to reconstruct the missing stomach and esophagus. It's a rare operation, but one that teams at Fox Chase and Temple have a great deal of experience performing safely.

Due to their diverse experience and outstanding technique, Erkmen and Farma completed the reconstruction without complications.

"Today, I'm as normal as I can possibly be. I had to give up my hobby of scuba diving, but other than that there isn't much that I can't do physically," Pietrzak said.

As a result of the cancer and the surgeries, he faces two daily challenges. One is his feeding schedule. Because his newly reconstructed stomach is very small, he needs to eat six to eight times a day, which can be time consuming. "I consider myself a foodie, so not eating for 15 months was a big deal. But I'm back to enjoying meals."

The second challenge is a lack of energy. He gets fatigued a lot, and his doctors are working to pinpoint what the cause might be.

Despite all that, he is optimistic: "I am happy with each day I get. I have a scan every three months and my most recent scan was clear of cancer," he said.

"I was so impressed with the care I received at Fox Chase and Temple Health. The surgical team was top-notch and went above and beyond for me. Throughout all of my treatment and the surgical procedure, Dr. Erkmen and Dr. Farma were open to listening and discussing everything with me. This collaborative interaction was critical to the success of my surgery and to my mental and emotional comfort," Pietrzak said.

Farma was so impressed with how his patient was able to handle everything that he persuaded Pietrzak to join Fox Chase's Patient-to-Patient Network, a program that allows patients or caregivers dealing with a new cancer diagnosis to connect with a fellow cancer survivor or caregiver.

"After everything that was given to me, I am happy to give back," Pietrzak said.

WHERE STRESS MEETS CULTURE

BY SARAH JAYNE HUGHES

arolyn Fang, Associate Director for Population Science at Fox Chase Cancer Center, is a firm believer that stressful everyday events have a biological impact that can contribute to health consequences, so much so that she had made exploring the phenomenon her life's work.

Both of Fang's parents emigrated from China to the United States, and she vividly remembers just how stressful adjusting to a new culture was for them. From an early age, Fang saw how important erupted in 1992 in the wake of the acquittal of police officers charged with beating Rodney King, an African-American man. Fang went to the site of the riots to collect research data that led to her dissertation, which focused on race-related stressors and their impact on health.

The data and her life experience underscored the impact that stress can have on mental and physical health. "There is now a large body of evidence that stress is associated with changes in the immune system," said Fang.

"There is now a large body of evidence that stress is associated with changes in the immune system."

-CAROLYN FANG, ASSOCIATE DIRECTOR FOR POPULATION SCIENCE

proper communication is, especially when it comes to health.

"We lived in Connecticut, which did not have a large Chinese population at the time," said Fang. "Growing up, my mom did not speak English very well, so she would take me with her everywhere, including to her doctor's appointments."

Later, when Fang was earning a master's and a doctorate in psychology at the University of California, Los Angeles, rioting Her lab is now looking at biologic pathways that might be negatively affected by the stressors that Chinese immigrants can encounter when adapting to a new culture, a process known as acculturation.

"Those in our study who report higher levels of acculturative stress had a higher level of inflammation in their blood samples," said Fang. "Inflammation may increase one's vulnerability to diseases such as diabetes, cardiovascular disease, and select cancers."

Fang's lab is also conducting a variety of studies examining factors that might contribute to or impede Asian Americans from participating in cancer screenings and how to provide proper resources that might help encourage their participation. "We recognize that the communities we work with may not be able to obtain recommended screenings because they're having trouble communicating. They may hang up the phone immediately because the person on the other end is only speaking English and they do not know how to proceed further."

Whatever its specific focus, the goal of all of Fang's research is understanding how psychological factors, including social relationships, might relate to physical health. In addition to finding that individuals experiencing difficulties with acculturation show an increased risk for certain chronic diseases, her lab has also explored how social connections and support can act as a buffer against some of the stressors that immigrants encounter.

In her research, Fang collaborates extensively with Grace Ma, Professor and Director of the Center for Asian Health at the Lewis Katz School of Medicine at Temple University. "Dr. Ma and the entire Center for Asian Health have been great partners and collaborators to work with for the past 20 years," said Fang. "It has



been a very fruitful and productive collaboration." Fang also works with local Chinese schools and Greater Philadelphia Health Action, which runs Chinatown Medical Services.

When she has time left over from her busy professional life, Fang enjoys spending time with her family, gardening, and playing pickleball. "During COVID, like most, we acquired some new hobbies, but gardening is the only one that really stuck," said Fang. "We do the usual tomatoes, bell peppers, and zucchini, although we do have to battle it out with all the squirrels and bunnies in the yard."

Fang also has two pets. "My daughter wanted a guinea pig and my son wanted a dog, but of course with them both out of the house now, the pets are the responsibility of my husband and I."

While Fang's father had a doctorate in engineering, her mother only had the opportunity to earn a high school diploma, but they both emphasized the importance of education to Fang and her siblings growing up, something Fang has passed on to her children. Her son just graduated with a bachelor's degree in computer science and her daughter is exploring a possible dual major in art and psychology.

Exploring the intersection of psychology and culture has been the intense focus of Fang's career, which has been spent entirely at Fox Chase, which has become, she said, like a second home. "From the beginning, I have seen what a special place this is and how the people here really do want you to succeed."

BEATRICE 'BEA' MINTZ: FOX CHASE LEGEND MAKES HISTORIC GIFT

BY ANDREW BECKER

egendary cancer researcher Beatrice "Bea" Mintz has been described as not only one of the most important scientists in the history of Fox Chase Cancer Center, but one of the most significant scientists of the past century worldwide. Her discoveries opened new branches of science and added immeasurably to the world's understanding of cancer.

"Her real strength was in identifying what she considered the most fundamental questions and determining the most direct and convincing way to address them," Cancer Center Director Jonathan Chernoff wrote in an appreciation published after her death in 2022.

"Working mostly on her own through a seven-decade career, her work was foundational to several different areas of biology: embryonic development, stem cell dynamics, epigenetics, the clonal theory of cancer, and the importance of the tumor microenvironment. In a world of hedgehogs—scientists who focus on one big idea and are often known for one big discovery—Bea was the ultimate fox, with a wide range of interests and a diverse set of key discoveries."

Among several revolutionary contributions, Mintz developed transgenic mice, making it possible to breed particular models of mice for research on any number of human diseases. Mouse models are now indispensable in medical research. She also was first to understand the relationship between the behavior of stem cells and cancer, and to observe that aberrant stem cells could be "reprogrammed" by neighboring healthy cells.

Not content to devote her entire life to making these breakthroughs, Mintz also arranged to continue her contributions to science in perpetuity after her death. She died three weeks before her Mintz was the inaugural holder of the Jack Schultz Chair in Basic Science at Fox Chase, which she received in 2002 and held until 2019. Her longtime colleague and friend Bob Spallone recalled that she considered it the nicest thing that happened to her over her many decades at Fox Chase.

When considering how to structure her gift to Fox Chase, an endowed chair seemed the best fit. Endowed chairs provide a stable source of dedicated funding while honoring and advancing the careers of high-achieving faculty members. They are among

"Her real strength was in identifying what she considered the most fundamental questions and determining the most direct and convincing way to address them."

-JONATHAN CHERNOFF, CANCER CENTER DIRECTOR

101st birthday and left her entire estate to support cancer research through a handful of organizations she valued. The gift she left to Fox Chase—the largest ever made by a faculty member—will create the Beatrice Mintz Chair in Cancer Research. It will be the 20th endowed chair at Fox Chase. the highest academic honors. Researchers who receive an endowed chair are empowered to delve into ambitious, longterm projects that might otherwise be hindered by funding uncertainties.

Accustomed to complete control in her work, Mintz had to be







reminded that the decision of who might hold the chair would be left to Fox Chase leadership. "She envisioned a select board making the choice, with her input," Spallone recalled with a laugh. It was her hope—and challenge to Fox Chase —to fill the chair with a researcher of her caliber.

A challenge indeed. Mintz was in a class by herself. She was an elected member of the National Academy of Sciences, a recipient of the American Cancer Society's National Medal of Honor for Basic Research, received a Lifetime Achievement Award from the American Association for Cancer Research, and the first March of Dimes Prize in developmental biology, among others. In a 2009 interview in *Forward*, Mintz described herself as someone who has "asked a series of big questions" and has had "a good time" answering them.

Her answer to what she found most rewarding about her career may provide a road map for the Over the course of her career, Beatrice Mintz made a number of key scientific contributions, including the development of transgenic mice, which made it possible to breed particular models of mice for disease research.

future holder of the Beatrice Mintz Chair: "Having the freedom to go from one really tantalizing question to the next, and to recognize and follow clues along the way. New questions, and experimental ways to try and answer them, continue to fascinate me."

AUDITORIUM GETS A NEW LOOK AND A NEW NAME

his Spring, the Fox Chase Cancer Center auditorium underwent a major transformation and was renamed the Judith & Thomas K. Leidy Auditorium in honor of the generous donors who made it possible.

The six-week project brought new flooring, seats, and wall coverings, which enhanced the room's acoustics, air quality, and overall comfort. Networking and audiovisual system upgrades are planned for the near future. Amid the changes, the chalkboard wall at the front of the room remains as a nod to the history of the auditorium.

The Leidys have supported Fox Chase since 1996, donating to many initiatives, including the Clinical Urology Research Endeavors program, a pilot study of immunotherapy in kidney cancer, and the Judith and Thomas K. Leidy Visiting Professorship in Urologic Oncology.

The auditorium, along with renovations to two of the adjacent conference rooms, is the first in a three-phase plan to upgrade the Center Building common areas.



\$1 MILLION GRANT COULD ASSIST IN DEVELOPMENT OF NEW DRUGS

ohn Karanicolas, a Program Leader for the Cancer Signaling and Microenvironment Research Program, has received a \$1 million grant from the W.M. Keck Foundation to develop a platform that could assist in the development of new drugs.

Karanicolas' project, "Using Deep Learning to Enable Rational Design of Molecular Glues," aims to develop machine learning tools for identifying compounds that stabilize select protein interactions.

Machine learning is a process by which computers are taught how to learn and perform certain functions. He and a team of five other Fox Chase investigators will use machine learning to design compounds that induce association of selected target proteins and then test these compounds in cancer cells.

Karanicolas' project is one of 11 medical research grants totaling \$12.8 million selected for funding by the Keck Foundation's Board of Directors in 2022. The foundation funds new and innovative projects that they believe have the potential to be transformative and far reaching.

AFRICAN-CARIBBEAN CANCER CONSORTIUM RECEIVES PRESTIGIOUS TEAM SCIENCE AWARD

The African-Caribbean Cancer Consortium (AC3), a multi-institutional collaborative network that focuses on studies of cancer risk and outcomes among populations of African ancestry, received the American Association for Cancer Research Team Science Award. Camille Ragin, Associate Director of Diversity, Equity, and Inclusion at Fox Chase, heads the network.

"It is the scientific diversity and dedication of our AC3 team that makes us impactful. We are a multidisciplinary team of basic, translational, and clinical scientists and advocates from countries within the African diaspora," said Ragin, who is also a Professor in the Cancer Prevention and Control Research Program. "We have investigators in Africa, the Caribbean, and the United States."

The award acknowledges an exemplary interdisciplinary research team for their work in advancing the fundamental knowledge of cancer or for applying existing knowledge to advancing detection, prevention, diagnosis, or treatment. It is awarded to a team focused on a goal that would not be realized by any single team member.

HONORS & AWARDS

ANNA MARIE SKALKA RECEIVES STANLEY P. REIMANN HONOR AWARD

nna Marie Skalka, Senior Advisor to the President and Professor Emerita, has been recognized with the Stanley P. Reimann Honor Award, Fox Chase's highest distinction.

In addition to this new honor, Skalka is an elected member of the American Academy of Arts and Sciences and was awarded the 2018 Sigma Xi William Procter Prize for Scientific Achievement and Communications. She has authored over 240 scientific papers as well as the book *Discovering Retroviruses: Beacons in the Biosphere*. She is also co-author of *Principles of Virology*, the leading virology textbook for undergraduate and graduate students studying how viruses reproduce and cause disease. Stanley P. Reimann, for whom the award is named, was the founder of the Institute for Cancer

Skalka has authored over 240 scientific papers as well as the book *Discovering Retroviruses: Beacons in the Biosphere.* She is also a co-author of *Principles of Virology*, the leading textbook in the field.

Research, which merged with the American Oncologic Hospital in 1974 to form Fox Chase Cancer Center.





Cihangir Duy was awarded an American Society of Hematology 2023 Junior Faculty Scholar Award in basic/

translational research.



Jaye Gardiner received the Maximizing Opportunities for Scientific and Academic Independent

Careers Postdoctoral Career Transition Award to Promote Diversity from the National Institute of General Medical Sciences.



Joel Helmke has been named Vice Chair of the Board of Directors of the Alliance of Dedicated Cancer Centers. The

trade association represents 10 of the nation's leading cancer hospitals, including Fox Chase.



Elizabeth Plimack was appointed Treasurer of the American Society of Clinical Oncology, a professional

medical society of nearly 45,000 members.



Camille Ragin was appointed Chair of the Minorities in Cancer Research (MICR) Council for the American Association for

Cancer Research. The MICR aids the careers and professional needs of minority scientists in cancer research.

PAUL GROTZINGER: A FATHER FIGURE FOR FOX CHASE'S CLINICAL PROGRAM

BY MARIAN AURIEMMA

pioneering leader of Fox Chase Cancer Center's clinical program from 1960 into the 1980s, surgeon Paul Grotzinger is remembered for his unwavering dedication to patient care and his innovative approach to integrating research and clinical care through meaningful relationships.

"He was a strong leader who followed his goals and his rules. When he had staff meetings he ran them like he was the captain of the ship," said Paul Engstrom, Professor Emeritus at Fox Chase, who worked closely with Grotzinger.

But this firm approach to leadership did not take away from Grotzinger's ability to form personal bonds with his colleagues.

"He seemed gruff and tough, but for those of us who got to work with him, he was amenable to new ideas and was really rather welcoming," said Engstrom. "In some ways he was a father figure to me. I had moved from Minnesota and had no other family in the area. Dr. Grotzinger and his wife took my wife and I under their wing and we would do things with them socially."

Grotzinger believed that cultivating relationships, particularly between surgeons and scientists, was paramount to progress in the field. He also took great care in developing strong relationships with his patients, who would at times wait hours just to see him in the clinic, Engstrom said.

Grotzinger's son John, now a distinguished professor of geology and planetary sciences at Caltech, witnessed that respect firsthand when he was young.

"One of the memories that sticks out in my mind is going to the grocery store and invariably running into one of his former patients who was just so passionately appreciative of their recovery from disease. I saw him as a member of a community we were part of that I had never appreciated before. He was doing good for humanity and people acknowledged that," John said.

A Philadelphia native, Grotzinger received his medical degree from Hahnemann Medical College in 1943. After an internship and residency in general surgery at Hahnemann, he completed residencies at Charles Wilson Memorial Hospital in Binghamton, New York, and Jeanes Hospital in Philadelphia.

He also served as an associate professor of surgery at Hahnemann from 1951 to 1966 as well as a professor of clinical surgery at the University of Pennsylvania Medical School.

Grotzinger served as Chief of Surgery at the American Oncologic Hospital from 1960 to 1974. When the hospital and the Institute for Cancer Research became Fox Chase Cancer Center in 1974, Grotzinger was instrumental in establishing the center's clinical program and became Chief of Surgery. He also served as Medical Director at Fox Chase until 1982 and as Vice President for Medical Affairs from 1975 to 1986.

"What I remember most is someone who was very dedicated to his work. He was deeply passionate about it and absolutely loved being involved in the hospital and the center," said John. "He would often take us into both the center and the hospital and my sister and I would do our homework in his office while he did his rounds."

Grotzinger retired from Fox Chase in 1986 and the Paul Grotzinger and Wilbur Raab Chair in Surgical Oncology was established in 2001. The chair was created to support an outstanding leader in the field of surgical oncology who represents the highest standards of excellence. In addition, the annual Grotzinger Lectureship enriches the intellectual life of Fox Chase by bringing distinguished visitors to speak on areas of clinical interest.

"I think if there is anything my father would want to be remembered for it would be cultivating that proximity of the clinical program to the research program," John said. "He strongly believed that's how progress was made, and I've seen in my own work that he was right."

"What I remember most is someone who was very dedicated to his work. He was deeply passionate about it and absolutely loved being involved in the hospital and the center."

-JOHN GROTZINGER, SON OF PAUL GROTZINGER



333 Cottman Avenue Philadelphia, PA 19111-2497 www.foxchase.org 1-888-FOX-CHASE

NON-PROFIT ORG. U.S. POSTAGE PAID PHILADELPHIA. PA PERMIT NO. 3187



Visit us online at foxchase.org/Forward















"MY FOX CHASE TEAM KNEW EXACTLY WHAT TO DO TO PUT MY CANCER INTO REMISSION."

JAMES "CY" YOUNG MELANOMA SURVIVOR

WHERE YOU START MATTERS.®

FoxChase.org 888-FOX-CHASE

