

Perlmutter Cancer Center

AN NCI-DESIGNATED COMPREHENSIVE CANCER
CENTER AT NYU LANGONE HEALTH



The Comeback of a Lifetime

AT AGE 79, GIULIO PICOLLI WAS LOSING GROUND TO PROSTATE CANCER. THEN HE FOUND A GAME-CHANGING THERAPY AT PERLMUTTER CANCER CENTER.

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Inspiration

Avoiding Your Mammogram? Jackie Barry Would Like a Word.

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Remarkable Cases

The Teacher Who Sang Her Way Through Brain Surgery

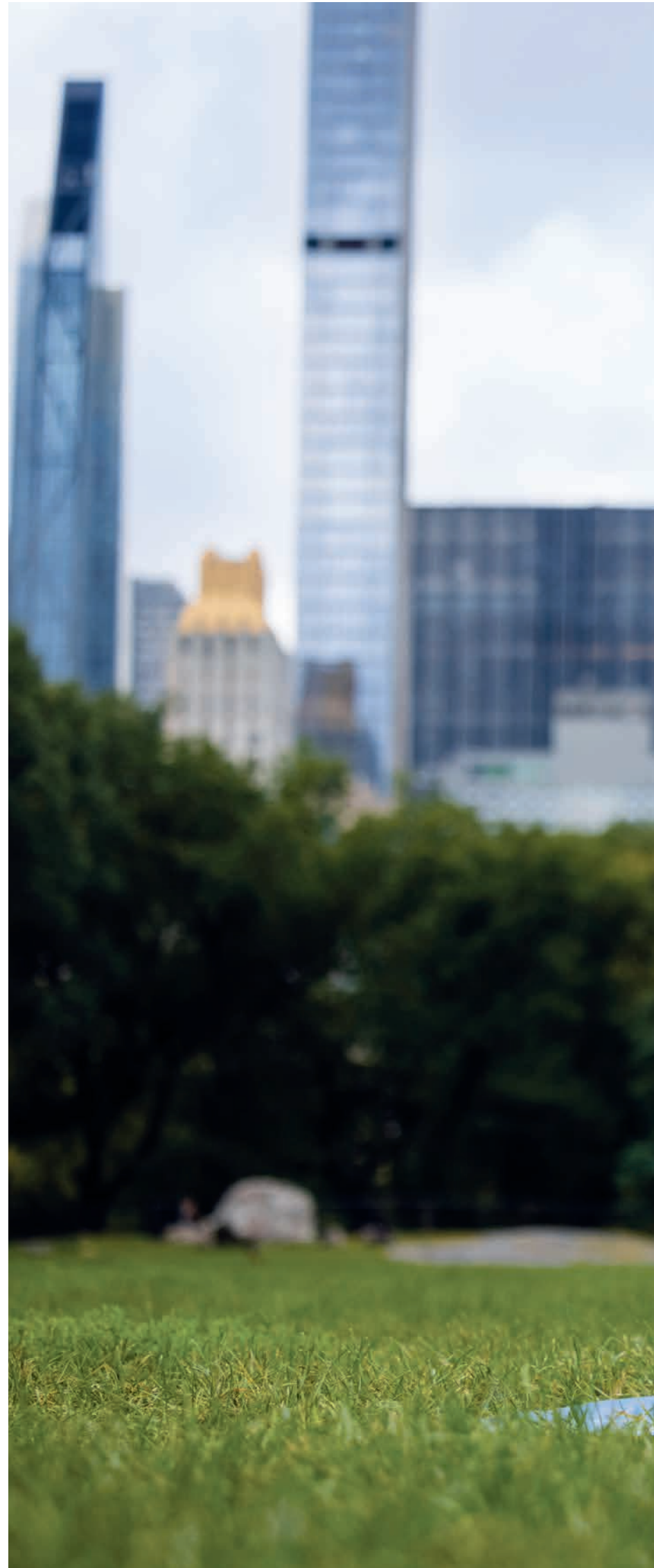
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Breast Cancer

After Myriad Treatments and Two Close Calls, a Patient with Breast Cancer Is Grateful for a Timely Screening

Christa Avampato had no pressing reason to get a mammogram.

At age 44, based on the current breast cancer guidelines, she wasn't due for a routine screening for another year. She had no symptoms. In fact, she felt great. She practiced yoga and ate a plant-based diet. But then came the vivid dream. A dear friend who had passed away appeared, imploring her to take care of her health. Spooked by the vision, she took it as a sign to find a new primary care doctor and get a mammogram, anticipating a second wave of COVID that "might shut down tests for a long time," she says.



**“Having a unified approach saved my
life more than once.”**

CHRISTA AVAMPATO, PRACTICING
YOGA IN CENTRAL PARK



Photograph by **Claudia Paul**



Dr. Freya Schnabel, director of breast surgery, who performed Christa Avampato's double mastectomy, encourages her patients to embrace a positive mindset. "You will come out the other side of this," she told Christa, "and you will be healthy."

CLAUDIA PAUL

Her decision to get screened on September 11, 2020, at NYU Langone Health proved to be life transforming and, ultimately, lifesaving. Christa was found to have invasive breast cancer. Subsequent biopsies showed that tumors were present in both of her breasts and had spread to some lymph nodes, defined as stage 2A. Christa was incredulous at first—"I thought maybe they had the wrong patient file," she says—but her disbelief quickly turned to gratitude that she would receive her multifaceted care at Perlmutter Cancer Center, a National Cancer Institute-designated Comprehensive Cancer Center, with NYU Langone doctors at the ready to meet any issues that might develop. Surgeon Freya Schnabel, MD, director of breast surgery, explained that Christa's treatment would involve surgery, chemotherapy, radiation treatments, and because the growth of her type of cancer can be spurred by estrogen and progesterone, hormone therapy. "This is a full-court press to get rid of the disease," Dr. Schnabel told her.

Christa felt like she had an army supporting her cancer fight, with Dr.



Perlmutter Cancer Center is accredited by the American College of Surgeons National Accreditation Program for Breast Centers (NAPBC), a designation given for high standards in breast cancer treatment.

Schnabel as the commander. After doing some research, she opted for a double mastectomy with reconstruction rather than a lumpectomy. On October 27, Dr. Schnabel completed the four-hour surgery, removing both breasts and the lymph nodes under her right arm. When biopsies of Christa's left nodes came back positive, Dr. Schnabel performed a subsequent procedure to remove them. "It's unusual to be asymptomatic and come back with bilateral node-positive breast cancer," says Dr. Schnabel. However, she notes that invasive breast cancer in patients under 45, who account for only 9% of the 276,000 women in the US diagnosed each year, tends to be more aggressive. "That's why the topic of starting screening at age 40 needs to be reopened," Dr. Schnabel adds.

Postsurgical treatments for breast cancer may include drugs that target specific cancer cells, such as monoclonal antibodies, and immunotherapy designed to block a tumor's defenses so the immune system can attack it. Women with certain genetic mutations may enroll in one of Perlmutter Cancer Center's many clinical trials

evaluating new therapies. Due to her relatively young age and diagnosis, Christa was given a state-of-the-art test to scan for heritable gene mutations linked to breast cancer. When results showed no genetic predispositions, a two-stage course of chemotherapy was deemed the best option.

She weathered the first four infusions, but after switching to the medication Taxol, she felt feverish and short of breath. On February 23, in respiratory distress, she was taken by ambulance to NYU Langone's Ronald O. Perleman Center for Emergency Services and nearly wound up on a ventilator. A scan revealed severe pneumonitis, a systemic inflammation of the lungs. Christa was given high-flow oxygen therapy and, with the virus still rampant, tested for COVID. But pulmonologist Mark Sloane, MD, had a suspicion. "She didn't have the classic virus symptoms like loss of smell or taste, and she was on a drug that can, in rare instances, cause a severe immune response," says Dr. Sloane. He prescribed steroids to calm Christa's systemic reaction. She improved rapidly and was discharged after four

Meet #TeamChrista

What began as a routine mammogram turned into an ongoing odyssey for Christa Avampato. Luckily, she has benefited from the collaboration of what she calls “my phenomenal team of doctors.” Among them:



HILDEGARD TOTH, MD

SECTION CHIEF OF
BREAST IMAGING

► Interpreted the scans and performed the biopsies that revealed the cancer diagnosis.



FREYA SCHNABEL, MD

DIRECTOR OF BREAST
SURGERY

► Completed the double mastectomy and removed lymph nodes on both sides.



ORIANA COHEN, MD

CLINICAL ASSISTANT
PROFESSOR IN
THE HANSJÖRG WYSS
DEPARTMENT OF
PLASTIC SURGERY

► Placed tissue expanders during the initial surgery to make room for implants, and will perform breast reconstruction later this year.



YELENA NOVIK, MD

ASSOCIATE PROFESSOR
OF MEDICINE AND A
MEDICAL ONCOLOGIST

► Has managed Christa's care at Perlmutter Cancer Center.



CARMEN PEREZ, MD, PHD

ASSISTANT PROFESSOR OF
RADIATION ONCOLOGY

► Administered six weeks of radiation treatments and got Christa into a clinical trial, led by Naamit Gerber, MD, associate professor of radiation oncology, for a topical therapy designed to reduce inflammation and scarring in the breast area.



MARK SLOANE, MD

CLINICAL PROFESSOR OF
MEDICINE

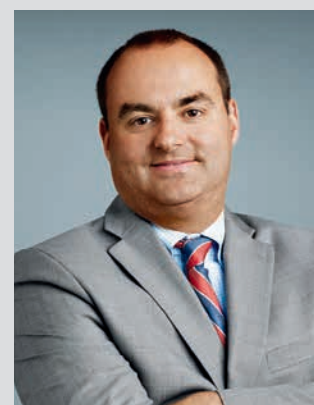
► Diagnosed the immune response to chemotherapy that resulted in pneumonitis, leading to successful treatment with steroids.



ARI KLAPHOLZ, MD

CLINICAL ASSISTANT
PROFESSOR OF MEDICINE

► Has treated Christa's pulmonary condition as an outpatient.



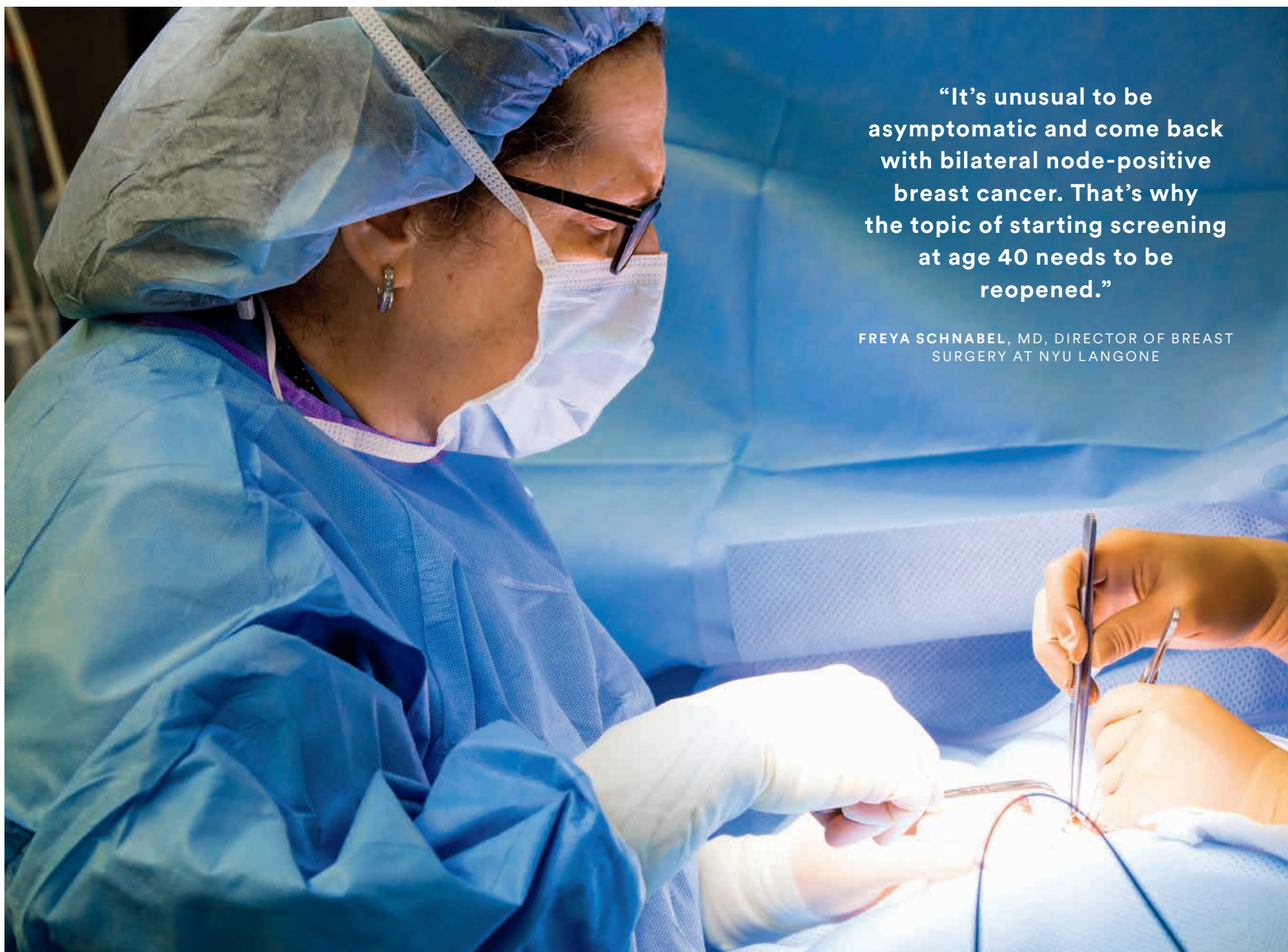
JONAS SOKOLOF, DO

DIRECTOR
OF ONCOLOGICAL
REHABILITATION

► Diagnosed the inflammation and restricted arm movement, known as cording, that can develop when lymph nodes are removed, and prescribed a comprehensive program to treat it at Rusk Rehabilitation.



TO FIND A DOCTOR WHO TREATS BREAST
CANCER, VISIT [NYULANGONE.ORG/BREAST-
CANCERDOCTORS](https://nyulangone.org/breast-cancerdoctors), OR CALL 212-731-6000.



“It’s unusual to be asymptomatic and come back with bilateral node-positive breast cancer. That’s why the topic of starting screening at age 40 needs to be reopened.”

FREYA SCHNABEL, MD, DIRECTOR OF BREAST SURGERY AT NYU LANGONE

ADAM WATT (LEFT); COURTESY OF CHRISTA AVAMPATO (BELOW); SCAN COURTESY OF ARTIE SHEN (OPPOSITE)

days. Two weeks later, though, after attempts to cautiously taper the steroids, Christa returned to the hospital with shortness of breath. Again, she rebounded quickly with oxygen and steroids, tapered over four months under the watch of pulmonologist Ari Klapholz, MD.

Christa’s medical oncologist, Yelena Novik, MD, says such a reaction is so rare that she’s only seen it once in her career. “This is the gold standard chemotherapy for breast cancer,” she says. Dr. Novik credits the access Perlmutter Cancer Center patients have to specialists at NYU Langone for ensuring that Christa received the proper treatment. “We provide an individualized approach to cancer care, with access to specialists in every area,” she says.

Christa also benefited from personalized care during 3-D conformal radiotherapy, which uses energy beams to precisely target residual cancer cells. Frequently, radiologist Carmen A. Perez, MD, PhD, uses a technique in which patients inhale deeply and hold their breath to provide greater spacing between the heart and the treatment area. But



Perlmutter Cancer Center’s radiation oncologists pioneered the use of prone radiation, which allows for more precise targeting to the breast while avoiding vital organs such as the heart and lungs.

since Christa’s lungs were still recovering from pneumonitis, Dr. Perez used a combination of photon and electron treatment fields, a hybrid strategy that minimized exposure to her heart and lung.

During the six-week radiotherapy regimen, Christa enrolled in a Perlmutter Cancer Center clinical trial led by radiation oncologist Naamit Gerber, MD, to test whether a caffeine-based cream reduces scar tissue formation from radiation. The hope is that the experimental remedy may improve the outcome of Christa’s final breast reconstruction surgery, slated for later this year.

Christa’s cancer treatments aren’t done. She could remain on hormone therapy for up to 10 years and has weathered hot flashes and other menopausal symptoms. Yet she maintains a preternaturally positive outlook. While her last 14 months have been full of unexpected challenges, she notes that “everybody has gone through some kind of craziness during the pandemic.”

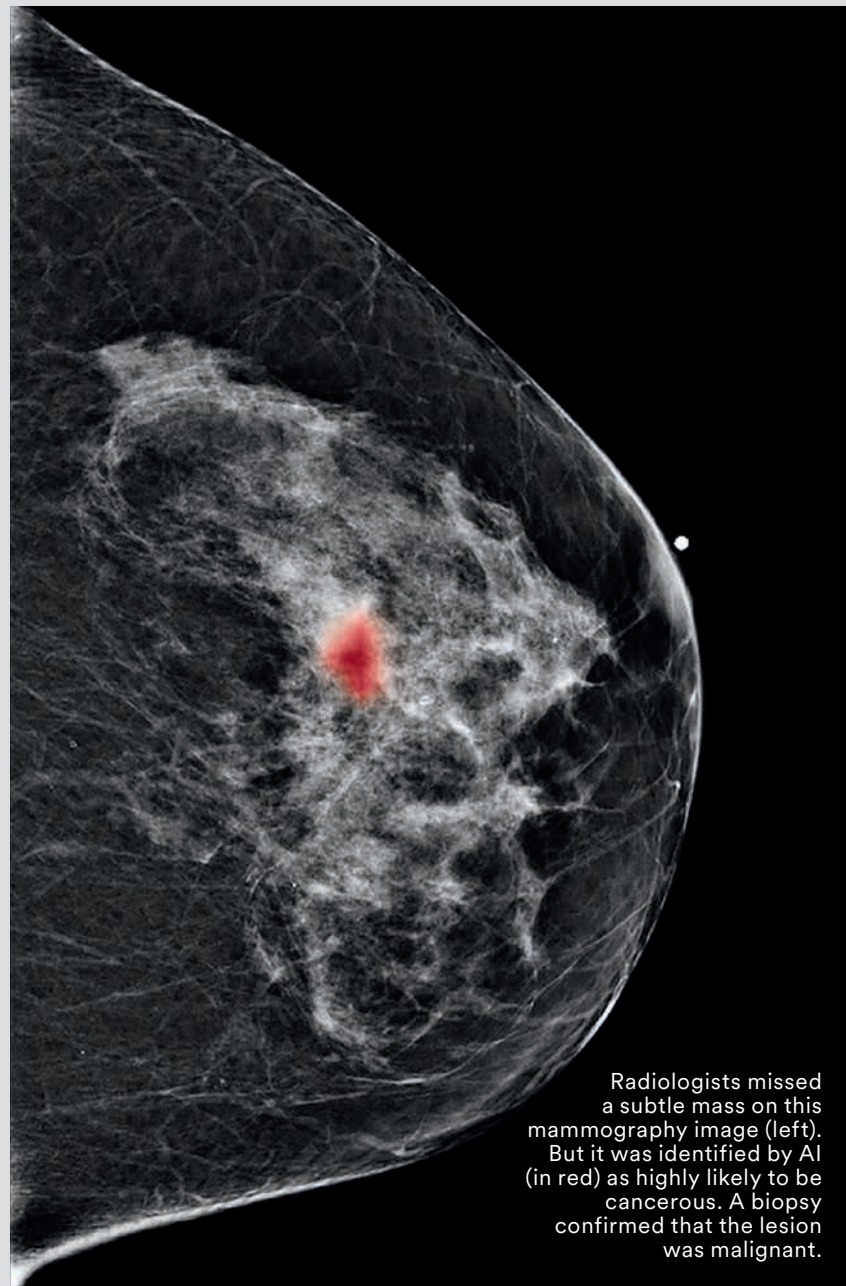
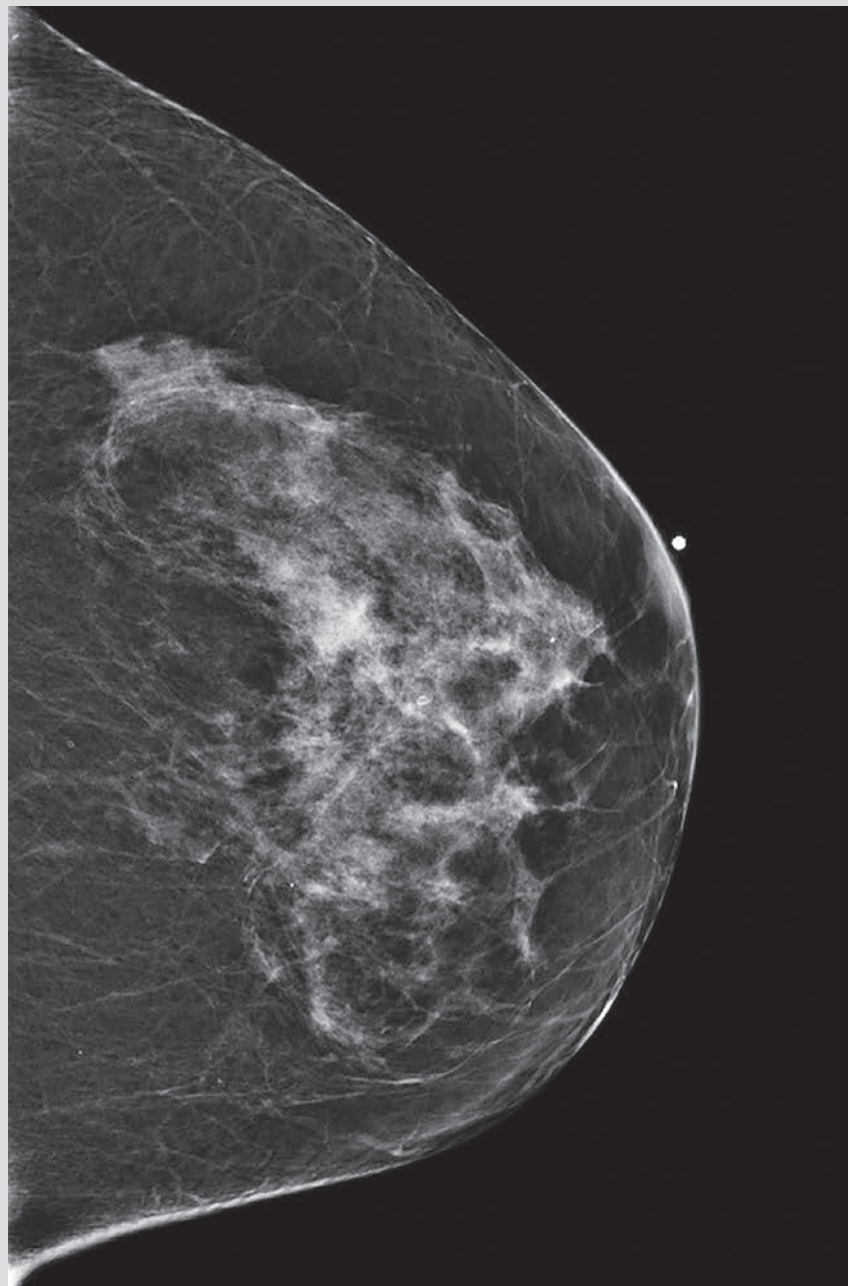
Convinced of the advantage of having clinicians who can access her electronic health records in-



stantly, Christa has transferred all of her care to NYU Langone. “Having a unified approach saved my life more than once,” she says.

While a recurrence is always possible, Christa’s physicians are optimistic about her prognosis, given the 85% five-year survival rate for women with stage 2 breast cancer. “The good news is that she had a lot of treatments available to her,” says Dr. Schnabel. “We have removed all the clinically evident disease, and we’re giving her case everything we’ve got.”

Above, right: Christa Avampato preps for a double mastectomy.



Radiologists missed a subtle mass on this mammography image (left). But it was identified by AI (in red) as highly likely to be cancerous. A biopsy confirmed that the lesion was malignant.

Can Artificial Intelligence Perfect Mammography?

NYU LANGONE HEALTH RESEARCHERS ARE USING AI TO SEE SUBTLE SIGNS OF BREAST CANCER THAT CAN ELUDE HUMAN VISION.

Mammography has proven a valuable tool for early detection of breast cancer, significantly reducing mortality, but the X-ray imaging technology is not without limitations, especially for patients with dense breast tissue. The challenge radiologists face is that while mammograms yield high-resolution images, most asymptomatic cancer lesions are small, sparsely distributed, and may exhibit only subtle changes in the tissue patterns. “Artificial intelligence can be a really good assistant because it helps read images faster, and our initial results found it was more accurate than radiologists,” explains Linda Moy, MD, professor of radiology. Since 2017, Dr. Moy has partnered with Krzysztof Geras, PhD, assistant professor of radiology and a computer scientist affiliated with NYU’s Center for Data Science, to develop artificially intelligent computer code that can “read” a mammogram and accurately predict the likelihood of breast cancer. ■ To train their system to differentiate between normal and suspicious tissue, the researchers fed it more than 2 million images drawn from mammograms performed at NYU Langone Health. “Like facial recognition software, our computers can examine—in a split second—features that are otherwise imperceptible,” notes Dr. Moy. They found that their AI system has an accuracy rate of about 90%, compared to an overall average of 80% by radiologists. “Notably, when radiologists used this tool as a second reader, their performance improved,” says Dr. Moy. “So we want to reach that sweet spot where we use both.” ■ The technology is also being developed for ultrasounds of the breast, sometimes ordered to validate the findings of a mammogram. Dr. Moy projects that it could be available for clinical application at NYU Langone within a year for ultrasounds and within two years for mammograms.

My Incredible Job

“I’m a Patient Navigator with the Beatrice W. Walters Breast Health Outreach & Navigation Program”

FOR BREAST CANCER PATIENTS,
A PERSONAL NAVIGATOR
LEADS THE WAY

Photographs by **Jonathan Kozowyk**



Jackie Barry, one of five patient navigators at Perlmutter Cancer Center, has been with the program since its inception in 2016.

**“Some of my patients don’t have family members nearby,
or they may not want to discuss certain things with their family.
And they have so many other issues in their lives.
These are the patients I have the strongest bond with.”**

**JACKIE BARRY (FAR RIGHT), WITH PATIENT DESIREE WILLIAMS, OUTSIDE OF
FLATBUSH FAMILY HEALTH CENTER AT NYU LANGONE IN BROOKLYN**

Breast cancer hits women of color especially hard.

Black women are twice as likely to be diagnosed with an aggressive type that’s harder to treat, and for Latino women, breast cancer is a leading cause of cancer-related death. Beatrice W. Welters, a noted businesswoman and former US ambassador to Trinidad and Tobago, was successfully treated for the disease at Perlmutter Cancer Center. In 2016 she helped fund the initiative that bears her name to educate women—particularly those from at-risk populations who live in medically underserved communities throughout New York City—about the importance of screening and early detection. The program’s co-directors are Kathie-Ann Joseph, MD, MPH, professor of surgery and population health and director of breast surgery at NYC Health + Hospitals/Bellevue, and Joseph Ravenell, MD, associate professor of population health and medicine and associate dean for diversity affairs and inclusion at NYU Grossman School of Medicine.

At the heart of the Welters program are five patient navigators who help women secure free or low-cost mammograms through community outreach efforts and guide recently diagnosed patients through the healthcare system. So far, the program has enrolled more than 2,000 women, nearly 20% of whom have become patients at Perlmutter Cancer Center. Here, Jackie Barry, who has been a patient navigator since the program’s inception, serving the Brooklyn communities of Sunset Park and Flatbush, discusses the unique challenges and

immense rewards of supporting women through the ordeal that is breast cancer.

Why do some patients need a navigator?

Some of my patients don’t have family members nearby, or they may not want to discuss certain things with their family. And they have so many other issues in their lives. These are the patients I have the strongest bond with. I see who’s coming to the clinic, and if they’re not compliant with their mammograms, I reach out to them. If a woman is diagnosed with cancer, I connect her with as many resources as possible, eliminating all the barriers within my power. We provide free transportation for medical appointments. We help patients find small grants when they lose income. We help them get a wig when they lose their hair. A lot of these women have always focused on others, so I tell them: “Just one day a week, I want you to turn off everything and everybody and focus on yourself.”

When women are hesitant to get a mammogram, how do you reassure them?

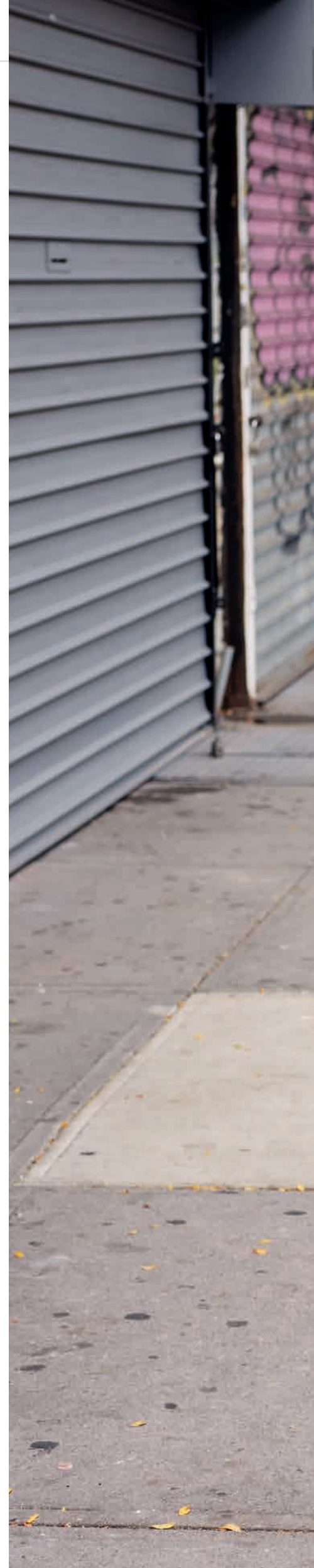
There’s a lot of misinformation and fear relating to mammograms. When you have reliable information, you have less fear, less resistance. I emphasize that when breast cancer is found early, the outcomes are much better. I tell women that whatever pain they may experience during a 10-minute mammogram is nothing compared to treatments for advanced disease. I remind them that the amount of radiation they’re exposed to in an airplane is greater



NYU Langone surgeons were the first in New York City to employ a device that uses electromagnetic waves to identify whether the edges of removed breast tissue contain cancer cells, helping to avoid the need for additional surgery.



TO LEARN ABOUT THE BEATRICE W. WELTERS BREAST HEALTH OUTREACH AND NAVIGATION PROGRAM, VISIT NYULANGONE.ORG/BREASTHEALTHPROGRAM, OR CALL 844-902-9355.





Patient navigator Jackie Barry (right) embraces a patient, Desiree Williams (left), outside of an NYU Langone Family Health Center in Flatbush, Brooklyn. Barry encourages women who access the center for care to get screened for breast cancer and helps them navigate treatment options when needed.

“My mom has been gone for seven years, and my father died before I was born, so I don’t have family I can talk to or vent with. Jackie is a parental figure, and she gives me wonderful advice.”

DESIREE WILLIAMS (RIGHT), ON
PATIENT NAVIGATOR JACKIE BARRY

than from a mammogram. If they’re still resistant, I say: “Let’s do an ultrasound and see what happens.”

How do you earn a patient’s trust during such a stressful time?

I take time to listen. Once you start listening to patients, they open up and you can better help them. I’m nonjudgmental. Rather than advise patients, I guide them. Even if someone looks okay, there may be something that they’ve never shared with anyone. I try to peel away the layers of the onion. If you’re not holding on to anything, it could make your recovery process better.

You’re known for going above and beyond for your patients. Can you share an example?

One patient called me at 3 am in a panic, telling me that she was afraid to die. After a lengthy conversation, I texted our medical director, Dr. Kathie-Ann Joseph, as well as our nurse coordinator. Within seconds, they responded with a plan to address some of the patient’s health issues. That’s what I’m here for, even if it’s just holding a patient’s hand at the doctor’s office.

What makes you so well suited for this role?

I connect with people very easily from having lived in several countries and having been exposed to different cultures. My master’s degree is in disability studies and I’ve volunteered as an interpreter because I’m fluent in Spanish, French, and Creole. On my mother’s side, the men from my great-grandfather down were doctors and pharmacists

and the women were nurses. I’ve always been interested in people’s well-being. Whenever traditional medicine was failing someone, I was always trying to find something that could help them.

What are your biggest day-to-day challenges?

My work has a very heavy emotional burden. Many of my patients are single mothers in their mid 30s or early 40s with the most aggressive cancers. Some of them have been in abusive relationships and they have very young children. The ones with the worst illness have very heavy emotional baggage. I don’t know if that’s a coincidence or if stress has just depleted their immune systems. I wake up at 4:30 am and meditate, and then again at night. I take care of my energetic self.

What makes your day?

Whenever I get news that something actually shifted as a result of what we were able to do for a patient. The best experience is when a patient actually makes it out of the tunnel. Then I have a friend for life. For years they’ll talk about how they don’t know how they would have made it without this program. Just watching someone find the conviction that they’re going to make it is cause for celebration. But everybody has a destiny, and when the outcome is heartbreaking, the reward is knowing that you did every single thing possible for them. And hearing them say, “I’m grateful that you were here with me on this journey.”

First Person

For Desiree Williams, Jackie Barry Is Not Only a Navigator, but a Guiding Light

“In April of 2020, two months before my 35th birthday, I noticed a small lump in my left breast that turned out to be stage 1 cancer. My oncologist at Perlmutter Cancer Center, Dr. Elena Katz, referred me to the Welters Program, and with the grace of God, that’s where I met Jackie Barry. I’m a retired professional ballet dancer, and I had been teaching ballet fitness classes at a gym, but the pandemic left me unemployed for a long time. The Welters Program has paid for car services between my apartment in Park Slope and medical appointments in Sunset Park and Manhattan. Just as important, it gives me strength and encouragement. It reminds me that there are people who want to help you not just because it’s their job, but because they really care.

“My mom has been gone for seven years, and my father died before I was born, so I don’t have family I can talk to or vent with. Jackie is a parental figure, and she gives me wonderful advice. ‘You’re a strong woman,’ she says. ‘You can do everything.’ I’ve been on hormone therapy for more than a year. There are times when I’ve cried to Jackie, and her voice itself was the hug I needed. I could feel it. I’ve been calling her ‘Auntie’ to myself, but only recently did I say it to her. The first time I did, she smiled and hugged me—and wouldn’t let go. ‘I’m here for you,’ she said. ‘I’ve got your back.’ Hearing those words, I broke down in tears. ‘I love you so much,’ I told her. I didn’t have any family in my life before, but I do now.”





A 3D-rendered image of a low-dose CT chest scan, performed during a routine lung cancer screening, reveals a tumor in a patient's right lung.

Lung Cancer

Not Just a Smoker's Disease

In his role as medical director of NYU Langone's Lung Cancer Center, Abraham Chachoua, MD, has seen significant improvements in the treatment of a dreaded disease once thought of as a death sentence. A new generation of therapies harnesses the power of the body's immune system to kill off tumor cells, while others target specific molecules to block the growth and spread of cancer cells. All told, NYU Langone's Perlmutter Cancer Center offers more than 30 clinical trials of investigational therapies for lung cancer.

Meanwhile, for lung cancer caught in its earliest stages, major advances in robotic surgery allow surgeons to excise a small section of the affected lung rather than an entire lobe. In effect, patients leave the operating room cured. Altogether, the wave of progress has helped physicians at the Lung Cancer Center extend the lives of many of the 1,200 patients it treats annually.

Despite these impressive advances, the prognosis for most lung cancer patients remains poor. The aggregate five-year survival rate is just 25%, according to the American Cancer Society, and some 132,000 people die from lung cancer each year, twice as many as from any other cancer. The problem is that lung cancer rarely becomes symptomatic until the disease has advanced and spread to other parts of the body.

For this reason, Dr. Chachoua sees early detection as a critical lifesaving intervention. Annual screenings for lung cancer have been found to reduce mortality among smokers by 20%, according to results from the National Lung Screening Trial, sponsored by the National Cancer Institute (NCI), which studied more than 50,000 current or former heavy smokers. Unfortunately, only about 2% of eligible patients receive them.

"We still can't cure lung cancer, with the exception of a very small number of patients," says Dr. Chachoua, the Jay and Isabel Fine Professor of Oncology. "The best way is to catch it early and remove it."

That's precisely the idea behind two major screening initiatives at Perlmutter Cancer Center, an NCI-designated Comprehensive Cancer Center. The first is the expansion of the lung cancer screening program to locations throughout Manhattan, Brooklyn, Queens, and Long Island, for patients who are eligible based on their smoking history. Since its launch last year, more than 250 patients identified through NYU Langone's electronic health record system have begun receiving annual low-dose CT chest scans, which can often detect cancer at an early stage.

The second project is a major study, led by principal investigator Elaine Shum, MD, assistant professor of medicine, that intends to



40%

The estimated percentage of Asian American women diagnosed with lung cancer who are non-smokers or who have smoked fewer than 100 cigarettes in their lifetime. That percentage is at least double the American Cancer Society's estimated 12% to 20% overall rate of patients with lung cancer who have never smoked.



Dr. Abraham Chachoua, medical director of NYU Langone's Lung Cancer Center, with his collection of elephants with upturned trunks—a symbol of good fortune—given to him by grateful patients.

JONATHAN KOZOWYK

shed light on why Asian American women are disproportionately affected by lung cancer. Some 40% of Asian American women diagnosed with the disease are nonsmokers, at least double the rate of the general population. While a number of possible links have been suggested, including exposure to cooking-oil fumes, secondhand smoke, and a genetic predisposition, none have been confirmed as causes. “That’s the \$64,000 question we want to answer,” says Dr. Chachoua.

Dr. Shum says researchers have long been aware of a strong connection between nonsmoking Asian women and a common lung cancer mutation of the epidermal growth factor receptor, or EGFR, causing abnormal cell growth. Yet few studies have examined the factors that might explain it. Perlmutter Cancer Center

has begun enrolling Asian American women ages 40 to 74 who have never smoked or have smoked fewer than 100 cigarettes in their lifetime, and who have no history of cancer. During the three-year study, volunteers will receive an annual low-dose CT scan of the chest while donating a blood sample for an experimental screening tool that uses machine learning to detect genetic markers of seven types of cancer. The study’s topline goals are to create a database, collect biospecimens, and identify risk factors. In addition, Dr. Shum hopes to debunk the myth that lung cancer is only a smoker’s disease. “A lot of people don’t realize that up to 20% of those diagnosed are nonsmokers, or that patients in this group tend to be diagnosed at younger ages, often in their 40s or 50s,” says Dr. Shum.



NYU Langone pioneered the use of CT scans for lung cancer screening in the 1990s.

While the Lung Cancer Center’s screening program provides scans for those who are uninsured or underinsured, Dr. Chachoua is optimistic that this latest study will help shore up the case for expanding health coverage of lung cancer screenings to nonsmokers as well as smokers. “This could potentially be a practice-changing study that opens up screening to people who don’t smoke,” he says. “There’s definitely a need for it.”

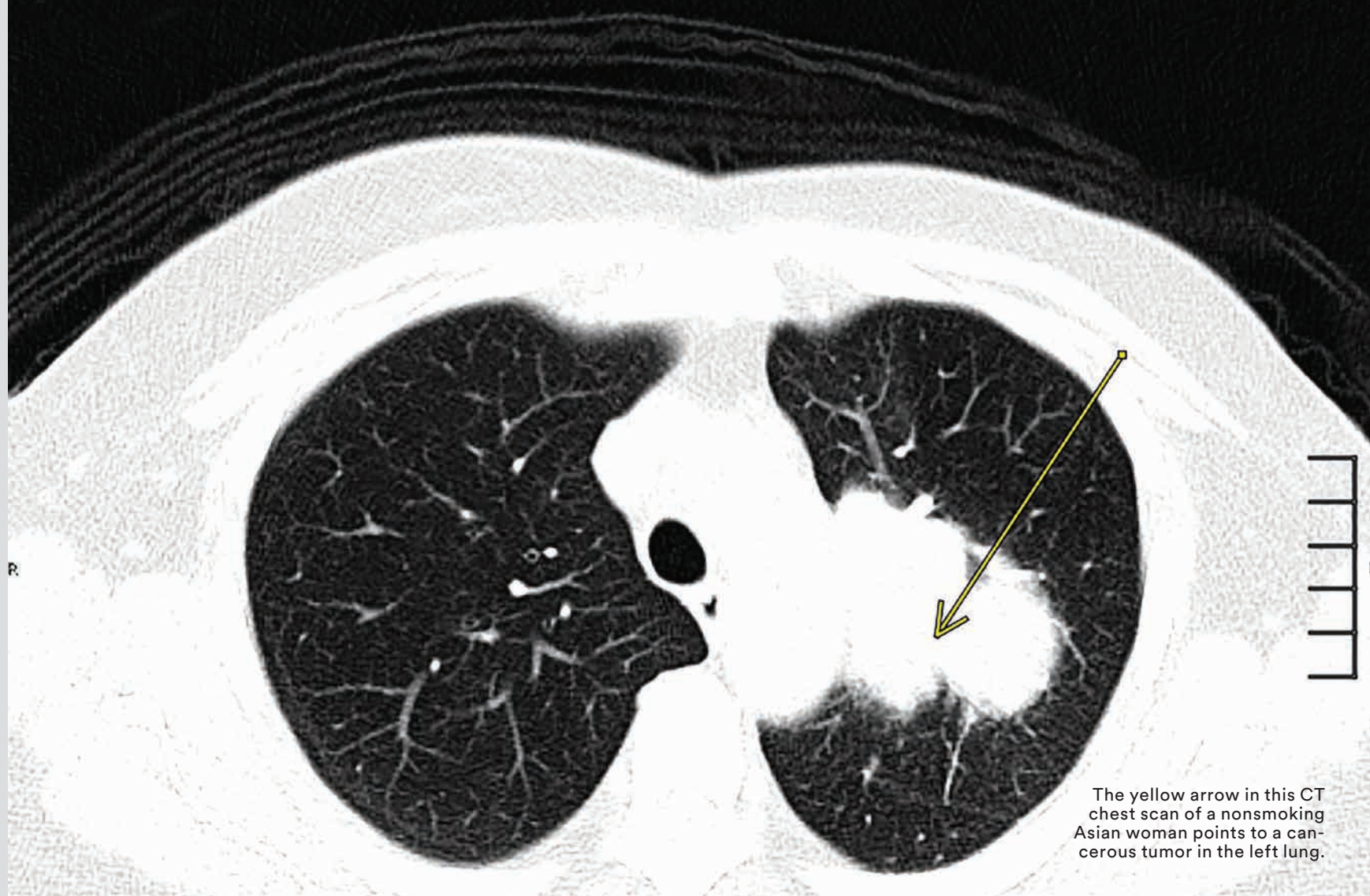
► Patients interested in learning more about the New York Female Asian Nonsmoker Screening Study or enrolling can call 212-731-6212 or email FANSS@nyulangone.org.



TO FIND A DOCTOR WHO TREATS LUNG CANCER, VISIT NYULANGONE.ORG/LUNGANCERDOCTORS, OR CALL 212-731-6000.

“We still can’t cure lung cancer, with the exception of a very small number of patients. The best way is to catch it early and remove it.”

ABRAHAM CHACHOUA, MD, THE JAY AND ISABEL FINE PROFESSOR
OF ONCOLOGY (OPPOSITE PAGE)



The yellow arrow in this CT chest scan of a nonsmoking Asian woman points to a cancerous tumor in the left lung.

Lung Cancer: Brooklyn’s Hidden Health Crisis

The need for more lung cancer screening is compelling. Nationwide, lung cancer is projected to kill 132,000 people in 2021, double the number of deaths from any other cancer. In Brooklyn, lung cancer is the single largest cause of cancer death. The most populous borough has New York City’s highest annual lung cancer incidence and second-highest rate (after Staten Island). Abraham Chachoua, MD, medical director of the Lung Cancer Center, notes that a high percentage of his Brooklyn patients are diagnosed with advanced lung cancer, “and that speaks to a lack of screening.”

Lung cancer typically causes no symptoms in its early stages and has spread to other organs by the time it’s diagnosed. Only a tiny fraction of those eligible for screening in Brooklyn actually receive it, despite the fact that, according to a major study, annual scans reduce lung cancer deaths among this group by 20%. The five-year survival rate for localized non-small-cell lung cancer is 63%, but that figure drops to 7% for patients diagnosed at stage 4, according to the National Cancer Institute.

New recommendations released in March 2021 from the US Preventive Services Task Force will nearly double the number of patients advised to have yearly scans, lowering the recommended screening age from age 55 to 50 and reducing the smoking history guideline from 30 years to 20 years.

Learn more about NYU Langone’s lung cancer screening program. Point your smartphone camera to the QR CODE.





Photographs by **Tony Luong**

Pancreatic Cancer

“Most of my patients have been told surgery isn’t an option. I think about that as I’m finishing an operation. The feeling of helping someone never gets old.”

GOING DEEP WITH CHRISTOPHER WOLFGANG, MD, PHD, CHIEF OF THE NEW DIVISION OF HEPATOBILIARY AND PANCREATIC SURGERY

Christopher Wolfgang, MD, PhD, is an internationally renowned pancreatic surgeon, surgical oncologist, and cancer researcher. He joined NYU Langone Health in January, 2021, as chief of the new Division of Hepatobiliary and Pancreatic Surgery in the Department of Surgery, having previously served as chief of hepatobiliary and pancreatic surgery, and vice chair for surgical oncology at Johns Hopkins Medicine. ■ Specializing in technically challenging cases, he has performed more than 1,200 Whipple procedures, a complicated, high-risk surgical technique to remove cancer in the head of the pancreas. A luminary in the field of pancreatic cancer, his practice draws patients from around the world whose tumors have been previously deemed inoperable. [TURN PAGE FOR Q&A.]

**“I’m naturally drawn to and driven by difficult challenges.
Pancreatic cancer has dismal survival rates
and receives much less attention than other cancers.
It’s also one of the most difficult cancers to treat surgically.
So, of course, it was a natural fit.”**

**CHRISTOPHER WOLFGANG, MD, PHD, CHIEF OF THE NEW
DIVISION OF HEPATOBILIARY AND PANCREATIC SURGERY IN THE DEPARTMENT
OF SURGERY (OPPOSITE)**

You grew up on a farm in Pennsylvania. When you went off to college, you set out to study agriculture with the expectation that one day you would run the family business. What made you change course so dramatically?

My dad sent me to Penn State to study agricultural business. It was a big deal. I was the first Wolfgang in my immediate family to go to college. But I wasn’t all that interested in the subject matter. I really wanted to study science and medicine. When I came home with a GPA of 1.86 in my first year, my parents gave me an ultimatum. They said, “Chris, you can study what you want, but you need to turn your grades around or we’ll pull you out of college.” I dove into science and my grades soared after that. I loved the farm, and I always will. It’s a part of our family. But my passion is medicine.

A quarter of patients with pancreatic cancer die within a month of being diagnosed, and three-quarters will die within a year. What drew you to a field with such discouraging numbers?

When I began my training as a physician-scientist, I knew I wanted to concentrate my efforts in an area where I could make the biggest impact. I’m naturally drawn to and driven by difficult challenges. Pancreatic cancer has dismal survival

rates and receives much less attention than other cancers. It’s also one of the most difficult cancers to treat surgically. So, of course, it was a natural fit.

You’ve performed more than 1,200 Whipple procedures, a demanding, high-stakes surgery to excise cancer from the pancreas. It involves removing the head of the pancreas, part of the small intestine, the gallbladder, and the bile duct to preserve shared blood vessels, and then rebuilding a functional digestive system. How did you develop a level of skill that attracts patients from around the globe?

There’s a saying, “Jack of all trades, master of none.” My philosophy is to pick one or two things and be the best at them. I’m like that with everything. Some people wonder how I can do the same operation over and over again. It’s because every time I finish a surgery, I’m a little bit better. Even after nearly two decades in the operating room, I still feel like I’m a better surgeon than I was a month ago.

Because I take on some of the most challenging, so-called “unresectable” cases, the majority of my patients have been told surgery is not an option and that their tumors can’t be removed. I think about that as I’m finishing an operation and sending the tumor to the pathology lab. That feeling of accomplishment

and knowing you have changed someone’s life never gets old. It’s extraordinary when you can say, “I think we can take your tumor out,” or “We can give you a shot at a cure.”

NYU Langone has one of the lowest mortality rates for the Whipple procedure. Why?

Studies show that patients with pancreatic cancer experience higher survival rates and fewer complications when they seek care at a health system that performs at least 10 to 20 Whipple procedures a year. This year alone, NYU Langone is projected to complete well over 125. It’s not only the experience of the surgeons that matters, it’s the entire team—from anesthesia to nursing to the recovery room. We have the best of the best, and we all work together as one team to provide excellent patient care. We’ve assembled a multidisciplinary clinic that provides personalized medicine based on the very latest understanding of the molecular biology of the patient’s tumor. We offer clinical trials, and our innovative research translates into clinical advances. Like Vince Lombardi once said, in the process of chasing perfection, we will catch excellence.

You had a distinguished 15-year tenure at Johns Hopkins. Why join NYU Langone’s Perlmutter Cancer Center?

Even though the standard of care



TO FIND A DOCTOR WHO TREATS
PANCREATIC CANCER, VISIT
NYULANGONE.ORG/PANCREAT-
ICCANCERDOCTORS, OR CALL
212-731-6000.



“Research shows that a tumor growing in the pancreas can take 12 to 15 years before it becomes invasive. If we can find and remove premalignant tumors within that window, we can potentially cure pancreatic cancer with surgery alone.”

CHRISTOPHER WOLFGANG, MD, PHD (OPPOSITE)

for pancreatic cancer is great, the vast majority of patients still die. We won't turn that around unless we have a future-forward approach to research and treatment of the disease. At NYU Langone, pushing the envelope is part of the culture. I want to invent the future and set the world standard for pancreatic and hepatobiliary surgery, research, and innovation. My philosophy of taking calculated risks; pursuing pioneering, groundbreaking solutions; and constantly challenging the status quo aligns with that of NYU Langone's leadership. To paraphrase Wayne Gretzky, it's not knowing where the puck is, but where it's headed. That means doing certain things that in the beginning may seem unconventional, but leadership understands that investing in innovation now is going to change the future.

How do you see the future unfolding for pancreatic cancer?

Two of the biggest things that will dramatically move the needle are early detection and improved systemic control. My colleague Diane Simeone, MD, director of NYU Langone's Pancreatic Cancer Center, is focused on early detection (*see page 24*). Of the 60,000 cases of pancreatic cancer diagnosed annually, 80% are ineligible for surgery because the cancer is too advanced. Dr. Simeone's work will shift that percentage.

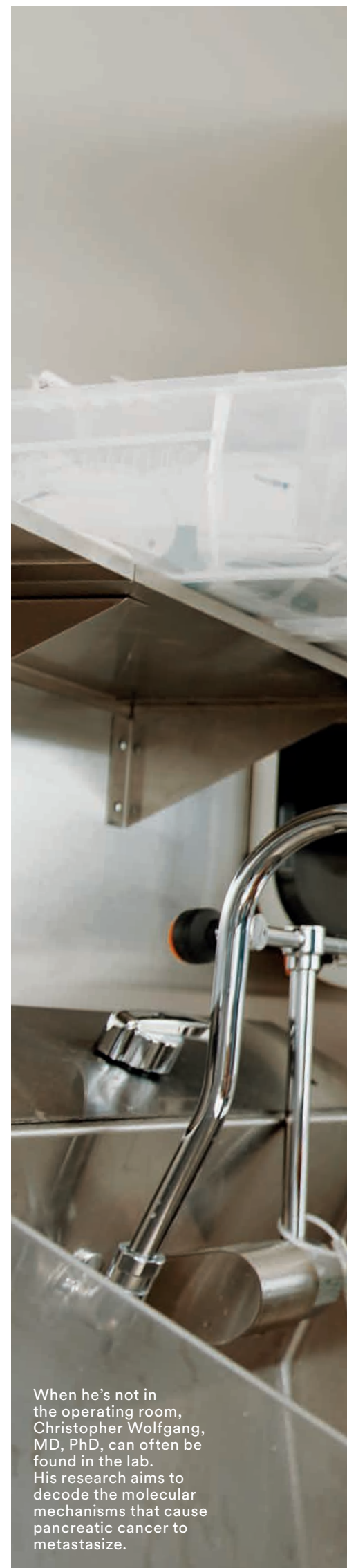
However, we must also crack the biology of the disease. Even among

the 20% of patients eligible for surgery, the tumor will rebound in 80% of those cases. The cancer is systemic, so invariably it spreads beyond the surgical site. The only way we're going to cure this disease is to eradicate it systemically.

To that end, my research focuses on circulating tumor cells—what we call the seeds of metastasis—and how the cancer spreads. Even if we remove a tumor, we can still find these little seeds circulating throughout the body. If chemotherapy doesn't kill them all, the disease rebounds. So understanding the biology of systemic disease is one of the most important next steps in curing more people.

How long does it take for pancreatic cancer to metastasize?

Research shows that a tumor growing in the pancreas can take 12 to 15 years before it becomes invasive. If we can find and remove premalignant tumors within that window, we can potentially cure pancreatic cancer with surgery alone. The problem is that many early tumors are invisible. We can't see them on scans. We are developing ways to detect them in the blood, a diagnostic technique called liquid biopsy. The tumors that can be detected on scans are called cystic neoplasms. Most of these lesions are benign, but 3% to 5% will undergo malignant transformation. The challenge with these types of tumors is determin-



When he's not in the operating room, Christopher Wolfgang, MD, PhD, can often be found in the lab. His research aims to decode the molecular mechanisms that cause pancreatic cancer to metastasize.



90%

The odds of detecting a removable lesion in the pancreas when it's identified through early screening. The figure plummets to 15% without screening.

ing which ones to watch and which ones to surgically remove. So that's another big area of research.

Are there particular risk factors for pancreatic cancer?

Most cases of pancreatic cancer are sporadic, meaning that they're caused by bad luck. Like all cancers, pancreatic cancer is driven by genes, but the mutations occur in the adult cells of the pancreas, not in the sex cells that pass on genes from generation to generation. You may not be born with a mutation that predisposes you to pancreatic cancer, but you could acquire one.

Germline mutations that create familial clustering occur in fewer than 10% of cases. To get a better understanding of them, Perlmutter Cancer Center is running a research project to sequence the DNA of patients with pancreatic cancer, and then analyze those sequences for germline mutations. The other roughly 90% of pancreatic cancer cases arise randomly, or they're driven by hidden environmental exposures. For example, the incidence of pancreatic cancer is higher in the West Virginia coal region near where I grew up. So learning more about environmental drivers is also key.

You've said that the single most important thing you can do for a patient, aside from providing great clinical care, is to offer hope. What has convinced you of this?

I develop a relationship with each and every one of my patients. I'm their physician for life. I answer their emails. We talk on the phone. Even patients now 15 years out will still see me once a year. These relationships are extremely meaningful to me.

I'm also optimistic and upbeat by nature. If I'm watching a game and my team's down by 40 points, I'm always thinking, "The game isn't over yet." I'm on the edge of my seat until the very end. That's the same attitude I have with my patients. We never throw in the towel. We're always thinking of ways to beat the cancer. We never give up.

At the same time, I'm also realistic. When I see my patients for the first time, we chat for an hour. It's my opportunity to explain where we stand, and prepare them for the hard road ahead. I tell them that the odds are stacked against us, but that together, we're going to fight all the same. I stand with them. It's truly one of the most rewarding parts of my job.

If you take 100 people with localized pancreatic cancer, five years from now, 80 of those people won't be here. But here's the thing. We don't know if you're going to be one of those 80 or one of those 20. I tell my patients, "Right now, I have no reason to think that you won't be one of those 20. We're going to fight the fight and help get you through it every step of the way."

How to Stop Pancreatic Cancer Before It Starts

FOR PEOPLE AT HIGH RISK, PERLMUTTER CANCER CENTER'S EARLY SCREENING PROGRAM CAN GREATLY SHIFT THE ODDS OF SURVIVAL.

After losing both his mother and father to pancreatic cancer 10 years apart, Alex Rosero, a 52-year-old college administrator, knew that he and his four siblings would need to be proactive to protect themselves from the disease. His sister-in-law, a physician, connected him with the Pancreatic Cancer Early Detection and Prevention Center at NYU Langone Health's Perlmutter Cancer Center. Alex enrolled in the program in 2019, a year after his father's death, and his brothers and sisters are following suit. "I'm participating in a surveillance study not only to take care of myself, but also for my seven nieces and nephews," he says. "I want to help researchers find better treatments or a cure for the next generation of our family."

Clinicians and researchers at the center aim to increase the five-year survival rate for pancreatic cancer from 9% to 50% within the next decade. Their goal is to prevent the disease or diagnose it early, when the chances of recovery are greater. Currently, 80% of pancreatic cancers are diagnosed at a late stage, when surgery is no longer practical. "While there is no standard screening test, there are some steps that may help avoid pancreatic cancer," notes Diane Simeone, MD, the Laura and Isaac Perlmutter Professor of Surgery and director of the Pancreatic Cancer Center.

The first priority, says Dr. Simeone, is to know your risk. "Make sure your primary care physician takes a thorough medical history," she advises. "If more than one person in your family has had pancreatic cancer, you should have your DNA examined in what we call a germline test." A blood sample can determine whether a patient's risk is high enough to warrant annual screening with an MRI or endoscopic ultrasound.

Screening high-risk individuals, notes Dr. Simeone, boosts the odds of detecting a removable lesion from 15% to 90%. NYU Langone serves as the coordinating center for the new PRECEDE (Pancreatic Cancer Early Detection) Consortium, a global collaborative of 35 academic medical centers focused on early detection in familial high-risk individuals. She notes that for half the patients who consult the program for surgical treatment, she can't identify a known risk factor, highlighting that there is much to learn about identifying those at risk. Dr. Simeone stresses the importance of managing those risk factors associated with pancreatic cancer that can be controlled, such as smoking, drinking, obesity, and type 2 diabetes, which doubles the risk for pancreatic cancer. She adds that there is a growing appreciation of the role of heritable risk, which likely involves at least 10% of cases.

Diane Simeone, MD, director of the Pancreatic Cancer Center at Perlmutter Cancer Center, has established a first-of-its-kind program for the early detection and prevention of pancreatic cancer.



TO LEARN ABOUT PERLMUTTER CANCER CENTER'S HIGH-RISK SCREENING PROGRAM FOR PANCREATIC CANCER, VISIT NYU-LANGONE.ORG/PANCREATICCANCEREARLYDETECTION, OR CALL 212-731-5655.

5 THINGS YOU SHOULD KNOW ABOUT

The Virus Fueling Rising Rates of Throat Cancer

The Explainer



THE INCIDENCE OF oral cancer, historically linked to smoking and alcohol use, has declined as smoking rates have fallen. Yet one type has reached epidemic proportions. Over the past 30 years, cases of throat cancer, known as oropharyngeal cancer, have doubled. An estimated 70% of throat cancers are attributed to the human papillomavirus, or HPV, the most common sexually transmitted disease. With more than 13,000 new diagnoses of throat cancer each year in the US, the disease has surpassed cervical cancer as the most common cancer associated with HPV.

As leaders of the Head and Neck Center at NYU Langone Health's Perlmutter Cancer Center, Mark Persky, MD, and Kenneth Hu, MD, are two of the country's foremost experts on the treatment of throat cancer. Under their direction, the center offers some 1,000 patients exceptional care and outstanding outcomes every year.

Here, they share their insights and perspectives on a disease that disproportionately affects men, and whose numbers in that group are projected to double over the next decade.

1

HPV is common, but some types cause cancer.

An estimated 80% to 90% of the population are infected with HPV, a virus that causes the most common sexually transmitted infection. About 7% have a form that affects the oral cavity, and 1% contract the most pathogenic strains. In most cases, the immune system clears the virus within a year or two, but types 16 and 18 can remain dormant for years, even decades, before precancerous cells give rise to a tumor. "The virus can go deep within the crypts of the tonsils," explains Dr. Persky, professor of otolaryngology-head and neck surgery, "and that's probably where it often harbors." Patients treated for throat cancer at the Head and Neck Center represent a broad spectrum of the population, but the majority are between 50 and 80, with men outnumbering women nearly 4 to 1. Typically, the patient is a healthy non-smoker whose first symptom is a painless lump in the neck, often noticed while shaving, that doesn't subside after a course of antibiotics or steroids.

2

Tween and teenage boys are especially vulnerable.

The risk of contracting a high-risk form of HPV is estimated to be 14% for people who have had one sex partner, but five times greater for those who have had six or more partners. Dr. Persky attributes the rise in throat cancer to climbing rates of sexual activity among a younger and younger population. The earlier an exposure to the virus, he explains, the more time it has to develop, making dangerous strains more prevalent. "Many teens and preteens don't even consider oral sex a form of sex," he notes, "but it's a major transmission route for HPV."

3

Childhood vaccination can prevent the cancer.

There's no screening test to identify those at risk for developing HPV-positive tumors, but three FDA-approved childhood vaccines protect against types 16 and 18. "Throat cancer can be prevented to a great extent if parents have their children vaccinated around age 12, before they become sexually active," says Dr. Persky. He expects the epidemic to peak around 2040, when the first generation vaccinated as preteens reaches middle age.

4

The cure rate is very high.

"If a patient's tumor is HPV-positive, the long-term cure rate for most stages is 80% to 90%," reports Dr. Hu, professor of radiation oncology and otolaryngology-head and neck surgery. HPV-positive tumors are more responsive to chemo and radiation, partly due to the biology of the tumors and partly because healthy nonsmokers tolerate treatment better. Most patients don't require surgery, notes Dr. Persky, but when they do, the preferred method is robotic surgery, which affords less invasive access to the deep structures of the head and neck. "The robotic approach has revolutionized surgical treatment," says Dr. Persky. "The tumor can be identified more easily, exposed better, and removed with fewer functional and cosmetic post-operative issues." For a small subset of these surgical patients, he adds, there's actually no need for chemo or radiation.

5

When it comes to chemo and radiation, sometimes less is more.

For patients who do require treatment, the severe discomfort and complications of radiation combined with chemo rank as the biggest concerns, says Dr. Hu. So he is encouraged by the early results of a study under way at Perlmutter Cancer Center to evaluate reduced doses of radiation and chemo to minimize side effects without compromising efficacy. "We've found that if a patient with an early-stage tumor responds rapidly to standard treatment, they can benefit from a midcourse adjustment," says Dr. Hu. "We can reduce the radiation dose by 15% and switch from high-dose chemo to low-dose chemo administered weekly." For the patients treated with this experimental strategy so far, the success rate has been 90%, with less than 10% of them requiring surgery. Dr. Hu expects this novel approach to become an established protocol option at Perlmutter Cancer Center within a couple of years.



TO FIND A DOCTOR WHO TREATS HEAD AND NECK CANCER, VISIT NYULANGONE.ORG/HEADNECK-CANCERDOCTORS, OR CALL 212-731-6000.

MEET THE HEAD AND NECK CENTER TEAM



► ADAM JACOBSON, MD

SURGEON; CODIRECTOR, HEAD AND NECK CENTER; DIRECTOR, DIVISION OF HEAD AND NECK SURGERY, DEPARTMENT OF OTOLARYNGOLOGY-HEAD AND NECK SURGERY

► KENNETH HU, MD

RADIATION ONCOLOGIST; CODIRECTOR, HEAD AND NECK CENTER

► ZUJUN LI, MD

MEDICAL ONCOLOGIST; CODIRECTOR, HEAD AND NECK CENTER

► MICHAEL PERSKY, MD

SURGEON; DIRECTOR, HEAD AND NECK ROBOTIC SURGERY

► MARK PERSKY, MD

SURGEON

► BABAK GIVI, MD

SURGEON

► THERESA TRAN, MD

SURGEON; CHIEF, OTOLARYNGOLOGY SERVICE, NYC HEALTH + HOSPITALS/BELLEVUE

► ALEX VAEZI, MD, PHD

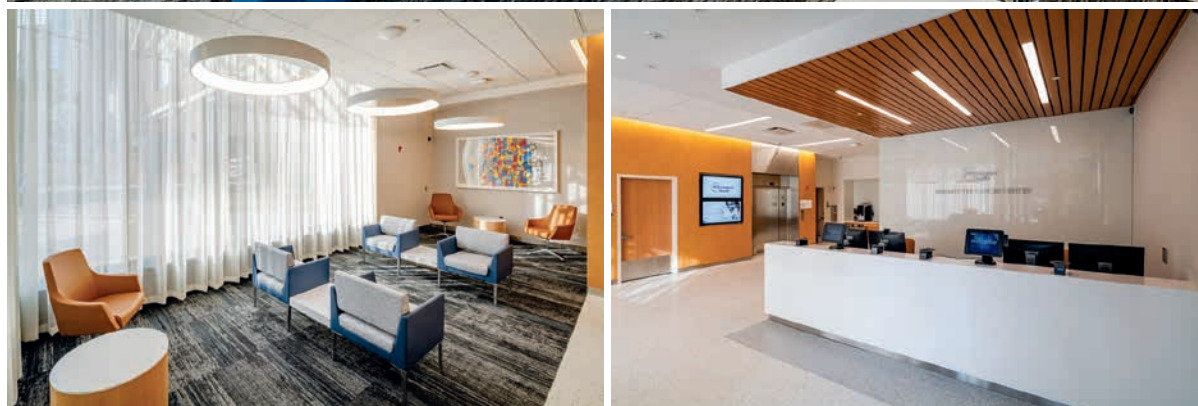
SURGEON; CHIEF, HEAD AND NECK SURGERY, NYU LANGONE HOSPITAL-LONG ISLAND

► MOSES TAM, MD

RADIATION ONCOLOGIST

RENE PEREZ; SHUBHANGI GANESHRAO KENE/SCIENCE PHOTO LIBRARY (FACING PAGE); MIKROMANG (NEAR LEFT)

Blood Transplants



Self-Storage for Stem Cells

A NEW OUTPATIENT CENTER EASES BURDENS FOR BLOOD AND MARROW TRANSPLANT PATIENTS.

Patients who receive blood and marrow transplants normally require a three- to four-week hospital stay so that they can be closely monitored for complications. But for patients at NYU Langone Health's Perlmutter Cancer Center who receive an autologous transplant—in which the patient's healthy stem cells are collected before chemotherapy and then given back after treatment—care is now much more convenient. In September, a new Transplant and Cellular Therapy Center opened at 2nd Avenue and 34th Street in Manhattan to treat patients with blood cancers in an ambulatory setting. The facility is equipped with eight infusion chairs, an apheresis center for the collection of donor stem cells, and a laboratory that will allow stem cells to be processed and banked in-house for the first time.

Outpatient transplants will be available to patients who, in addition to meeting other criteria, reside within a certain proximity and have adequate support for travel. "This center enables Perlmutter Cancer Center to bring its premier services directly to the community," notes Samer Al-Homsi, MD, MBA, clinical professor of medicine, executive director of the Transplant and Cellular Therapy Program. "During their treatment period, patients can enjoy the comfort of their homes, surrounded by their families." Each year more than 8,000 autologous transplants are performed in the U.S. In 2020 Perlmutter Cancer Center provided about 90, a number that's now expected to rise by about 20% each year.



FOR INFORMATION ABOUT BLOOD AND BONE MARROW TRANSPLANTS, VISIT NYULANGONE.ORG/BLOODMARROWTRANSPLANT, OR CALL 646-501-4848 FOR ADULTS OR 646-754-1569 FOR CHILDREN.

Brain Cancer

She Sang Her Way Through Brain Surgery

“Are you
okay?”

the fourth-grader asked his math teacher. Lauren Barbosa, 39, wasn't so sure. She was about to start a remote class one day in November, 2020, when she instantly lost her ability to speak. “I knew what I wanted to say and my lips were moving, but I just couldn't get anything out,” Barbosa recalls. “And I'm never at a loss for words.” Not wanting to alarm her students, she ended the session and ran to the bathroom mirror. A couple of minutes later, she was finally able to say the words she had been struggling to utter: “I can multiply and divide whole numbers.”

Despite having no other symptoms, Barbosa feared a stroke. Her husband, Leonardo, brought her to the Emergency Department at NYU Langone Hospital—Long Island, a short drive from where they were then living in Westbury. “It's a great hospital and I knew they would take good care of me,” she says. “It's where I was born, where my son, Dylan, was born, and where my husband once worked as a patient transport attendant.”

Brain scans ruled out a stroke, but revealed a suspicious lesion. Several days later, Barbosa met with Lee



Several months before completing her final round of oral chemotherapy in October 2021, Lauren Barbosa attended a wedding with her husband, Leonardo, and son, Dylan.



“Damage to this part of the brain is a very devastating injury. The person could speak, but their words wouldn’t make any sense because they wouldn’t know what they were saying, even though they would think they knew what they were saying.”

LEE TESSLER, MD (LEFT), CHIEF OF NEUROSURGERY AT
NYU LANGONE HOSPITAL—LONG ISLAND



In the Emergency Department at NYU Langone Hospital—Long Island, Dr. Lee Tessler reviews a brain scan with colleagues in neurology, radiology, and critical care.





GREGORY A. SHEMITZ (LEFT); COURTESY OF LAUREN BARBOSA



“Dr. Tessler made me feel comfortable right away. He said, ‘Don’t worry, whatever this is, we’re going to take care of it.’”

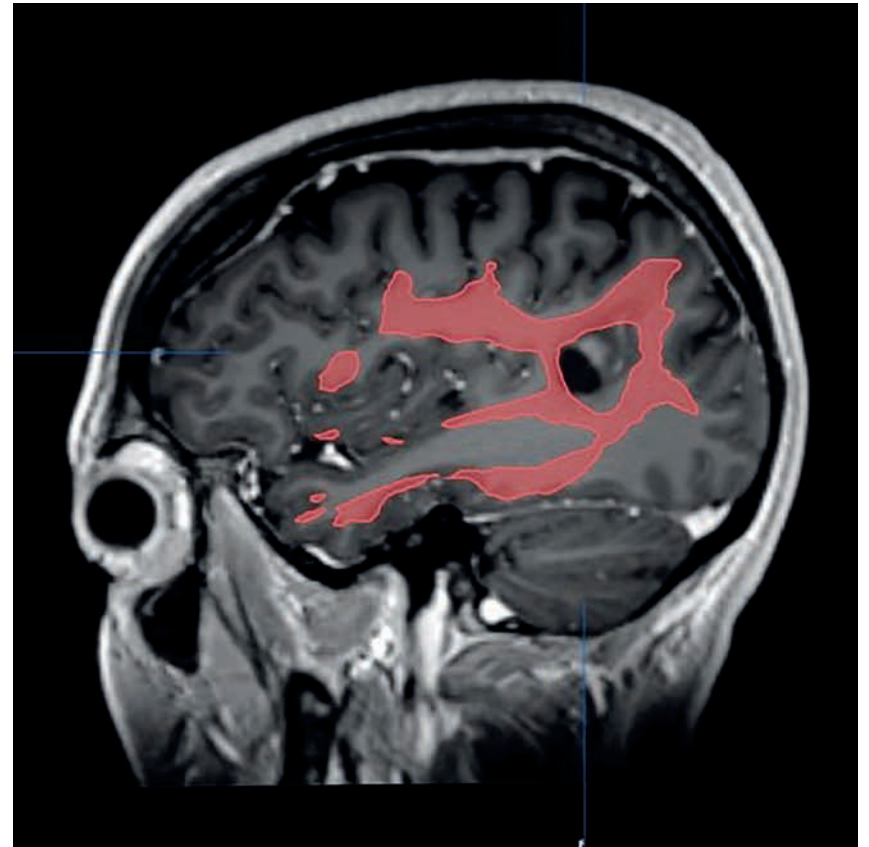
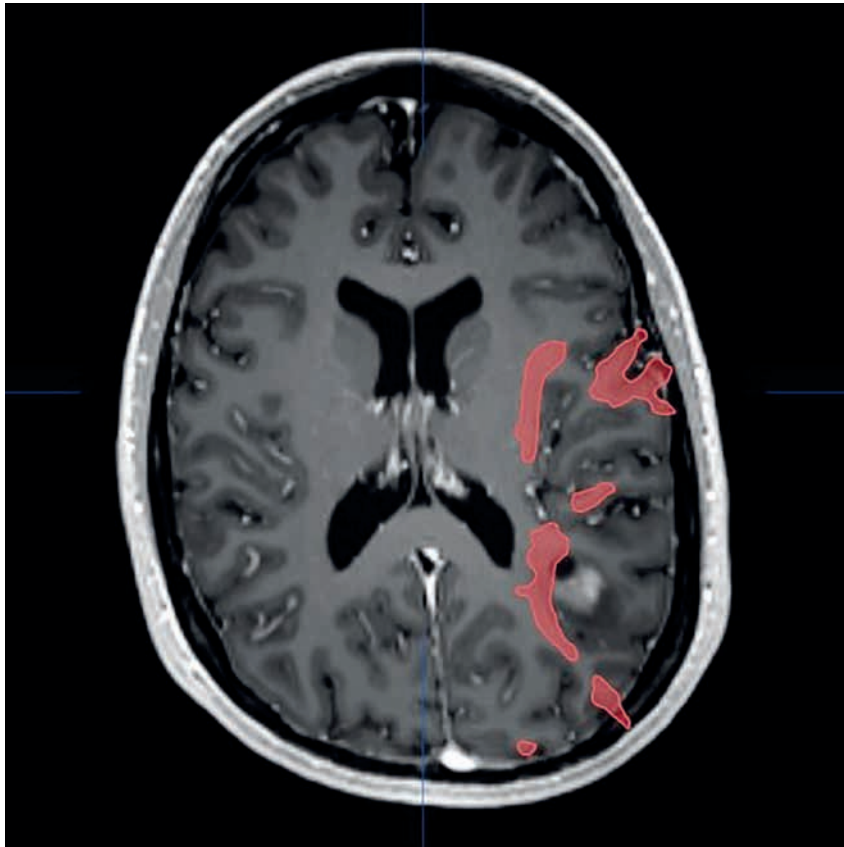
LAUREN BARBOSA (ABOVE),
WITH FAMILY DURING A KAYAKING EXCURSION
ON THE LONG ISLAND SOUND LAST MAY.

Tessler, MD, chief of neurosurgery at NYU Langone Hospital—Long Island. The hospital’s neurosurgery program, part of Perlmutter Cancer Center, is ranked number one on Long Island by *U.S. News & World Report*, and its doctors perform over 1,200 related procedures each year. “Dr. Tessler made me feel comfortable right away,” says Barbosa. “He said, ‘Don’t worry, whatever this is, we’re going to take care of it.’” Dr. Tessler told Barbosa that the episode was most likely caused by a seizure, so he prescribed an anti-seizure medication and asked her not to drive. He also ordered a lumbar puncture to check her cerebrospinal fluid for signs of infection and additional scans to rule out metastasis from another part of her body. When all the test results came back negative, Dr. Tessler narrowed down the potential diagnosis to a primary brain tumor. He suspected an astrocytoma, named for the star-shaped cells where such tumors originate—cells that “clean out debris in the brain,” as Dr. Tessler puts it.

The most common type of brain tumor in adults, astrocytomas afflict some 15,000 Americans each

year. Unlike discrete solid tumors, they infiltrate healthy brain tissue as cancerous cells spread in between normal cells. Barbosa’s tumor was located in the left parietal lobe, which controls language and speech. “This is one of the more challenging parts of the brain to operate on,” notes Dr. Tessler. There are two important eloquent areas of the brain related to speech. One allows you to speak and another allows you to understand speech. They’re connected by a fiber tract, and that’s where Barbosa’s tumor was situated. “Damage to this part of the brain is a very devastating injury,” says Dr. Tessler. “The person could speak, but their words wouldn’t make any sense because they wouldn’t know what they were saying, even though they would *think* they knew what they were saying.”

Barbosa’s tumor was about the width of a dime—big enough to trigger a seizure. “While we caught the tumor early due to Lauren’s episode of speechlessness,” says Dr. Tessler, “it was in a deeper part of the brain that’s more difficult to access without damaging tissue.” To frame his battle plan, Dr. Tessler



“If I probe an area and you stop speaking, or stop being able to name things or identify pictures, I avoid that area. I use this feedback to fine-tune how to get to the tumor and what to remove.”

DR. LEE TESSLER (OPPOSITE), CHIEF OF NEUROSURGERY AT NYU LANGONE HOSPITAL—LONG ISLAND

used an imaging technology called MR tractography, which enables the surgeon to visualize functional areas of the brain and their corresponding fiber tracts. “By seeing the areas that control speech preoperatively, I was able to find a natural fold in the tissue that led almost directly to the tumor,” Dr. Tessler explains. “During surgery, I would incorporate that data into our 3-D navigation system so that I could operate without causing permanent injury.”

Dr. Tessler explained to Barbosa that he would need to perform a procedure known as an awake craniotomy, which was scheduled for December 21. “He said, ‘We’re going to do this while you’re awake,’” she recalls. “I looked at him and said, ‘Are you kidding?’” With speech, he explained to Barbosa, the only way to test brain function is with the patient awake. “If I probe an area and you stop speaking, or stop being able to name things or identify pictures, I avoid that area,” Dr. Tessler told her. “I use this feedback to fine-tune how to get to the tumor and what to remove.” Dr. Tessler reassured Barbosa that the brain itself doesn’t feel pain, and nerve blocks are used to



NYU Langone’s Brain and Spine Tumor Center, part of Perlmutter Cancer Center, is an international leader in the treatment of brain tumors, spinal cord tumors, and skull base tumors in adults and children.

numb the scalp.

Just before Barbosa was sedated, Dr. Tessler informed her that it was the birthday of the neuropsychologist who would be asking her questions during the procedure. “When you become alert,” Dr. Tessler said to her, “It would be great if you would wish him a happy birthday.” Barbosa did one better. She launched into the “Happy Birthday!” song, drawing laughter from the OR team. “We want the patient relaxed,” explains Dr. Tessler. “But it was incredible that Lauren could do that.” On the morning of December 23, Dr. Tessler gave Barbosa two pieces of good news: the surgery went well and she would be home before Christmas Eve.

After surgery, it took several months for her speech to return to normal, but today, with no permanent deficits, Barbosa is back at school, teaching on a full schedule. At a recent follow-up visit, she asked Dr. Tessler if she could ride a roller coaster or go zip lining. “Your scans look amazing,” he replied. “Go for it.” Barbosa has no plans for either activity. “I just wanted to make sure that I could do anything again,” she says. “And I definitely can.”



TO FIND A DOCTOR WHO TREATS BRAIN CANCER, VISIT NYULANGONE.ORG/BRAINTUMORDOCTORS, OR CALL 212-731-6000.

Opposite page: Brain scans from a 3D intraoperative navigation system show two views of Lauren Barbosa's tumor (white area) with its associated cyst (dark area). The red highlights represent areas of eloquent speech.



Gynecologic Cancers

“They truly care about us, not just the trial. I’ve always felt like I’m in good hands.”

JACQUELINE HOLZBAUR IS BEATING OVARIAN CANCER THANKS TO A CLINICAL TRIAL AT PERLMUTTER CANCER CENTER. SHE’S NOT ALONE.

Photograph by **Jonathan Kozowyk**



Since being treated in a clinical trial at Perlmutter Cancer Center, Jacqueline Holzbaur, 60, has avoided a recurrence of ovarian cancer and taken up pickleball.

Jacqueline Holzbaur and her husband, David, vacationing in Venice during her clinical trial.



Jacqueline Holzbaur, 60, had already been through a lot by the end of 2016,


when she switched her care to NYU Langone Health. In May of that year, she had been diagnosed with stage 4 ovarian cancer, necessitating a total hysterectomy along with the removal of her spleen and the tip of her pancreas, where the disease had spread. Following that difficult surgery at another institution, she had endured six chemotherapy treatments during which she lost her hair and dealt with nausea, achiness, and fatigue. So when doctors told her there was no evidence of cancer remaining and that she didn't require further treatment, Holzbaur should have been relieved.

Instead, she was worried, and with good reason. She had done research and knew the odds weren't in her favor: there was an 85% probability that her cancer would return, either in the abdomen, the pelvis, or possibly another part of the body, explaining why the five-year survival rate for her late-stage disease is just 17%. The tax accountant from Lawrence Township, New Jersey, wanted to be around to see her three children finish college and to travel the world with her husband, David. Yet there were no maintenance therapies for ovarian cancer available to substan-

tially reduce the risk of recurrence.

Then, Holzbaur learned of a phase 3 clinical trial at Perlmutter Cancer Center, the final stage in evaluating the safety and effectiveness of an investigational treatment known as a PARP inhibitor. The medication, niraparib, blocks an enzyme that cancer cells use to repair damaged DNA, thereby preventing or delaying a recurrence in patients whose metastatic ovarian cancer has, like Holzbaur's, responded to chemotherapy.

Genetic testing at Perlmutter Cancer Center revealed that Holzbaur's tumor tested positive for a biomarker called HRD, making her a strong candidate to benefit from the therapy. After meeting with Bhavana Pothuri, MD, director of Perlmutter Cancer Center's gynecologic oncology clinical trials, she enrolled in March 2017 and has been on the treatment ever since. The trial's encouraging results, published in the *New England Journal of Medicine*, showed that niraparib reduced the risk of ovarian cancer progressing by 38% compared with patients on placebo, leading to its FDA approval last year. Holzbaur will complete the therapy next March, when she



“Patients with cancer treated in clinical trials live longer. The more quality trials we can open, the more women we can help.”

**LESLIE BOYD, MD, DIRECTOR
OF GYNECOLOGIC
ONCOLOGY AT PERLMUTTER
CANCER CENTER**



“We get first dibs on trials, and that enables us to pick those likely to have the biggest impact. Many of these medications can extend life, and some may even cure a subset of patients, which is our ultimate goal. We are deeply invested in moving the needle in cancer care.”

BHAVANA POTHURI, MD (OPPOSITE), DIRECTOR OF PERLMUTTER CANCER CENTER'S GYNECOLOGIC ONCOLOGY CLINICAL TRIALS

reaches the five-year mark. “Having access to the trial gave me hope of remaining disease-free and provided a chance to help other women with my condition,” says Holzbaur, who has vacationed in Ireland and Italy and taken up a new sport, pickleball, during her treatment.

Holzbaur's case perfectly illustrates the objectives of Perlmutter Cancer Center's clinical trials program for gynecologic oncology: to provide patients with access to novel therapeutics that stem deadly cancers for months or even years following surgery and chemotherapy, and to advance the most successful of these much-needed maintenance treatments toward approval. More than 110,000 new cases of gynecologic cancer are diagnosed each year in the US, and the diseases claim some 32,000 lives annually, according to the American Cancer Society. “Patients with cancer treated in clinical trials live longer,” says Leslie Boyd, MD, who was appointed director of gynecologic oncology at Perlmutter Cancer Center earlier this year. “The more quality trials we can open, the more women we can help.”

That philosophy has helped Perlmutter Cancer Center rise from

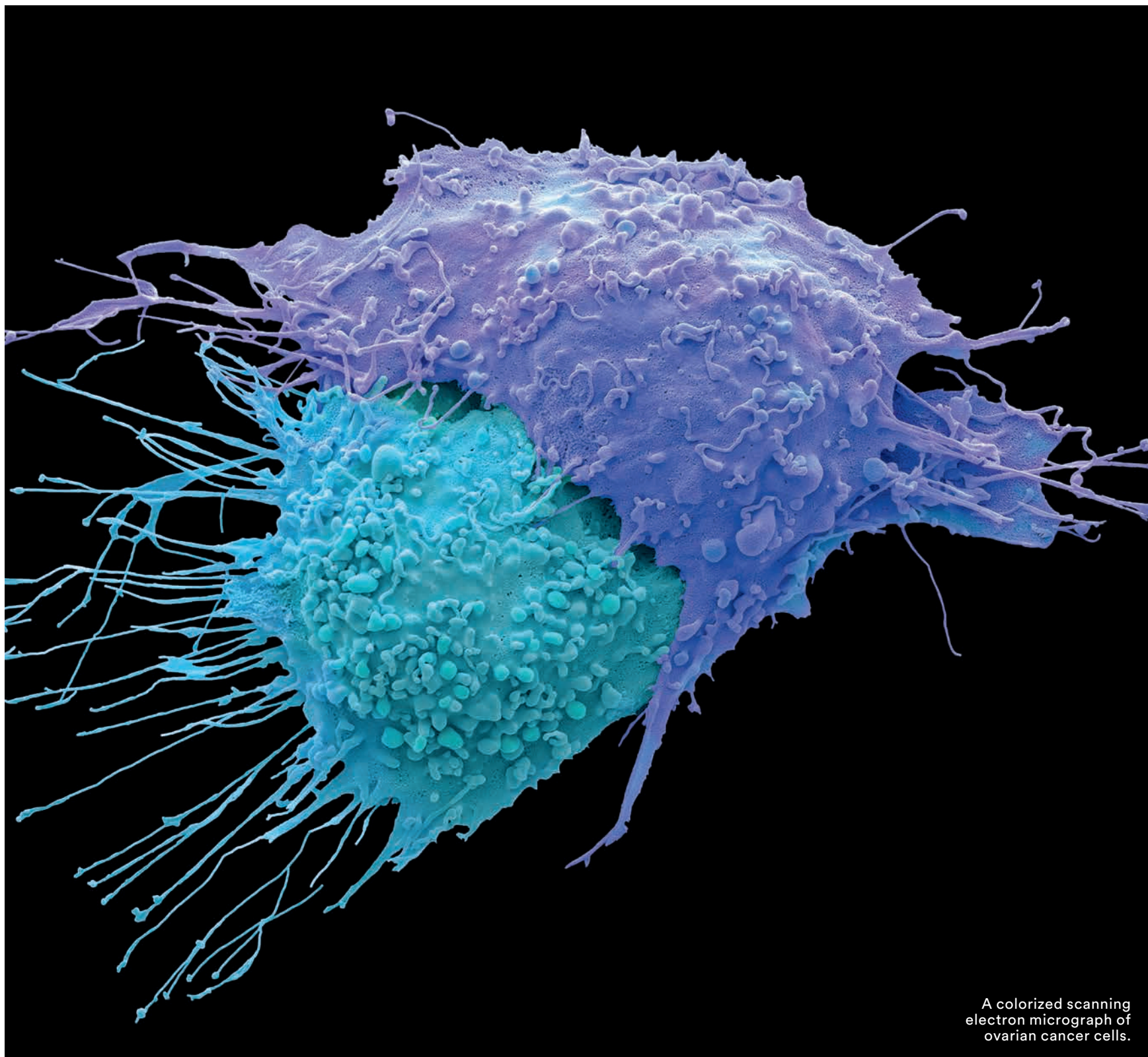


Perlmutter Cancer Center is the #1 clinical trials program for gynecologic cancer patient recruitment in New York and ranks #10 nationally, according to the GOG Foundation.

#34 to #10 nationally for the recruitment of patients with gynecologic cancers into government and industry clinical trials during the past two years, as ranked by the GOG Foundation, a nonprofit organization dedicated to transforming the standard of care in gynecologic oncology. Several key factors have helped earn the program its #1 ranking among New York centers.

I. Shrewd Trial Design and Selection

Dr. Pothuri, professor of medicine and of obstetrics and gynecology at NYU Grossman School of Medicine, serves as the GOG Foundation's associate clinical trial adviser for ovarian and endometrial cancer. In that role, she helps shape trials to ensure that they identify the patients most likely to benefit from targeted therapies, which block cancer cells from growing; immunotherapies, which stimulate the body's immune response; and combination therapies, which involve two or more therapies working in tandem. Her collaboration not only improves the quality of trials but also



A colorized scanning electron micrograph of ovarian cancer cells.

STEVE GSCHMEISSNER/SCIENCE PHOTO LIBRARY

provides Perlmutter Cancer Center with access to the most promising of these therapies.

“We get first dibs on trials, and that enables us to pick those likely to have the biggest impact,” says Dr. Pothuri. “Many of these medications can extend life, and some may even cure a subset of patients, which is our ultimate goal. We are deeply invested in moving the needle in cancer care.”

II. Efficient Recruitment and Implementation

Perlmutter Cancer Center has become a preferred site for clinical



Our clinicians have pioneered the use of targeted treatments, called PARP inhibitors, for ovarian cancer in clinical trials, often in combination with immunotherapies.

trials by establishing a strong track record for recruiting patients quickly and running studies efficiently. While Dr. Pothuri and Dr. Boyd, an associate professor of obstetrics and gynecology at NYU Grossman School of Medicine, do the lion’s share of recruiting, they rely on clinicians across the enterprise to recommend appropriate candidates. To that end, the department holds weekly research meetings with Perlmutter Cancer Center clinicians from NYU Langone’s hospitals in Manhattan, Brooklyn, and Long Island to discuss investigational therapies. It’s a concerted effort to spread the word. “When it comes to clinical trials, a lot of patients think



TO FIND A DOCTOR WHO TREATS GYNECOLOGIC CANCER, VISIT NYULANGONE.ORG/GYNECOLOGICCANCERDOCTORS, OR CALL 646-929-7815.

#10

Perlmutter Cancer Center's national ranking for the recruitment of patients with gynecologic cancer into GOG Foundation clinical trials in 2021. It's up from #34 in 2019, and represents the highest ranking of any center in New York.

'guinea pig,' not 'groundbreaking research,'” says Dr. Boyd. “It’s our job to explain why the trials we open are beneficial to them.”

Those efforts have paid off. Trial enrollment has grown in recent years, as has the diversity of volunteers, with Black and Hispanic patients currently comprising about one-third of participants—more than three times the national average. “Having underrepresented minorities in these trials is important to give them access to exciting therapies and to make sure they work on all segments of the patient population,” says Dr. Pothuri.

III. Putting Patients First

Before she decided to switch her care to Perlmutter Cancer Center, Holzbaur visited another institution offering clinical trials for cancer in Manhattan. She was unimpressed. “I felt like a number there, not a patient,” she says. By contrast, she says her team at Perlmutter Cancer Center, including Dr. Pothuri, nurse practitioner Kathleen Lutz, NP, and senior clinical research coordinator Priyanka Patel, has provided per-

sonalized care from day one. “They truly care about each of us, not just the trial,” says Holzbaur. “I’ve always felt like I’m in good hands.”

Holzbaur recalls that in the early days of the pandemic, when she was unable to schedule in-person visits, the team devised a workaround. Dr. Pothuri and Lutz, who was recently highlighted as an “Oncology Nursing Champion” by *Oncology Nursing News*, conducted monthly video visits. Patel arranged for the medication to be delivered to her home and to have her bloodwork done locally until she was fully vaccinated. “They made sure I didn’t miss a single dose,” says Holzbaur.

The high satisfaction rate among enrolled patients in clinical trials for gynecologic cancers has led to further expansion, both by word of mouth and among women who ultimately qualify for a second or even a third trial at Perlmutter Cancer Center. “Having a close relationship with our patients and maintaining their health means we get to take care of them for a long time,” says Dr. Boyd, “and that they can benefit from clinical trials multiple times during their treatment.”

Three Cancers, Three Clinical Trials, Three Fresh Reasons for Hope.

In its rise to becoming the top gynecologic oncology clinical trial site in New York for patient recruitment, Perlmutter Cancer Center has participated in a number of significant studies to evaluate new therapies for gynecological cancers, including these three.

OVARIAN CANCER: TARGETED THERAPY

NYU Langone was part of the multicenter phase 3 PRIMA trial, testing a targeted therapy, niraparib, that blocks cancer cells with damaged DNA from repairing themselves. The results, published in the *New England Journal of Medicine*, with Bhavana Pothuri, MD, director of gynecologic oncology clinical trials, as an author, showed substantial improvement in preventing or delaying recurrence among patients diagnosed with advanced ovarian cancer, leading to the medication’s FDA approval in 2020. Dr. Pothuri received consulting compensation from GlaxoSmithKline, which manufactures niraparib.

CERVICAL CANCER: IMMUNOTHERAPY

The multicenter phase 3 EMPOWER trial examined the effect of the immunotherapy drug cemiplimab on patients with recurrent or metastatic cervical cancer. The drug stops cancer cells from neutralizing T cells, thus strengthening the body’s immune response. The study showed that the medication reduced mortality by 31% and disease progression by 25% compared with chemotherapy alone, results that will likely lead to FDA approval. “The trial ended early because the benefit of the immunotherapy was so evident,” notes Dr. Pothuri.

ENDOMETRIAL CANCER: IMMUNOTHERAPY AND CHEMOTHERAPY

A phase 3 study at NYU Langone examines whether the addition of the immunotherapy drug pembrolizumab, in combination with two standard chemotherapy drugs, improves outcomes among patients with stage 3, stage 4, or recurrent endometrial cancer. Results are pending, but Leslie Boyd, MD, director of gynecologic oncology at Perlmutter Cancer Center, is optimistic. “Many patients benefit from chemotherapy or a targeted therapy combined with an immunotherapy, which helps boost the immune system,” says Dr. Boyd.



Learn more about this endometrial cancer trial. Point your smartphone camera to the QR code.



BIKE MS

Prostate Cancer

The Cancer Had Spread to His Bones. Then He Had a Gene Test.



This is 80? After a remarkable response to immunotherapy for advanced prostate cancer, Giulio Picolli is attacking his bucket list, whether it's completing local charity rides (left) or trekking in Italy's Dolomite Mountains.

When Giulio Picolli met David Wise, MD, PhD, in October 2020, he was nearly out of options.

The athletic 80-year-old from Paramus, New Jersey, had been treated for advanced prostate cancer for 11 years, undergoing lymph node removal and radiation treatments and dealing with the long-term side effects of hormone therapy. But with the disease having spread to Picolli's ribs and lower spine, making it painful for him to lift his right leg, his urologist in New Jersey suggested chemotherapy, a long shot with significant side effects.

Instead, Picolli's wife, Galina, on the referral of a friend who had raved about the care of Dr. Wise, nudged him to make an appointment. The decision to seek care at Perlmutter Cancer Center with Dr. Wise, an oncologist who specializes in prostate cancer, was a game changer and, quite possibly, lifesaving. "He gave us a good feeling from the first day, that he had a plan, and there was a team behind me," says Picolli, a re-

tired office equipment technician.

Some 80% of prostate cancers are slow growing and present a variety of treatment possibilities, including three pioneered at NYU Langone: focal ablation, in which cold or high-intensity sound waves target tumors while preserving healthy tissue; stereotactic body radiation therapy, precise, high-dose X-rays delivered in only five treatments, as compared with 45 for standard radiation therapy; and nerve-sparing radical prostatectomy, which greatly improves sexual function post-surgery.

However, a solid 20% of cases defy standard treatment options. That's where Dr. Wise shines. Determined to understand cancer from all angles, he holds a doctorate degree in cancer biology and has dedicated his oncology practice to treating the deadliest forms of prostate cancers. As director of NYU Langone's prostate cancer clinical trials program, his goal is to pioneer new treatment options that could help patients like Picolli beat steep odds. Advanced prostate cancer has a five-year survival rate of just



Medical oncologist Dr. David Wise, director of NYU Langone's prostate cancer clinical trials program, with John Pascale, another patient with prostate cancer who has benefited from immunotherapy.

ANDREW NEARY (LEFT); KATERYNA KON/SCIENCE PHOTO LIBRARY

30% and accounts for most of the 34,000 annual deaths from the disease. "Metastatic prostate cancer is difficult to treat, because it tends to stop responding to traditional treatments," says Dr. Wise, assistant professor of medicine and urology at NYU Grossman School of Medicine.

Dr. Wise immediately had Piccolli undergo bloodwork and a biopsy to determine whether the cancer might be treated with one of two approved immunotherapies designed to boost the body's own defense system. "For these patients, our goal is to offer therapies based on the genetic factors driving the cancer, if possible," he says.

While these treatments are effective on only a small minority of patients with metastatic disease, Dr. Wise notes that "about 5% of men possess a genetic profile that confers a very good chance of dramatic improvement with immunotherapy, and they can be spared a lot of unnecessary, unpleasant treatments." Piccolli, who had never received genetic testing prior to switching his care to Perlmutter Cancer Center,



Perlmutter Cancer Center doctors pioneered ablative therapy, a targeted treatment using controlled freezing (cryotherapy) or high-frequency radio waves to destroy prostate cancer while preserving healthy tissue.

was found to be among them. Last fall, he underwent a short course of radiotherapy with Andrew Evans, MD, medical director of radiation oncology. In May 2021, he began infusions of the drug pembrolizumab and stopped taking a testosterone suppressor. Within three weeks, his prostate specific antigen, or PSA, a blood test marker for prostate cancer, had dropped from a dangerous level to an undetectable one.

By June, he and his wife were trekking in the Dolomite Mountains in his native Italy. "I feel great," Piccolli says. "After all I've been through, it's a miracle what Dr. Wise did for me."

Dr. Wise sees things differently. To him, Piccolli's story reflects a critical mission of Perlmutter Cancer Center: to analyze a cancer's genetic code in order to provide eligible patients with access to the most promising prostate cancer treatment options, a paradigm known as precision oncology. "This is an important step that's still being skipped all too often," he says. "Because when immunotherapy works, it works very well."



TO FIND A DOCTOR WHO TREATS PROSTATE CANCER, VISIT NYULANGONE.ORG/PROSTATECANCER-DOCTORS, OR CALL 212-731-6000.

Next-Gen Therapies for Prostate Cancer Start Here

Illustration of a cancerous tumor growing within the prostate. The mass compresses the urethra, which transports urine and semen.

AT PERLMUTTER CANCER CENTER, CLINICAL TRIALS ARE TESTING THE METTLE OF TWO NEW CLASSES OF MEDICATIONS DESIGNED TO REIN IN AGGRESSIVE PROSTATE CANCERS.

► Lutetium-177-PSMA-617

This experimental therapy targets a cancer-cell protein called prostate-specific membrane antigen, or PSMA, that is prevalent in patients with metastatic disease. The compound is coupled with a radioactive particle designed to destroy malignant cells. It's a precision-guided approach that Dr. Wise likens to a smart bomb. Early studies showed that the therapy can delay disease progression among patients by 60%.

WHAT'S NEXT: NYU Langone will begin enrolling patients in a phase 3 trial this fall. If all goes well, the drug could receive FDA approval next year.

▲ Learn more about the trial. Point your smartphone camera to the QR code.



► Learn more about the trial. Point your smartphone camera to the QR code.



► DKN-01

In a paper published in *JCO Precision Oncology*, Dr. Wise reported that as prostate cancers become more aggressive, they become less dependent on testosterone, which is why the suppression of male hormones often fails. Instead, the cancer cells activate a gene called DKK1 that fuels their growth. Leveraging that knowledge, Perlmutter Cancer Center is testing a monoclonal antibody designed to inhibit the DKK1 protein. The trial is funded in part by the Prostate Cancer Foundation and the biotech company Leap Therapeutics, for which Dr. Wise is a paid consultant.

The trial evaluates the effectiveness of the monoclonal antibody—both alone and in combination with chemotherapy—at triggering the immune system to identify and attack cancer cells. “This treatment is not going to be for every patient whose metastatic cancer is resistant to hormone therapy,” Dr. Wise says, “but we think 25% to 30% of these men may benefit, which would be a significant and exciting development for our field.”

WHAT'S NEXT: Study results are expected to be published this winter.



Prostate cancer survivor Giulio Picoli of Paramus, New Jersey, crushing his workout at age 80.



Full Speed Ahead

A NOTE FROM THE DIRECTOR

If there's one lesson we've learned this year, with its historic rollout of COVID-19 vaccines in record time, it's this: Where there's science, there's hope. That's especially the case with cancer care. We live by those words—and our patients live *for* them. This year, Perlmutter Cancer Center has made great strides in both the clinic and the lab, providing patients with more reasons than ever to take heart. ■ Here are just a few. In July, the FDA cleared for clinical lab use a gene-sequencing test to guide treatment decisions. In September, a new Transplant and Cellular Therapy Center opened in Manhattan so that patients receiving an autologous transplant will no longer require a lengthy hospital stay. We've expanded lung cancer screening to locations throughout Manhattan, Brooklyn, Queens, and Long Island. And, we've launched more than 75 clinical trials this year to investigate promising therapeutics. ■ Among our recent clinical recruits is Christopher Wolfgang, MD, PhD, chief of the new Division of Hepatobiliary and Pancreatic Surgery. In a Q&A on page 18, Dr. Wolfgang stresses that the single most important thing he can do for a patient, aside from providing great clinical care, is to offer hope. "Even in the face of overwhelming odds," he says, "hope is a powerful thing." As you read these pages, you'll see how true that is.

BENJAMIN G. NEEL, MD, PHD
Director, Laura and Isaac Perlmutter Cancer Center