

FOX CHASE Forward

BROADENING THE CONVERSATION ABOUT CANCER | SUMMER/FALL 2021



THE EYE OF THE BEHOLDER

THE PERSPECTIVE THAT CAN COME WITH A CANCER
DIAGNOSIS AND TREATMENT



ASPECTS OF THE CANCER JOURNEY

From reflection to revelation to resilience. The cancer experience so often transcends the logistics of clinical care by taking us on a journey. It is deeply personal and unique to each patient. Many others accompany them along the way, their contributions becoming integral to the transformation that inevitably takes place.

The people you'll meet in this issue of *Forward* offer us thought-provoking insights from various points of view: patient, medical oncologist, psychologist, social worker, chaplain, and research coordinator, among others. Together, they tell the story of what it's really like to face cancer.

In our cover feature, we look through "The Eye of the Beholder." Beyond the appointments and care plans and treatments, there are many different emotions that come with cancer: anger, grief, guilt, gratitude. Perspectives on health, relationships, one's purpose, and life itself are

reexamined or perhaps considered for the first time. Things change and people change.

We also focus on the particular challenges of transitioning into survivorship. The cancer experience doesn't end when treatments do. There are concerns about managing lingering symptoms of disease and side effects from treatment, adjusting to fewer appointments with the clinical team and greater responsibility for monitoring one's health, and dealing with anxiety about follow-up scans and what they may reveal. We are here for our patients at this and every point of their journey.

Finally, we take a closer look at clinical trials and how they are changing the way we treat patients. Immense work goes into developing and carrying out these studies. We are able to offer potentially life-saving treatments to participants years before they become widely available. The cancer experience teaches us that what lies ahead is not always



expected, nor is it easy. Together with our patients, we are moving forward with hope and proving our resilience. Science and medicine pave the way, but the human spirit accounts for success in ways we may never be able to measure.

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FOX CHASE *Forward*

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A. Lindo Patterson played a major role in running an X-ray structure analysis group and mentoring some of the best young scientists in the field. His research was also used by several Nobel Prize-winning scientists.

NEW CANCER EPIGENETICS INSTITUTE LAUNCHED

Fox Chase Cancer Center has launched a new Cancer Epigenetics Institute (CEI) that will create a locally based national hub for epigenetics study and collaboration focused on mechanisms promoting cancer and therapeutic resistance.

Epigenetics is the study of how modifications to DNA and the environment surrounding DNA impact the way genes are expressed and the stability of DNA without changing its sequence. In cancer research, epigenetics is used to understand how cancer cells react to their environments and discover ways to control those reactions.

“Precise regulation of epigenetic mechanisms is critical for mammalian development and tissue homeostasis and is often dysregulated in human diseases,” said C. David Allis, the Joy

“The benefit of the new institute is that it increases the focus on epigenetic mechanisms driving cancer and helps facilitate center-wide collaborations.”

—JOHNATHAN R. WHETSTINE,
DIRECTOR, CANCER EPIGENETICS
INSTITUTE

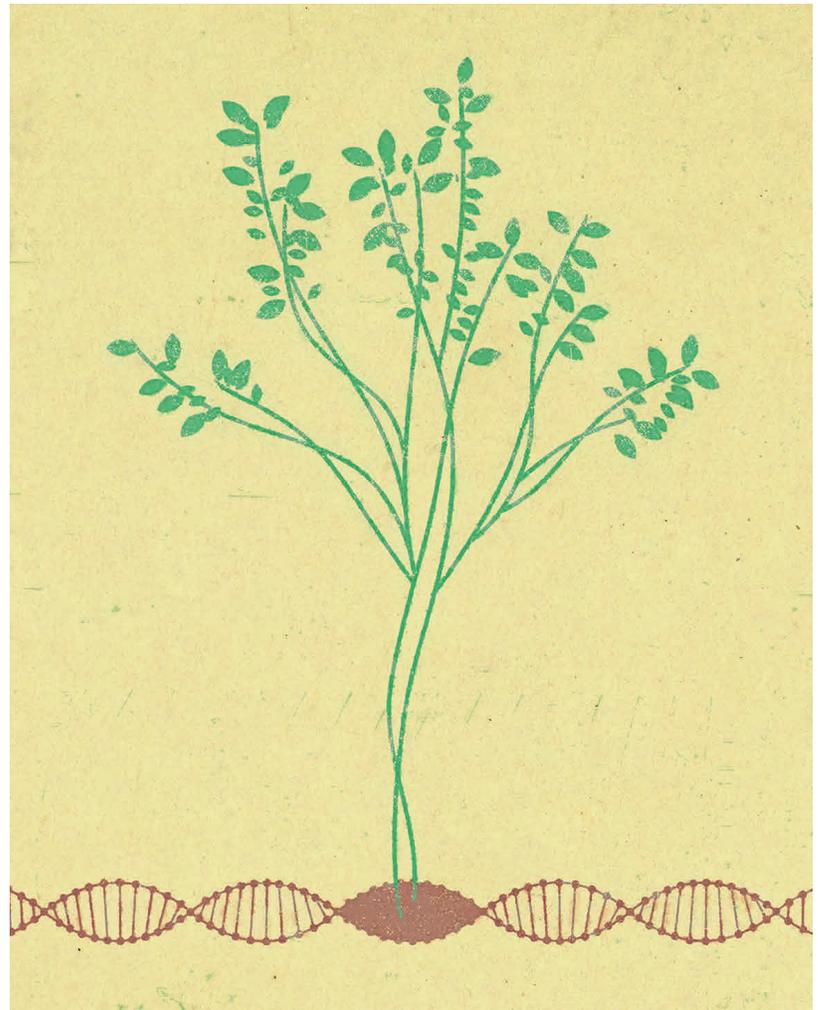
and Jack Fishman Professor at The Rockefeller University and one of the leading researchers in epigenetics. Allis will serve as a member of the CEI advisory board.

“Exciting progress has been made in unraveling fundamental mechanisms that utilize a plethora of epigenetic regulators drawing upon biochemical and cell-based studies,” Allis added. “The Cancer Epigenetics Institute at the Fox Chase Cancer Center is well suited to bring about these advances through the collective talent and expertise of its members.”

The mission for the new CEI is to facilitate academic-to-industry and academic-to-academic partnerships with the goal of promoting discovery in cancer

epigenetics. The aim of those discovery efforts is to reduce the morbidity and mortality associated with cancer by focusing on biomarker research and therapeutic interventions.

“The benefit of the new institute is that it increases the focus on epigenetic mechanisms driving cancer and helps facilitate center-wide collaborations,” said Johnathan R. Whetstine, founding director of the new institute, who is also a professor and co-program leader for the Cancer Signaling and Epigenetics Program at Fox Chase.



RICHARD MIA

BONE MARROW TRANSPLANT DEPARTMENT RECOGNIZED FOR EXCEPTIONAL SURVIVAL OUTCOMES

The Fox Chase-Temple University Hospital Department of Bone Marrow Transplant (BMT) and Cellular Therapies was recently recognized for exceptional performance in successful transplant procedures, making it the second year in a row that the center has achieved this distinction.

Each year, the Center for International Blood & Marrow Transplant Research (CIBMTR)

“That’s why we are successful, because we have the community doctors working together.”

—HENRY CHI HANG FUNG,
CHAIR OF THE DEPARTMENT
OF BONE MARROW TRANSPLANT
AND CELLULAR THERAPIES

performs a center-specific survival analysis providing one-year survival rates among 170 centers in the United States. The report contains outcomes for transplants using both related and unrelated donors.

The CIBMTR identified Fox Chase as having some of the best survival outcomes, a distinction it shares with only 16 other centers across the nation. Fox Chase is the only center in the tristate area listed for two years in a row.

Henry Chi Hang Fung, chair of the department, said the honor is due to several essential factors, including strong program leadership, an expert multidisciplinary team, and close collaboration with community physicians.

Fung added that a large referral



Henry Fung’s department was recognized for having exceptional performance in successful transplant procedures.

base, like the one that the department has with St. Luke’s University Health Network-Anderson Campus in Easton, Pennsylvania, is also a factor in the department’s success. Once transplants are completed at Fox Chase, patients are then able to return closer to home to receive follow-up care from St. Luke’s.

“That’s why we are successful, because we have the community doctors working together. Our

radius of referral is about 200 miles. Probably about one-quarter of our transplants are from St. Luke’s,” Fung said.

He added that another component of the BMT department’s success is its CAR T-cell therapy program. In CAR T-cell therapy, a lab modifies the patient’s red blood cells by adding a chimeric antigen receptor (CAR) and then reinfuses those cells into the patient’s body to attack cancer cells.

POTENTIAL NEW TREATMENT TARGET FOR GI TUMORS IDENTIFIED

Researchers at Fox Chase Cancer Center have identified a potential new target, a tyrosine kinase known as Wee1, for the treatment of gastrointestinal stromal tumor (GIST).

“Historically, all GISTs were thought to be the same,” said Lori Rink, assistant professor in the Molecular Therapeutics Program at Fox Chase. “Now, we know that there are different subtypes of GIST, each with distinct differences in terms of clinical history and response to therapy. These include the more common KIT-mutant subtype and the less frequent PDGFRA-mutant subtype.”

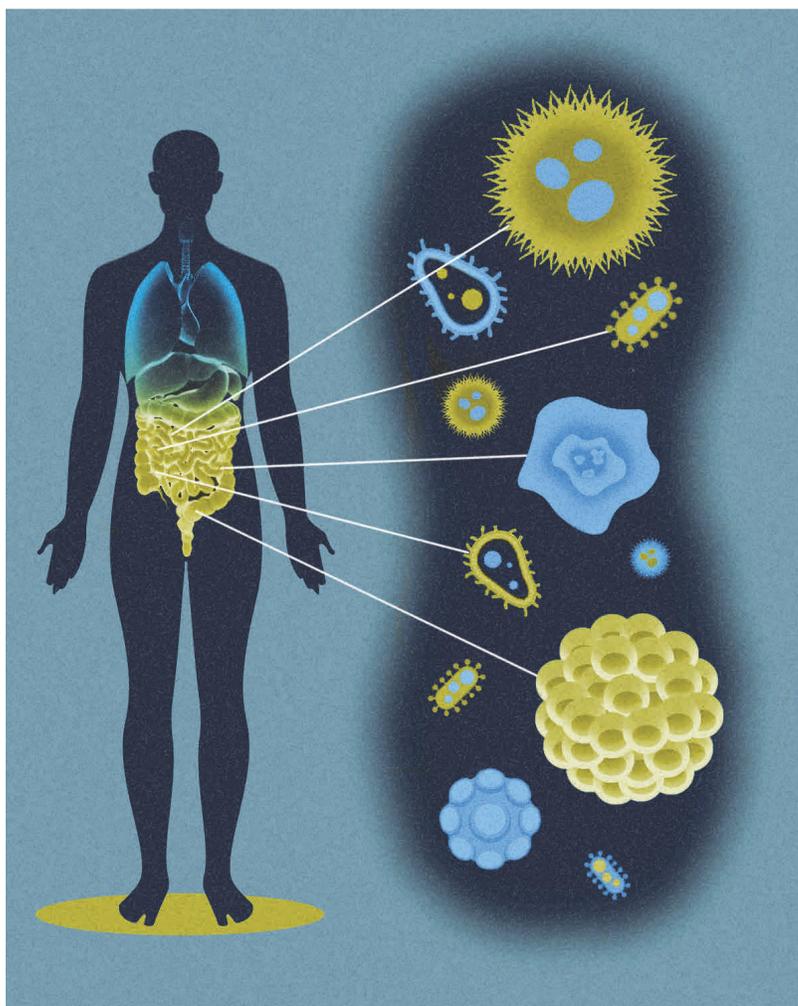
Imatinib was approved for the treatment of GIST nearly 20 years ago. However, patients with PDGFRA D842V-mutant disease do not respond to imatinib, Rink

“We know that there are different subtypes of GIST, each with distinct differences in terms of clinical history and response to therapy.”

—LORI RINK, MOLECULAR THERAPEUTICS PROGRAM

said. Last year, the Food and Drug Administration approved avapritinib (also known by its brand name, Ayvakit) as a first-line therapy for patients with PDGFRA D842V-mutant disease.

“Avapritinib was shown to be quite effective in this GIST subtype,” Rink said. “However,



avapritinib is associated with some cognitive side effects and clinical resistance to the drug has already been reported.”

Shuai Ye, a postdoctoral fellow in Rink’s laboratory, led the study, which looked at the kinome in GIST specimens from three common molecular subtypes: KIT-mutant, PDGFRA-mutant, and SDH-deficient GIST to explore new targets for treating GIST. This kinome profiling first identified a potentially important role for Wee1, a cell cycle-related kinase, in

the survival of some forms of GIST.

The Rink lab then performed a preclinical study in mouse models that showed that combination of MK-1775, a Wee1 inhibitor, significantly improved the activity of avapritinib in KIT- and PDGFRA-mutant GIST cell lines.

“The hope is that if we are able to combine these drugs clinically that we could give lower doses of avapritinib and bypass both the cognitive toxicities associated with the drug and the acquired resistance observed clinically.”

CHEMOTHERAPY-INDUCED 'DORMANCY' IN AML ALLOWS CANCER CELL SURVIVAL, CONTRIBUTING TO RELAPSE

A recent study has helped to identify a cellular resilience mechanism through which acute myeloid leukemia (AML) cells survive cancer treatment, causing disease relapse. The research also suggests that certain drugs could be used to destroy these treatment-surviving AML cells.

Cihangir Duy, assistant professor in the Cancer Signaling and Epigenetics Program at Fox Chase,

who led the study, made an early observation in his postdoctoral research that AML cells enter a senescent state in response to chemotherapy that has the potential to re-initiate leukemia. Senescence, another word for cellular aging, is the point at which cells lose their ability to divide and grow.

Duy's findings, which were published in *Cancer Discovery*, revealed a new drug resilience mechanism that AML cells use to

recover after cancer treatment.

Past studies suggested that AML relapse was caused by the presence of inherently more resistant leukemia stem cells. Instead, in their study, Duy and colleagues found that when patient-derived AML cells were treated in the lab with chemotherapy, many cells died, but a fraction survived, regardless of whether they were leukemia stem

Researchers found that drugs that inhibit ATR function could be used to target senescence-like cells to prevent survival and recurrence of AML after chemotherapy.

cells. These residual cells were large, stopped growing, and showed markers of cellular senescence.

Temporarily entering this senescence-like phase allows AML cells to endure chemotherapy; subsequently, these protected AML cells awaken and are able to begin dividing again.

Duy found that inhibition of the ATR protein kinase, a key factor in cellular DNA damage response, impaired this resilience mechanism, implying that drugs that inhibit ATR function could be an approach for targeting senescence-like cells to prevent survival and recurrence of AML after chemotherapy.



RAUL ARIAS

THE EYE OF THE BEHOLDER

THE PERSPECTIVE THAT CAN COME WITH A CANCER
DIAGNOSIS AND TREATMENT

Cancer is a life-changing event and a unique experience for each person who goes through it. Whether a patient views their new reality as just an obstacle to get over or as a lens through which to assess their life and priorities, cancer can have a profound effect on the lives it touches. Dealing with these new challenges can be a complex process filled with deep personal questions or revelations. It can also involve new emotions that can range from relief or thankfulness to regret, fear, or even anger.

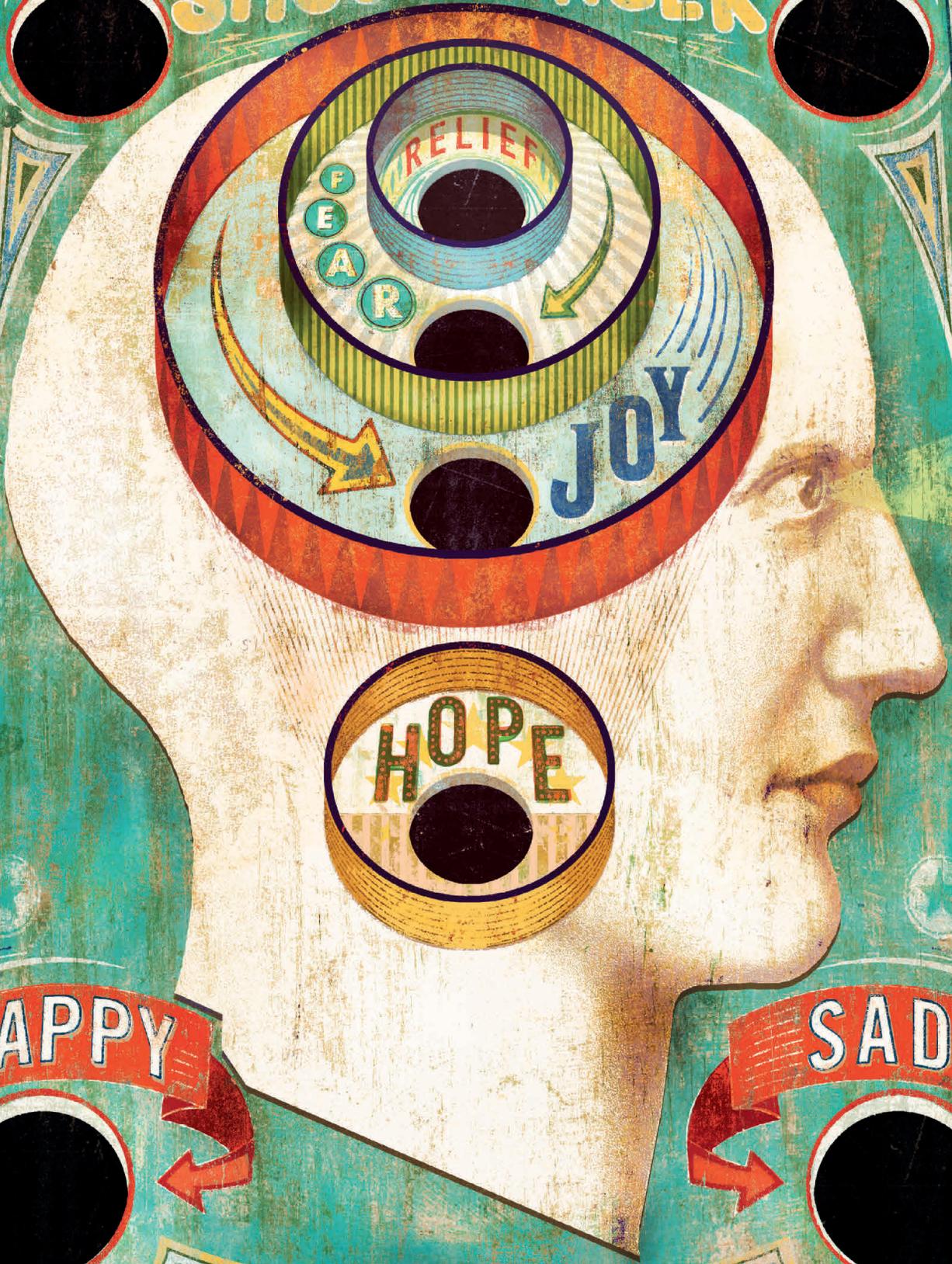
For Mike Phillips, 75, of Warminster, Pennsylvania, a cancer diagnosis didn't necessarily scare him, but it was the first time he had ever felt defenseless.

"I'm a pretty strong person, and for the first time I really felt vulnerable. I was concerned, but for some reason, I was never fearful. I guess it was because of the confidence I had in my clinical team and the fact

BY **MARIAN DENNIS**

ILLUSTRATION BY **CHRISTIAN NORTHEAST**

SHOCK ANGER



F
E
A
R

RELIEF

JOY

HOPE

HAPPY

SAD



that I'm a strong, positive person," he said.

Phillips was first diagnosed with kidney cancer in 2005 when he was 58. At that time, he had part of one kidney removed. In 2011, the cancer returned, and this time it affected both kidneys. He was put on dialysis and on a waiting list for a kidney transplant.

He also experienced other medical challenges during that time. He had his prostate removed and also needed pancreatic surgery. He endured a left hemispheric stroke that, fortunately, had no residual effects. He finally received a kidney transplant in 2015 and has been doing well ever since.

Phillips said his medical ordeal forced him to look at his life, assign value to the most important things, and come to terms with some difficult truths.

"After several surgeries and a few brushes with death, I felt that I was going to plan to retire. I've always been a good family person, but it did reinforce the need to spend more time with my family. I came to the realization that time is in fact limited," said Phillips. "And I once heard this parable that says, 'No one on their deathbed says I wish I had spent more time at the office.'"

ANSWERING THE TOUGH QUESTIONS

Like Phillips, many cancer patients are forced to come to terms with the idea that time is fleeting. For some, this can lead to an intense need for deep personal reflection or the surfacing of difficult questions that may or may not have concrete answers.

Barbara Klimowicz is a seasoned expert when it comes to dealing with these unique challenges. As a staff chaplain at Fox Chase Cancer Center, Klimowicz has the important responsibility of walking with patients through their cancer experiences and helping them emerge with the hope needed to sustain them.

"Somehow, just by being hospital chaplain, people feel they have sort of this neutral resting place where they can share things they're afraid to share with their family members because they don't want to make them sad or hurt, or things they don't even want to share with a social worker or their doctor. They can share these things with a total stranger like me," said Klimowicz.

After 24 years of working at Fox Chase, she said the common characteristic she finds among her patients is their desire to look within themselves and find the answers to some of life's biggest questions.

"Whether it's referrals I have at bedside, in outpatient, infusion, radiation, or in the hallway, it becomes an intense conversation," said Klimowicz. "You start looking within yourself and start asking 'What happens after I die?' and 'Is there a God?' or 'Who's going to help me?'"

Klimowicz spends much of her time with patients from varying backgrounds, cultures, and belief systems. What

"IT HAS CHANGED MY PERSPECTIVE IN THAT IT HAS MADE ME MORE SENSITIVE TO PEOPLE I KNOW, WHETHER FRIENDS OR COLLEAGUES, WHO ARE CAREGIVERS FOR SOMEONE GOING THROUGH A HEALTH ISSUE. IT'S ALMOST A FULL-TIME JOB."

—MIKE PHILLIPS,
KIDNEY CANCER SURVIVOR



may provide personal relief for one person may not offer the same comfort for another. In all of these circumstances, however, her goals are the same—to listen to patients, help them learn more about themselves, and put them at peace with who they are.

"Being a chaplain is such an interpersonal model of care. The patients get to know you, they become your family and they trust you. It's about trust and about love," said Klimowicz. "At that point, I'm able to guide them through and have them find the peace that's within them. You want someone who is already at that edge, who may be bitter or angry, to find peace with what they have accomplished and remind them of the good that they do."

GOING THROUGH THE EMOTIONS

Unfortunately, grappling with these questions is not the only obstacle many patients face in the throes of a diagnosis. Whether a patient fears facing their own mortality or worries that a change in appearance may affect how they are viewed by others, these patient emotions are common and can be the result of myriad factors associated with the disease. For many people, the first emotion they are forced to deal with is the initial shock of a formal diagnosis.

"There are certainly some phases that people go through as they try to adapt to life with cancer. One of the things I've noticed is that for many people, they have the sense that something is wrong and the thought of cancer floats through their mind, but it may take some time for them to get the formal diagnosis," said Paula Finestone, a clinical psychologist at Fox Chase.

"In a way they sort of saw it coming. That can be hard,



Mike Phillips said his cancer diagnosis was the first time he ever felt defenseless.

and even with that sense that something is wrong, a diagnosis usually comes as a huge shock because there are so many layers of meaning and social stigma for cancer even still,” she said.

For some patients, this experience can leave them feeling angry or that their diagnosis is unfair, even years after their treatment is completed. Finestone said these emotions are understandable, especially when cancer completely changes the direction in which patients thought

their life was going. She said there are many cases where anger on the surface represents more deeply felt grief, disappointment, or fear.

“I have had patients who are still grieving what the cancer took from them even when it was years later,” said Finestone. “For example, one woman was hoping she would get into a relationship and have a family. As a result of her head and neck cancer, she perceived herself as being extremely unattractive. Because of that, she pulled away from relationships. Now, 20 years later, the cancer isn’t the issue anymore, but she’s still grieving what that took from her.”

Finestone said another common reaction to cancer is



“WHENEVER CRISIS HITS US, WE WANT TO KNOW WHERE IT CAME FROM AND WHY IT’S HAPPENING TO US. THE TRUTH IS NO ONE KNOWS WHY THEY GET CANCER.”

—PAULA FINESTONE,
CLINICAL PSYCHOLOGIST

guilt. It could result from the need to depend on others more or feeling as if the choices a patient made in the past somehow led to their diagnosis. She recommends that those individuals try to focus on the present, to cherish the days that they feel good and talk with their care team on days they may be struggling.

“Whenever crisis hits us, we want to know where it came from and why it’s happening to us,” Finestone said. “The truth is no one knows why they get cancer.”

Sometimes guilt may not even have to do with the

individual going through cancer. Phillips said he remembers feeling upset that his wife, now deceased, was tasked with so much in caring for him during his treatments. He said he felt that it was unfair that the experience was so difficult for her.

“It has changed my perspective in that it has made me more sensitive to people I know, whether friends or colleagues, who are caregivers for someone going through a health issue. It’s almost a full-time job,” said Phillips.

Additionally, a cancer diagnosis can bring a significant sense of loss. Patients who learn that they are now going to be dealing with a life-changing disease can be left with a feeling that they are no longer the person they once were. Whether that sensation of loss is because of a new flood of appointments that alter their daily schedule, a change in how they view the world, or any other major shift that can occur during a cancer journey, there are many valid reasons a patient can feel diminished.

“I have many patients who really struggle with losing their hair, partly because it’s an alteration in appearance and partly because it’s a sign and symbol of having cancer,” said Finestone. “There’s a lot of change and it can be difficult to manage.”

In these instances, Finestone said adjusting is a slow process. Whether it helps to do some personal reflection or find comfort in the company of others, each patient should find a method that works for them to maintain a healthy relationship between their mind and body. One method,

METHODS FOR MINDFULNESS

There are many techniques patients can use to cope with a difficult diagnosis. Among one of the most recommended is practicing mindfulness.

“We think of mindfulness as paying attention, on purpose, to the present moment nonjudgmentally. I think mindfulness can really help people tolerate that fear of the unknown by focusing on and making the most of the present moment,” said Lauren Zimmaro, a licensed clinical psychologist and senior postdoctoral associate at Fox Chase. Zimmaro’s research is broadly focused on stress, coping, and quality-of-life issues relevant to cancer patients.

“It helps by allowing patients to relate to their thoughts, emotions, or even their physical body in a new way by helping them observe what’s happening to them,” said Zimmaro. Practicing mindfulness can help break down negative thought patterns and allow a person to experience their emotions, she said.

Patients can even use mindfulness to cope with their physical pain, according to Zimmaro. By focusing on where

the physical pain is and identifying what may be triggering it, a patient can learn to listen to their body and give it what it needs.

But it can be difficult and frustrating for some patients to carve out time between appointments, treatments, travel, and other priorities to try a method that requires focusing on a singular process.

For these patients, Zimmaro suggests avoiding making big changes to a set routine and instead bringing attention to everyday things like washing the dishes.

“You can tap into all five senses as you’re doing it. You might just simply notice that you’re washing the dishes. Your mind might be on all the things you have to do today, so first just bring your attention to washing the dish,” said Zimmaro.

“Then you might shift your attention to the smell of the soap, or the meal you just cooked, the temperature of the water, the sound of the water splashing. All of these little moments are happening to us, but we just don’t pay attention to them.”



mindfulness, which is simply focusing on the present moment, has been found to be particularly helpful (see “Methods for Mindfulness,” facing page).

Clinical psychologist Paula Finestone (left) has counseled patients who are still grieving what cancer took from them, even after as many as 20 years. Staff chaplain Barbara Klimowicz (right) is a seasoned expert who guides patients through their cancer experiences.

LOOKING AHEAD WITH HOPE

Focusing on small moments is exactly what helped Rodney Malarchik, 67, of Bethlehem, Pennsylvania, get through his diagnosis and treatment.

Malarchik was diagnosed with stage III pancreatic cancer in June 2020. A self-proclaimed optimist, Malarchik said he recalled feeling surprised because he was someone who never got sick. As his treatment progressed, Malarchik said he began to take notice of even the small things in his day-to-day life.

“As I went through chemo and radiation, my perspective on life got much more crystallized. There’s much more to life. We take so much for granted, but when you realize that every day might be closer to your last day, it brings things into perspective,” said Malarchik.

For both Malarchik and Phillips, enduring cancer meant making changes in their lives. Phillips, who has been a patient at Fox Chase for over 17 years, saw it as an opportunity to help other patients and has been doing so for the past five years. He currently co-chairs the Patient Family Advisory Council at Fox Chase and sits on the Patient Satisfaction Leadership Team. He is also a member of the Patient-to-Patient Network, a telephone-based support program that matches patients and caregivers with a Fox Chase cancer survivor who either underwent similar treatments or dealt with the same type of cancer.

“I’m one of probably about a couple hundred people who have been trained to counsel patients with cancer. I’ve had kidney and prostate cancer, so if someone with either one of those cancers wanted someone to talk to outside of the clinical staff, I may be contacted and provide non-medical counsel,” said Phillips.

In addition to the Patient-to-Patient Network, Fox Chase offers multiple services aimed at helping patients through their cancer experiences, including pastoral care, social work services, stress management programs, support groups, and psychological support programs.

Malarchik said he intends to do what Phillips has been doing after completing his treatment in May. He wants to spend his time helping other patients through the difficulties of cancer and working with them to restore hope in moments it may be lost.

“I got so much from people just being supportive. It helped me know I wasn’t alone in my fight. It also changed my idea of what I want to do with my life after this. There’s a lot of survivors out there and people need hope. I have a great deal of faith, and I believe you can get through things, share, and pay it forward with others who need that kind of hope,” said Malarchik.

“There’s no easy in any of this, but if you have the right perspective, if you’re looking forward, you may be seeing a different future than what you had envisioned. You have to embrace it to make it better,” he said. ♦

Life After Cancer Treatment Is Not Always an Easy Road

SHIFTING Gears

Finishing treatment can be an exciting milestone for any cancer patient. It signifies the end of a difficult journey filled with seemingly endless months of appointments, nervous waiting, and numerous physical side effects. It can also be a happy time for a patient's family as they look forward to a return to normalcy.

But for many patients, the idea of their treatment ending can be a complicated experience. In addition to coming to terms with the fact that some of the physical issues they experienced during treatment don't necessarily stop as soon as their treatment does, patients also have to learn how to cope with these ailments without being monitored as frequently.

The emotional difficulties that accompany a transition into survivorship, which can feel like grinding gears, are often unexpected as well and can leave patients feeling less like survivors and more like permanent patients.

By MARIAN DENNIS

Illustration by EVA VÁZQUEZ



THE HAPPINESS HURDLE



appiness isn't always the first reaction to the end of cancer treatment. Being around other patients who are joyfully celebrating the end of their treatment or being with friends and family who are excited about the milestone can be an unexpectedly lonely experience for a patient when they don't feel the same joy.

"I've had patients say to me that it feels really weird to celebrate because they think, 'I'm not done. I'm never done,'" said Anjali Albanese, a social worker at Fox Chase.

Albanese works with patients through the entirety of their cancer experience, from diagnosis through survivorship. Albanese said she and her colleagues often receive calls from patients who have finished treatment but don't feel the way they think they are "supposed" to.

"I have this profound memory of a patient of mine. She finished her last chemo and everyone thought it would be a nice idea to have a party for her. I just remember looking at her face at the party and afterward she said to me, 'Everybody seems so happy, and I feel like I should be happy too, but I'm not. I'm scared,'" said Albanese.

"The biggest advice I can give to those people is just to be kind to yourself. You don't have to feel the way you think you're supposed to feel or that other people around you expect you to feel in terms of elation or joy," she said.

That happiness can be hard to find when confronted with the new reality of cancer survivorship. Although days of sitting in a room receiving active treatment may be behind them, the anxiety of follow-up scans that have the potential of revealing a cancer recurrence are still very much a concern.

"Some patients say to me that they feel like they live their life in three-month increments. They go from being seen here and getting the news that's hopefully good, and then they have permission to go and live the next three months of their life until it comes time for the next scan. Then it starts all over again with the fear, anxiety, and worry," said Albanese.

PHYSICAL CHANGES AND CHALLENGES



hat adjustment isn't just comprised of an emotional transition. Patients who have undergone weeks, months, or even years of cancer treatment become familiar with the side effects and pain that is associated with their cancer journey. For some, the light at the end of the tunnel

may be the end of their treatment, but it can be an unexpected obstacle to learn that the physical side effects of cancer still linger on.

"I think one of the things that really catches people by surprise is that some of these symptoms can be long lasting.



"I've had patients say to me that it feels really weird to celebrate because they think, 'I'm not done. I'm never done.'"

—ANJALI ALBANESE, FOX CHASE SOCIAL WORKER

Patients may have completed treatment but may be disappointed when they still feel fatigued or they're still having trouble sleeping," said Carolyn Fang, associate director for Population Science at Fox Chase, who researches cancer survivorship.

"The data show that the most common physical complaints that cancer patients may experience after treatment include fatigue, insomnia, and pain. Broadly speaking, different cancer populations may have different constellations of symptoms," she said.

These symptoms, though familiar to patients, may still cause concern in the survivorship stage. Once treatment has concluded, patients could then be burdened by figuring out what a specific pain or symptom may indicate.

"Imagine that you feel a twinge in your back or you feel run down. Cancer patients might be more vigilant for symptoms that in the past would have been attributed to just coming down with a cold or straining your back while doing yard work," said Fang.

In addition, many patients become accustomed to the

reassurance that a team of health professionals are actively treating their cancer. As those appointments and activities begin to lessen, patients may feel overwhelmed or nervous that the responsibility of monitoring their health is now completely on their shoulders.

WORRY AND STRESS

“I’ve had patients tell me a month before their next scan that they don’t feel well. They’ll have an upset stomach or feel nauseated. A lot of that is related to worry and stress. That anxiety can manifest in physical symptoms as patients get closer to scan times,” said Nicole Ross, an advanced practice clinician who specializes in survivorship.

“We recommend that the patient receive support through their care team, but there are other coping mechanisms like exercise, walking, yoga, and other things to help them deal with stressful situations,” Ross added. “To support patients during the very stressful times of waiting for results, we provide resources for support networks and refer to social work services or therapists as needed.”

In some of these cases, patients are seen by Jean Arlt, a

clinical psychologist at Fox Chase who frequently works with patients who have completed treatment. “What I see with folks who are transitioning into survivorship is that there is a lot of new anxiety about monitoring their health and various somatic experiences like a headache or feeling more fatigued.”

Arlt frequently speaks with patients about appropriate threat monitoring, which is a patient’s ability to observe their symptoms in a way that will help identify any red flags without causing excessive worry. She also discusses how cancer may have changed the patient’s experience with the sensations in their body.

“I tell them that cancer is an extremely stressful experience and going through treatment is extremely stressful,” Arlt said. In these cases, she added, it is important for a patient entering the survivorship stage to speak with an oncologist about the symptoms or warning signs specific to the patient’s particular kind of cancer.

“It’s important to be patient in terms of learning what to expect when treatment is over,” said Fang. “There are a lot of resources available at Fox Chase for patients and survivors dealing with these issues.”

TRANSITIONING INTO SURVIVORSHIP

“As we care for our cancer survivors, our goals are to prevent new cancers and screen for cancer recurrence,” Ross said. “We are also assessing for late side effects of treatment. We coordinate with other specialists and their primary care provider.”

In addition to care plans, Fox Chase offers several clinics for specific cancer types that can help survivors navigate their health in their new normal. These clinics are designed to address the needs of cancer survivors, maximize their quality of life, provide screening and cancer education, and provide survivors with a plan to help coordinate care with other providers.

“Having clinics and having providers that are vested in survivorship so that the visits can be meaningful is something that Fox Chase does very well,” said Ross. “We make sure to incorporate other things like screening for other cancers, making sure the patient stays up to date on vaccines, and teaching patients how to maintain a healthy weight after treatment.”

Fox Chase also offers patients opportunities to speak with financial counselors regarding treatment-associated costs and a schedule of educational events that cover a range of topics and include virtual support groups for patients, friends, and family.

“Adjusting to life after treatment can be an anxious or nervous time. But it’s important to know that patients are not alone and the care team is there to help them,” said Ross. ♦



Nicole Ross is an advanced practice clinician who specializes in survivorship.

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PATHWAYS TO INNOVATION

Clinical Trials Pave the Way for Life-Changing Treatment

Clinical trials are the method that doctors use to develop and bring new drugs to patients. Phase 1 cancer therapy trials are the first step in that process. These early trials are the first time that drugs are tested for safety and tolerability in humans. Phase 1 trials may test a new drug or a new combination of drugs with the hope that it will provide benefit to a patient in need. Clinical trials are one of the most important stepping-stones on the path to finding new treatment methods and options for patients with cancer.

Fox Chase Cancer Center is one of few institutions in the Philadelphia area that conducts these essential trials

Lot

BY MARIAN DENNIS
PHOTOGRAPH BY PETER FREED



**“IT’S REALLY IMPORTANT
TO RECOGNIZE THAT ALL
CLINICAL TRIALS ARE
ONE HUNDRED
PERCENT VOLUNTARY. ...
PARTICIPATION IS
ALWAYS IN THE PATIENT’S
CONTROL.”**

—ANTHONY OLSZANSKI,
MEDICAL ONCOLOGIST

for patients with cancer. Fox Chase conducts hundreds of clinical trials a year, including studies that involve giving patients treatment for their disease and non-interventional studies that are lab-based or observational. Many of these trials, particularly those that make it to the later stages, have helped patients live longer and have a higher quality of life.

“Sometimes these trials are your last hope,” said Stephanie Heart, a malignant melanoma patient who was treated at Fox Chase with a cutting-edge drug that was tested in a clinical trial. Although she did not participate in that trial, she ultimately benefitted from it.

WHAT IS A PHASE 1 CLINICAL TRIAL?

Phase 1 clinical trials are a key step in the approval and use of new therapies. But clinical trials can only begin after laboratory research, which includes cell and animal studies, has indicated that the treatment is promising. After this initial research is completed, the trial must then be approved by the Food and Drug Administration (FDA) for testing in humans.

“Phase 1 trials are typically generating a lot of data on how the body is working on the drug and how the drug is working on the body. We’re trying to establish that we can give the drug safely and figure out what dose we can give the drug at,” said Anthony Olszanski, a medical oncologist at Fox Chase and director of the Early Clinical Drug Development Phase 1 Program.

In a phase 1 oncology trial, a new and promising drug is given in carefully monitored doses that are gradually escalated to a limited number of patients—less than 50—in an effort to determine the drug’s safety and tolerability, as well as any preliminary activity. Once those are proven, the drug moves to phase 2 and 3 trials, which can include hundreds or thousands of patients.

Sometimes a phase 1 trial may include what are known as “expansion cohorts” that evaluate the final dose of the drug or drugs in specified groups of patients. Phase 1 oncology trials are very different than other phase 1 trials. In non-oncology trials, patients are often healthy human volunteers, but typically only patients with cancer can participate in phase 1 oncology trials.

During later phases, researchers work on determining whether the drug is indeed effective and whether it’s better than treatments that are already available. If the drug is determined to be better than the existing standard of care, it will then go to the FDA for potential approval.

Fox Chase is very active in clinical trials, with 121 intervention/treatment studies presently accepting patients in phases 1, 2, and 3. There are also over 100 non-interventional studies ongoing.

“Phase 1 trials are critical because it doesn’t matter how well a drug might work if a patient cannot tolerate it. It doesn’t matter how well a drug might work if we can’t get the right dose into a patient. Phase 1 trials answer those questions and are so critically important to the patients themselves because oftentimes people who enter phase 1 trials have gone through all forms of standard of care and those standard medications are not keeping their cancer under control,” said Olszanski.

These trials allow patients with few options to have a chance at a treatment that may work for them. At Fox Chase, patients in phase 1 clinical trials have been at the forefront of the development of life-saving drugs.

“This institution has pioneered a number of major drugs going back decades, including drugs like Taxol,” which was approved for use in 1993, said Martin Edelman, chair of the Department of Hematology/Oncology at Fox Chase and Deputy Cancer Center Director for Clinical Research. “More recently, we were involved in many of the targeted agents, and most recently, immunotherapeutics. As one of my colleagues put it, ‘In general, patients at Fox Chase have the potential to

get one of these drugs years before it becomes available to the general public.”

“SOMETIMES THESE TRIALS ARE YOUR LAST HOPE.”

—STEPHANIE HEART,
MALIGNANT MELANOMA PATIENT

HOW TRIALS CHANGE LIVES

Although trials that reach the later stages can be literal life-savers for many patients who participate in them, they go far beyond helping just those individuals. Heart, who was diagnosed with malignant melanoma in her left big toe, says she is still alive today because of the clinical trials that led to the approval of her treatment, nivolumab. Known also by its brand name Opdivo, the drug was approved by the FDA as an adjuvant treatment for melanoma in 2017.

When she first came to Fox Chase, Heart met with Jeffrey Farma, a surgical oncologist, who told her that the cancer was advanced enough that she would have to have her toe amputated. Before the amputation procedure, she underwent a sentinel lymph node biopsy to determine if any lymph nodes were affected by the cancer cells. Results indicated that Heart was at stage III after the biopsy revealed microscopic cancer cells.

She then scheduled an appointment with Olszanski, who recommended that she undergo a year-long course of treatment with an immunotherapy drug, which harnesses the



Stephanie Heart is a malignant melanoma patient who benefited from a clinical trial.

power of the body’s immune system to fight cancer. Heart was treated with immunotherapy to prevent any potential cancer cells left in her body from spreading and growing.

“Melanoma has no cure and it can rest dormant for years. With all the clinical trials and studies and work they’re doing to raise awareness for melanoma, people like me have been given the gift of time,” said Heart.

For many patients, deciding to participate in a clinical trial is not easy. Mistrust in the health system or the belief that they may not get the same quality of care while participating in a trial are common deterrents for patients who may otherwise qualify for specific clinical trials.

“There’s a lot of misinformation about clinical trials, and sometimes patients’ family members will talk patients out of participating in them, not fully understanding why the research was offered. They often misunderstand the amount of care they will get in a clinical trial. Most guidelines like the National Comprehensive Cancer Network guidelines actually state that the best way to receive cancer care is through a clinical trial,” said Olszanski.

Luke Bernardo, phase 1 clinical research team lead at Fox Chase, said patients participating in clinical trials certainly have no reason to worry about the quality of care they receive during trials. Although the purpose of phase 1 trials is to determine the safety and efficacy of treatments, patients in these trials still receive the same standard of care as patients who are not part of them, with the possibility of receiving access to an even better treatment.

“I trust not only in the science we have at our disposal, which we have reviewed with a fine-tooth comb, but also, we are really selective about the trials we decide to add to our portfolio,” said Bernardo. “It’s such an effort to get these studies off the ground that it certainly wouldn’t be worth it for a trial we didn’t think our patients would benefit from.”

Patients may also fear that if they enter a clinical trial, they may not be able to withdraw from it if they change their mind or their circumstances change. But that is a fear patients can

put to rest, Olszanski said.

“It’s really important to recognize that all clinical trials are one hundred percent voluntary. That means a patient can sign up for a clinical trial but decide not to participate in the clinical trial at any point. They can stop doing it at any point in time if they get uncomfortable about it, if they have side effects because of the drug, or if some other life-changing event

happens,” said Olszanski. “Participation is always in the patient’s control.”

FINDING A CLINICAL TRIAL

For many patients, getting into a clinical trial can be confusing. Clinical trials sometimes have rigid criteria that limits participation to all but very specific patients. In addition, it can be unclear whether the best course of action is for patients to seek these trials out for themselves or wait for a referral from a doctor.

Olszanski said that when receiving treatment from an academic institution like Fox Chase, patients can expect that their doctor may suggest enrolling them in a clinical trial. However, he said patients seeking out trials can be just as important.

“Patients should always remember to be their own advocate to some degree and ask doctors if a clinical trial might be appropriate for them. That’s critical because it highlights the person’s response to clinical trials and their acceptance of being a participant in a clinical trial.”

In addition to speaking with a doctor, patients can use the clinical trials search function on the Fox Chase website to browse available trials. There, patients can search by cancer type, drug names, or treatment to find a trial that they may qualify for. Other resources such as ClinicalTrials.gov may also be helpful for patients seeking trial options. Fox Chase has a number of clinical trials available to patients who qualify, including treatment options like immunotherapy and personalized medicine.

“I think it’s important to emphasize that when we approve a clinical trial, they’re looked at very closely to make sure that they’re appropriate studies for patients. Everything about these studies is highly evaluated, carefully regulated, and discussed for months to years before they go live. There’s an enormous amount of effort that goes into each and every study,” said Edelman. ♦

SURPRISED BY A RARE CANCER

BY CHRISTINA HERNANDEZ SHERWOOD

For decades, Miriam Lieberman's healthcare routine was the same: When she scheduled her annual mammogram to screen for breast cancer, she also booked an appointment for a preventative transvaginal ultrasound. That's because Lieberman's sister survived a bout with uterine cancer 40 years ago, and the family history could put Lieberman at risk of developing the same cancer.

But at her routine gynecological exam in 2018, Lieberman realized she hadn't had a transvaginal ultrasound in three years. Though her gynecologist said she was "fine" and gave her a clean bill of health, Lieberman asked for prescriptions for the mammogram and the ultrasound.

"I waited a month," said Lieberman, now 75, of Exton, Pennsylvania. "Then I had the mammogram and the transvaginal ultrasound and nothing was fine."

Both tests had found tumors.

The mammogram showed a mass—too deep to be felt from outside the body—that was diagnosed after a later biopsy as early breast cancer. The transvaginal ultrasound led to an even more devastating discovery: a tumor filled Lieberman's uterus. A later hysteroscopy led to the diagnosis of a rare and aggressive uterine carcinosarcoma.

"I thought, 'Oh my god, what happened to my life?'" said Lieberman, who with her husband, Mike, has two sons and eight grandchildren. "It's very scary."

Miriam needed a breast lumpectomy and a complete hysterectomy. Mike began researching hospitals and surgeons. A friend of the Liebermans, a young man who was healthy after a bout with liver cancer, recommended Fox Chase Cancer Center. Within days, Miriam was booked for appoint-

honest, straightforward," Mike Lieberman said. "This is a guy you felt you could trust."

Miriam approached the day of her surgeries—July 17, 2018—with optimism. "I did have high hopes," she said, "because I knew Dr. Rubin was a great surgeon."

The surgeries were successful. Daly removed the breast tumor, and during the hysterectomy, Rubin cleared out Miriam's uterine mass. The 15 lymph nodes removed during surgery were all cancer free.

"I'm three years cancer free. It can happen. It's a very aggressive, rare cancer. But I'm here, and you can be too."

—MIRIAM LIEBERMAN, BREAST CANCER AND UTERINE CARCINOSARCOMA SURVIVOR

ments with renowned surgical oncologist John Daly and Stephen Rubin, chief of gynecologic oncology.

Although Daly, who has since passed away, told Lieberman she could be confident in beating her breast cancer, Rubin underscored the seriousness of a uterine carcinosarcoma diagnosis. He told the Liebermans that Miriam had about a 50% chance of making a full recovery. Despite the odds, the couple said they appreciated Rubin's candor. "He was very

Buoyed by the good news, Miriam felt well enough the next day to host a few bedside visitors. "I really felt very confident after the surgery," she said. "I just felt that I was going to be OK."

Miriam's cancer treatment didn't end there, however. The next month, she began chemotherapy with Lori Goldstein, professor emerita of hematology/oncology, and Kathleen Smith, advanced practice clinician and nurse practitioner in hematology/oncology. Miriam's six



chemotherapy sessions, scheduled three weeks apart, concluded just before Thanksgiving that year.

“I remember saying, ‘Oh, good, I can really enjoy Thanksgiving at my son’s house,’” Miriam said, “because the day after the chemo I was fine. It was the second day that you get sick and you don’t want any food.”

In January 2019, Miriam went under the care of Penny Anderson, chief of breast and gynecologic radiation and oncology, for 30 days of breast radiation and three rounds of internal radiation. Her treatment was over by February.

By July—one year after her cancer diagnoses—Miriam felt

well enough that she and Mike took their two sons and their families on a weeklong cruise to celebrate.

“I’m three years cancer free,” Miriam said. “It can happen. It’s a very aggressive, rare cancer. But I’m here, and you can be too.”

Last year, Miriam briefly found something of a two-person support group when her first cousin was diagnosed with the same uterine carcinosarcoma. Miriam’s cousin traveled to Philadelphia to meet with Rubin, but unfortunately her cancer was too advanced, and she died a month later at age 64. She was two months away from becoming a grandmother.

“That really upset me something terrible,” Miriam said. “It’s strange that two of us in the family, first cousins ...”

Miriam knows she has to stay vigilant in order to catch the cancer early if it ever returns. Despite the COVID-19 pandemic, she hasn’t missed any of her follow-up appointments at Fox Chase. She hopes others can take to heart the hard lesson she learned after skipping her ultrasound three years in a row.

“If you’re at Fox Chase, you’ve got good doctors,” Miriam said. “So just try to do all the right things and get checked and don’t miss your appointments.”

A MISSION TO FIGHT DISPARITIES IN CANCER CARE

BY SARAH JAYNE HUGHES

Camille Ragin had nearly completed her doctorate when she received a final telephone call from her Aunt Herma before she passed away from breast cancer. “I remember the telephone call to this day. After telling me how proud she was of me, she said, ‘I want you to fight this thing, cancer. I want you to do that research and find the cure so that other people, especially those in the Caribbean, will not have to suffer the way I did.’”

Not long after her aunt’s passing, Ragin ended up pursuing that path and is now a professor in the Cancer Prevention and Control Program at Fox Chase Cancer Center.

Ragin grew up in Portmore, Jamaica, just outside the capital city of Kingston. It was there that her Aunt Janet, a cytotechnologist, introduced her to the microscope. “It was intriguing to see cells in that context,” said Ragin. She went on to excel in biology at her all-girls high school before moving to New York City to earn an undergraduate degree.

Ragin then moved to Virginia and trained to become a medical technologist. Several years later, she went to the University of Pittsburgh’s Graduate School

of Public Health, where she earned her doctorate in infectious diseases and microbiology and Masters in Public Health (MPH) in epidemiology.

Through a career development program at the University of Pittsburgh, Ragin was able to be enrolled in her MPH program while completing a postdoc in the Human Genetics Department at the university. Her second postdoc

focused on the ancestral origin of Black subgroups, migrants to the United States, whether forced or voluntary, have differing health characteristics; cultural health beliefs, attitudes, practices; and genetic admixture.”

The consortium, known as the AC3, focuses on the contribution of viral, genetic, environmental, and lifestyle risk factors to cancers in populations of African ancestry.

“My passion is to continue to do something impactful that improves the health of Black people everywhere.”

—CAMILLE RAGIN, PROFESSOR, CANCER PREVENTION AND CONTROL PROGRAM

turned out to be the most influential, because it led her into her present work. “I knew then that the racial disparities that impacted Black individuals would be my focus and passion. That was how the African Caribbean Cancer Consortium was born,” Ragin said.

“Blacks have the highest incidence and death rates and the shortest survival for most cancers in comparison to all other racial and ethnic groups,” said Ragin. “I have firsthand knowledge that although Africa is the common

The goal of the AC3 is to advance the science of cancer prevention and control through the promotion and facilitation of collaborative research between investigators in the United States, the Caribbean, and Africa.

To date, the AC3 consists of more than 150 member collaborators from 17 institutions in the United States, and 23 countries in the Caribbean and Africa. Ragin acknowledged that this and other accomplishments are due to a great deal of support from many people.



“So many people inspired me over my life,” said Ragin. “My parents have been encouraging in every way, and my husband Mike has been so supportive, allowing me to spread my wings.” Although her workload is demanding, family time, and time for herself, is a priority. “I am a workaholic, but that is something I’m trying to change,” she said. Ragin plans to get a new piano and start playing again as a stress reliever.

In addition to the AC3, Ragin’s laboratory established the Cancer Prevention Project of Philadelphia (CAP3) to serve as an additional resource addressing racial disparities in cancer.

CAP3 is a community

engagement effort that led to the development of a successful model for population-based health disparities research studies. The program provided the community with information about incorporating cancer-prevention practices and screening into their everyday lives. It also provided a better understanding of the importance of cancer disparities research.

Through her specific research on head and neck cancer genetics and biomarkers of environmental exposures, Ragin’s research is among the first to provide clear evidence of the distinct causes of cancers that arise in the oropharynx, the part of the throat that is at the back

of the mouth, due to the human papillomavirus (HPV).

“Our pioneering efforts to examine HPV-positive oropharyngeal cancers among Blacks have led to the identification of a distinct molecular profile that may influence survival,” said Ragin. “My lab has demonstrated for the first time that biological factors such as genetic ancestry influence DNA repair and DNA damage response gene expression.”

Ragin said this groundbreaking research is her way of giving back to her community. “My passion is to continue to do something impactful that improves the health of Black people everywhere,” she said.

FAMILY CARRIES ON A SON AND BROTHER'S LIFE WORK

BY ANDREW BECKER



Chris played several sports well, but golf was his game. He was a champion in high school, college, and at two Philadelphia-area country clubs. His love of golf was integral to his personality, attracting many admirers and friends.

His faith, his family, and his community were central to who he was, and he enjoyed mentoring others in and out of sports. Among the many extracurricular activities he participated in while

after he turned 23, Chris was diagnosed with acute myeloid leukemia (AML). The average age of a newly diagnosed AML patient is 68.

Mark worked as a CPA and Donna spent her entire career as a human resources professional at West Pharmaceutical Services Inc., a locally based global company that shares a long and special relationship with Fox Chase Cancer Center. She knew that was

Donna and Mark Fuga founded the Christopher M. Fuga Memorial Foundation and began hosting the annual Christopher M. Fuga Memorial Golf Classic in 2016 to honor their son's life. As the years—and the good work their philanthropy enables—add up, they've come to understand they are carrying out what might well have become the life work of their son.

Chris Fuga was a highly accomplished athlete and a natural leader with a selfless, giving spirit. "Chris was about helping people and caring for people," Mark said.

"We would be helping him give back to all the people and programs that helped him. We're keeping his legacy by doing what he would have done."

—DONNA FUGA, FOX CHASE PHILANTHROPIST

attending Coker College, Chris co-chaired the campus Make-A-Wish Foundation fundraiser and the Be the Match Campaign, which registered potential bone marrow and stem cell donors.

He could not have known that he would soon become a blood cancer patient himself. Just

where Chris should be treated.

From his first appointment at Fox Chase, Chris made a lasting impression. "Chris was such a vibrant and exciting person to know. I remember him talking about his teaching, working with children, and his love of golfing," said Cheryl Brown, the transplant



Opposite: Chris Fuga, who died of cancer at age 24, doing what he loved most. This page: Chris Fuga's family (left to right): His parents Mark and Donna and sister Stephanie Barndt and her husband Tom Barndt. In the foreground is Stephanie and Tom's son, Christopher.

coordinator for both of his bone marrow transplants.

Chris formed a deep bond with Henry Fung, chair of the Department of Bone Marrow Transplant and Cellular Therapies. They spoke by phone nearly every night while Chris was in his care. While recovering from his first bone marrow transplant, Chris promised Fung that if he ever won a major golf tournament, the first check he would write would be to support his work at Fox Chase.

Although he died in 2015 at 24, Donna has no doubt that Chris would have kept that promise and would today be raising funds to help others facing cancer if he



were able. "We would be helping him give back to all the people and programs that helped him," she said. "We're keeping his legacy by doing what he would have done."

Over its first four years, the Christopher M. Fuga Memorial Foundation has raised more than \$225,000 to support blood cancer research at Fox Chase, and an additional \$50,000 to fund scholarships

at other organizations. Although the pandemic prevented Donna and Mark from hosting the fifth annual event in 2020, they still raised \$63,000 last year and made a \$50,000 gift to Fox Chase.

With COVID-19 restrictions beginning to lift, the 2021 Golf Classic is scheduled for October 5. At the next fundraiser a new Christopher will be in attendance. Stephanie and her husband Tom named their baby—the Fugas' first grandson—after her brother.

Asked about a long-range plan for the golf outing and the foundation, Mark said they won't stop. "We plan to do this as long as we can. We want to help the next family."

CENTER REACCREDITED BY AMERICAN COLLEGE OF RADIOLOGY

Fox Chase Cancer Center’s main, Buckingham, and East Norriton campuses were awarded a three-year term of reaccreditation in radiation oncology as the result of a recent review by the American College of Radiology (ACR).

“The ACR accreditation process is an important national indicator

“This ACR reaccreditation confirms once again that we continue to deliver high-quality radiation treatments for our patients.”

—ERIC M. HORWITZ, CHAIR, DEPARTMENT OF RADIATION ONCOLOGY

of quality treatment in a radiation oncology department,” said Eric M. Horwitz, chair of the Department of Radiation Oncology.

Radiation oncology, also known as radiation therapy, is the careful use of high-energy radiation to treat cancer. A radiation oncologist may use radiation to treat cancer or to relieve a cancer patient’s pain.

“The accreditation process

involved a two-day site visit process that was performed by two ACR surveyors, a radiation oncologist and a medical physicist. These two surveyors reviewed numerous patient treatment cases from our main center, as well as our two satellite facilities, Buckingham and East Norriton,” said Penny R. Anderson, chief of the Division of Breast and Gynecologic Radiation Oncology at Fox Chase.

“They reviewed the quality and safety of our radiation treatments by analyzing and reviewing our clinical treatment information and our physics treatment information in order to evaluate and determine if we are delivering the highest quality of patient care and patient safety to our radiation oncology patients,” she said.

“This ACR reaccreditation confirms once again that we continue to deliver high-quality radiation treatments for our patients,” Horwitz said. “I want to acknowledge and thank Dr. Penny Anderson and our whole team for the work they did and continue to do to maintain the high standards of care reflected in this accreditation.”



Anna Liza Rodriguez came to Fox Chase from the Vanderbilt-Ingram Cancer Center.

ANNA LIZA RODRIGUEZ NAMED NEW CHIEF NURSING OFFICER

Anna Liza Rodriguez has become chief nursing officer and vice president of nursing and patient services at Fox Chase Cancer Center. Rodriguez’s role will include providing leadership and administrative oversight for all nursing practice at Fox Chase.

“She will be responsible for fostering the magnet culture, ensuring that the delivery of patient care is evidence based and innovative, with attention to the individual needs of every patient, supporting our nursing professionals and leaders, and further advancing the quality of care both at Fox Chase and throughout Temple University Health System,” said Richard I. Fisher, president and CEO of Fox Chase.

Rodriguez served for nearly five years as associate nursing officer at Vanderbilt University Medical Center and Vanderbilt-Ingram Cancer Center in Nashville, Tennessee. Vanderbilt is a top National Cancer Institute-designated comprehensive cancer center.

She led Vanderbilt’s oncology enterprise in collaboration with other senior leaders, providing administrative oversight and leadership, and assumed expanded cancer enterprise operations responsibilities during key leadership transitions. She managed a \$145 million budget and a staff of more than 350 to provide high-quality cancer care, overseeing 215,000 yearly clinic and infusion visits.



Eric Horwitz is the chair of the Department of Radiation Oncology.

PHOTOS COURTESY OF FOX CHASE CANCER CENTER

JOEL HELMKE JOINS CENTER AS NEW CHIEF OPERATING OFFICER

Joel Helmke has joined the Fox Chase senior leadership team as chief operating officer, where he will be in charge of directing clinical and business operations.

“By bringing industry best practices and new perspectives, he will help us refine our processes and enhance our facilities to match the talent and expertise we already have in our faculty and staff. Such improvements will further advance the way we provide care to our patients and their families,” said Richard I. Fisher, president and CEO of Fox Chase.

Fisher said Helmke will continue to propel integration efforts between Fox Chase and Temple University Health System, which Fox Chase is a part of. Particular attention will focus on developing new

collaborations and even greater efficiencies with TUH–Jeanes Campus, as well as identifying and pursuing areas of advancement in cancer care delivery and services throughout the health system.

Helmke served nearly five years as senior vice president of clinical operations at City of Hope National Medical Center in Duarte, Calif., a National Cancer Institute-designated comprehensive cancer center, where he managed an overall budget of \$1.5 billion and a staff of 1,200.



Joel Helmke will direct clinical and business operations.

NURSES HONORED WITH PRESTIGIOUS ‘I AM PATIENT SAFETY’ ACHIEVEMENT AWARD

A nursing team was honored as a recipient of the 2021 I AM Patient Safety award from the Patient Safety Authority. The team was awarded the Executive Director’s Choice award, making it one of 11 healthcare facilities in Pennsylvania to be recognized for their advancements, outcomes, and commitment to patient safety.

The third floor surgical nursing team was recognized for reaching the significant milestone of one year with no patient falls on their three south unit. This milestone supports the nursing department’s Zero Harm program, a patient safety initiative that focuses on limiting preventable harm in the healthcare environment.

“We are so proud of this Magnet team and their leaders for their commitment to target zero patient harm. That quest and dedication led to the achievement of no patient falls for one year and well-deserved statewide recognition,” said Kathleen Wolf, Magnet Program/Nursing Quality Director.



Jordan Anaokar

has been appointed the new site director for radiology at Fox Chase. In this role, Anaokar will coordinate with medical staff and the Department of Radiology in developing and implementing departmental programs.



Mary B. Daly

received the National Comprehensive Cancer Network’s (NCCN) Rodger Winn Award, which is given annually to one NCCN Clinical Practice Guidelines in Oncology panel member who exemplifies commitment, drive, and leadership in developing evidence-based guidelines.



Stephanie Greco,

assistant professor in the Department of Surgical Oncology, was recently named a new councilor for the Association for Academic Surgery, an organization that focuses on career development and leadership in the medical community.



Elizabeth Plimack,

chief of the Division of Genitourinary Medical Oncology, has been appointed chair of the Scientific Advisory Board for the Bladder Cancer Advocacy Network.



Jennifer Barsky

Reese was recently recognized with the New Investigator Award from the American Psychosocial Oncology Society. Awardees are recognized for contributing outstanding research in the field of psychosocial oncology. Her work addresses sexual issues related to cancer treatment.

A. LINDO PATTERSON: PIONEER AND MENTOR

BY MARIAN DENNIS

A. Lindo Patterson came to Fox Chase Cancer Center in 1949, when it was still known as the Institute for Cancer Research. During his time at the institute, he played a major role in running an X-ray structure analysis group and mentoring some of the best young scientists in the field.

“I came to Fox Chase in 1956 because of his excellent science. I considered Patterson to be a role model, particularly because of his willingness to hire women and his dedication to precise studies,” said Jenny Glusker, who started at Fox Chase as a research fellow and is now a professor emerita.

An obituary in the journal *Acta Crystallographica* described Patterson as possessing “a rare combination of a keen mind, a lively humor, and a gentle disposition.”

Patterson accomplished a great deal at Fox Chase, but he had already made great strides in the scientific community before his arrival at the center. One of his key accomplishments was the groundbreaking Patterson function, an equation in X-ray crystallography that helps determine the three-dimensional atomic structure and characteristics of molecules, information which helped researchers develop new and better drugs.

“He was a very well-known scientist, and it was assumed he’d win a Nobel Prize because he figured out how to take the diffraction pattern

of a crystal and work out what the arrangement of atoms in it was. That led people to finally be able to understand how you get pictures of how molecules are arranged,” said Glusker. At that time, most scientists used his formula if they were trying to determine molecular structure by X-ray diffraction.

He never did win the Nobel Prize, however, because of his early death, Glusker said. But he had a storied career nonetheless.

Arthur Lindo Patterson was raised in Canada. In 1920, when he was 18, he began attending McGill

University in Montreal as a junior. He went on to study with famed crystallographer W. L. Bragg at the Royal Institution in London.

atomic arrangement that resulted in those patterns. In 1933, he went to the lab of B.E. Warren at the Massachusetts Institute of Technology, where he developed the Patterson function. According to the *Acta Crystallographica* obituary, the function “represents perhaps the most important single development in crystal-structure analysis since the discovery of X-ray diffraction itself.”

In 1935, Patterson married Elizabeth “Betty” Knight and began working at Bryn Mawr College. Patterson left Bryn Mawr in 1949 to

—JENNY GLUSKER, PROFESSOR EMERITA, FOX CHASE CANCER CENTER

start an X-ray analysis group at the Institute for Cancer Research, where Betty was already working as a researcher.

During his time at the institute, Patterson served as an important mentor to young scientists, many of whom went on to run their own labs. He continued working at the institute until his death on November 6, 1966. The memorial service held for Patterson at Fox Chase in 1984 was attended by several Nobel Prize winners who had used his function in their own research, Glusker said.

Patterson later went on to the Kaiser-Wilhelm Institute in Berlin, where he worked with Herman Mark, an expert in X-ray crystallography. Patterson returned to McGill and received his doctorate in physics.

Patterson knew, after he measured X-ray diffraction patterns from crystals, that there must be a way to find the

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