

BreakThroughs

SUMMER 2020



Duke Cancer Institute



A GATHERING

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MICHAEL B. KASTAN

ON THE COVER:

A Gathering. Leaders of the world-class team that has come together to make Duke the destination for people with cancer that has spread to the brain or spine: Carey Anders, MD; Peter Fecci, MD, PhD; Rory Goodwin, MD, PhD; John Kirkpatrick, MD, PhD.
Photo by Chris Hildreth

IN THE NATION AND IN THE DUKE CANCER INSTITUTE COMMUNITY, the COVID-19 pandemic looms large. But cancer does not wait for COVID-19.

At DCI, we are continuing to offer cancer care as it should be while reducing exposure risk for our patients, their families, and our staff. You'll see one example of our DCI team's creativity and dedication in this issue's news briefs: The Adult Bone Marrow Transplant team has made at-home care the standard for all stem cell transplant recipients in recovery. In addition, the Duke Supportive Care and Survivorship Center has made all of its core support services available via telehealth. Before COVID-19, across DCI we conducted only a few telehealth visits each month. Our oncology providers are now making nearly 200 telehealth visits each day. We anticipate that telehealth will continue to play an expanded role at DCI.

Even as we are shifting how we provide care, we are innovating in other ways. In our cover story, you'll read about the continued progress of the Duke Center for Brain and

Spine Metastasis and our efforts to become the best place in the nation for patients with cancer that has spread to the brain and spine. As people with advanced cancers are living longer, this challenge is becoming more common for people with many types of cancer.

Also in this issue, you'll hear from researchers and clinicians who are working together to develop an "exercise prescription"—personalized exercise regimens that make the most of the body's own ability to fight cancer and to stay strong through the rigors of cancer treatment. And, you'll meet one of our breast cancer surgeons who is not only taking great care of patients, but is passionate about reducing health disparities and learning about her patients as people.

None of this life-saving work is possible without our volunteers and donors. Will you please join us?

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House Calls

Stem cell transplant patients are highly immune-compromised, so they are among the most vulnerable to COVID-19. That's why, in early March 2020, as the COVID-19 epidemic ramped up, the Duke Adult Blood and Marrow Transplant program leadership team made home care the standard of care for all active hematopoietic stem cell transplant patients. The team had experience in this area from a National Institutes of Health-funded study of this approach.

The study asked whether at-home care resulted in the patients' gut microbiome remaining intact, leading to better outcomes. "Also, we were asking whether the patients would eat better, exercise more, and feel better. Lastly, we wanted to know if the costs were lower," says Nelson Chao, MD, MBA, director of the Hematologic Malignancies & Cellular Therapy disease group. The benefit

of being seen at home during recovery, especially in the COVID-19 era, is that the transplant patient is exposed only to the one provider making the house call, instead of dozens of human and environmental exposures typically encountered at the hospital.

Previously, the only way for such a patient to receive post-transplant care at home (either their permanent home or temporary lodging nearby) was to participate in a clinical trial. With these studies, only one or two patients were randomized to receive home care at any one time. Now the home transplant team has made house calls to 26 separate stem cell transplant patients in recovery.

This significant re-deployment was made possible by extensive efforts from the advanced practice providers and nurses currently conducting the home visits, including Chao; Krista Nichols, RN, MSN, AOCNS; and Anthony Sung, MD.

—Julie Harbin



Physician assistant Kristina Tourville, PA-C, MMSc with patient David Wrenn.

Quit at Duke Expands

Quit at Duke, a tobacco cessation program, has partnered with Augusta Health to launch the first expansion of the program into another health system.

According to the American Cancer Society, the nicotine in tobacco is as addictive as heroin or cocaine. In fact, the Centers for Disease Control and Prevention indicates more people are addicted to nicotine than to any other drug.

"Quitting is very difficult and may, for some, require multiple attempts," says James Davis, MD, founder of the Quit at Duke program. "This is why Duke takes

a comprehensive approach to tobacco cessation by combining medication and counseling services. This concept, which is supported by published guidelines, is the gold standard of tobacco cessation care and has been proven to be more effective than quitting on your own. With the success we've seen at Duke, we are excited to partner with Augusta Health and bring this concept to the Shenandoah Valley in Virginia."

For more information on the Quit at Duke program, call **919-613-QUIT (7848)** or visit dukehealth.org/quit.

COVID-19 Response Funds

As the COVID-19 outbreak expands in our state and around the world, teams throughout Duke's hospitals, clinics, and research labs are actively monitoring and responding to the developing pandemic in countless ways. Duke is mobilizing to care for patients with the highest quality medical care and is advancing understanding

of the virus in order to develop treatments and preventions.

Gifts to the **COVID-19 Response Funds** will be used to address the needs of patients and caregivers impacted by COVID-19, to enhance our researchers' efforts to develop and test new tools to

combat the virus, and to support emerging areas of greatest need.

You can designate your gift to any one or more of three areas:

- **Area of Greatest Need**
- **Care Support**
- **Research Support**

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THE EXERCISE PRESCRIPTION

We all know that exercise is good for us. But what if doctors could prescribe the precise workout that would help each person beat their cancer?

From left, exercise physiologist Grace McDonald, study participant Sally Morgan, and exercise physiologist Megan Reaves during Morgan's clinical exercise test at the Duke Center for Living.



KEN HUTH

Sally Morgan strides to the top of a treadmill, swinging her arms. She wears a head piece that anchors a plastic tube that snakes from her mouth. A sensor inside the tube measures the oxygen she takes in and the carbon dioxide she breathes out.

“Good job Sally!” exclaims exercise physiologist Megan Reaves, who operates the treadmill controls. “Keep going. I’m going to boost the speed now.”

“Sally, looking good,” says exercise physiologist Grace McDonald, as she pumps the blood pressure cuff around Morgan’s arm.

Reaves calls out, “Here comes some incline: 3, 2, 1—climb that hill.”

Morgan, who was diagnosed with chronic lymphocytic leukemia (CLL) in 2019, is taking a clinical progressive exercise test after participating in 12 weeks of high-intensity interval training. She has no symptoms from the disease and is in a “dynamic monitoring” period, which means she isn’t currently receiving treatment.

She says the exercise training has made her feel better and have more energy. And she moved up a level on her tennis team.

Can it also help her keep the cancer at bay?

That is what Assistant Professor in Medicine David Bartlett, PhD, is trying to find out. He and other scientists have a hunch that exercise, in essence, acts like an immunotherapy—a treatment that boosts the body’s own ability to fight cancer. Bartlett’s early findings look promising, and if he can find support to do more and larger studies, he hopes to add exercise to the toolbox of personalized cancer treatments that doctors can prescribe.

READYING FOR A FIGHT

Plenty of evidence shows that exercise makes people generally less susceptible to disease, including cancer. And, Bartlett says that colleagues in the United Kingdom are finding that lifelong exercisers have an increased ability to produce new immune system cells, compared to sedentary people.

Bartlett aims to put a finer point on how exercise may be able to help the body fight cancer.

He explains that during the minutes we are exercising, cells that fight off invaders—Natural Killer cells and T-cells—

“WE MAY HAVE THE POTENTIAL TO USE EXERCISE TO SHIFT YOUR IMMUNE SYSTEM AROUND JUST ENOUGH THAT IT’S WORKING WITH THE DRUGS THAT YOU’RE GETTING, TO TREAT YOUR TUMORS.”

—David Bartlett

temporarily rush from the lymph nodes and other tissues into the blood. Bartlett points out that some people think that evolution favored this phenomenon in our ancestors; if you saw a lion or other predator and began running, survival was more likely if the body sent infection fighters to the blood, preparing for a bite wound.

If exercise readies the immune system for a fight, what better way to prepare for what is likely the fight of a person’s life—cancer?

BY ANGELA SPIVEY



Bartlett and Associate Professor of Medicine Mike Harrison, MD, are investigating whether an “acute dose” of exercise boosts the effectiveness of an immunotherapy treatment. People with bladder or kidney cancer ride a stationary bike while receiving a 30-minute infusion of a checkpoint inhibitor—a drug that removes the “brakes” from certain immune system cells so they can recognize and kill cancer.

Bartlett is still analyzing initial results from 15 patients in that study, so he can’t reveal much yet, but he is excited about his early findings. “We may have the potential to be able to use exercise to shift your immune system around just enough that it’s working with the drugs that you’re getting, to treat your tumors,” he says. If all goes well, he will seek funding to conduct a larger study with more patients.

Right now, a single stationary bike sits on the fourth floor of the Duke Cancer Center; Bartlett’s team rolls it around to whatever infusion bay is empty. Curtis Garbett, who is fighting bladder cancer with Duke’s help, is raising funds to change that. What if there were a whole room of bikes where patients could pedal and talk to each other while receiving treatment? Garbett, who was one of the first patients to participate in the study, is beginning to raise funds for bikes, which cost \$5,000 each, through the foundation he founded to raise awareness about bladder cancer—the Crush it for Curtis Foundation ([online at cifcf.org](http://online.at.cifcf.org)).

“Participating in the study gave me a feeling of empowerment over cancer,” Garbett says. “Even though the study may not directly impact me, I felt I was doing my part to advance cancer research and the way infusion therapy could be delivered in the future.”

Researcher David Bartlett gets his own exercise at Johnston Mill Nature Preserve. He says he gets a lot of cardiovascular benefit in a short time by alternating high intensity sprints with slower running.

HIGH INTENSITY

As a junior faculty member, Bartlett puts in long hours analyzing data and writing grant proposals. He and his wife also have a 12-month-old baby at home. So he doesn’t have the time he once did to participate in 12-mile extreme exercise events like Tough Mudder. Instead, he does simple high intensity interval training of his own. At nearby hiking trails, he sprints for two minutes or so until he’s exhausted, then slows down for about a minute, until he can go full bore again. Thirty-minute sessions like that give him similar benefits as longer periods of moderate exercise, he says.

It’s not too different from the training that the participants in the CLL studies, like Sally Morgan, do under supervision at the Duke Center for Living. They work at 90 percent of their maximum cardiorespiratory ability for one-minute intervals, then one minute of active rest, for 30 minutes at a time. Because the exercise is tailored to their baseline fitness level, it’s not as intimidating as it might sound. “For many people in our study, high intensity interval training is walking up a hill, or walking up and down stairs,” Bartlett says. With the speed and incline, Morgan says, the sessions were more challenging than she expected. “I was definitely in much better shape by the end of it,” she says. Ideally, the training will teach the participants the exercise intensity they need to maintain the gains they’ve made.



KEN HUTH

Sally Morgan, who has been diagnosed with chronic lymphocytic leukemia, says that participating in an exercise study helped her move up a level on her country club tennis team.

“What I really want is at the end, they're able to go back into their community and do it themselves,” Bartlett says.

Because CLL has not been linked to obesity the way some other cancers have, the effect of exercise is little studied in this disease. Collaborating with Assistant Professor of Medicine Danielle Brander, MD, and Medical Instructor Andrea Sitlinger, MD, Bartlett found some surprises. First, they conducted physical functional testing in 140 people with CLL. Then they compared immune system cells from the 10 most fit patients with cells from the 10 least fit. “We found that the fitter people have a completely different immune system than the unfit people. They have different levels of circulating factors that can affect their leukemia cell biology,” Bartlett says. And, when he incubated the blood plasma of the patients with tumor cells, the blood from the fittest patients slowed the growth of the tumor cells better than blood from other patients. These preliminary findings won Bartlett a young investigator award from the American Society of Hematology to continue this work.

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“WE FOUND THAT THE FITTER PEOPLE HAVE A COMPLETELY DIFFERENT IMMUNE SYSTEM THAN THE UNFIT PEOPLE. THEY HAVE DIFFERENT LEVELS OF CIRCULATING FACTORS THAT CAN AFFECT THEIR LEUKEMIA CELL BIOLOGY.”

—David Bartlett

The team also found that, overall, people with CLL scored lower on function tests than people their same age without the disease. And when the patients received strength training, they became stronger, but the degree of change was not as great as Bartlett would have expected. In previous studies, he saw people with diabetes achieve a 15 percent increase in fitness level, and people with rheumatoid arthritis averaged increases of 12 percent. But people with CLL have showed smaller gains.

“This implies that the exercise is having an effect, but their cancer is probably causing them to be physically unfit to some degree,” Bartlett says. “If that’s the case, can we intervene to stop that happening?” He wants to one day be able to measure certain markers in the blood that pinpoint whether a particular patient’s frailty and decline is caused mostly by their cancer, or by normal aging.

In the meantime, Sitlinger and Brander say that the exercise training is helping their patients feel better. Sitlinger was overjoyed to see one woman who had previously used a cane start coming to her appointments without one. They also hope to find that exercise can improve the course of the disease. About 80 percent of patients with CLL will need treatment at some point, but many may wait years to start. Treatment is not recommended until the patient reaches certain parameters—extreme fatigue, increased rates of infection, enlarged spleen or lymph nodes. “We don’t want to wear treatments out, so to speak,” Sitlinger says. “And we want to delay the time until a patient develops resistance to treatment.” This period of “dynamic monitoring,” as Brander calls it, can be frustrating for people. Sitlinger says, “Patients are always asking, ‘What can I do in the meantime to fight my disease?’ Exercise may be a good answer.



a Gathering

A WORLD-CLASS
TEAM COMES
TOGETHER TO
PROVIDE NEW
ANSWERS FOR
PEOPLE WITH
CANCER THAT
HAS SPREAD TO
THE BRAIN AND
THE SPINE.

People tend to think of Duke as the place to go for brain tumors, period. To patients and families, cancer is cancer, whether it started in the brain or spread there from elsewhere in the body.

From the medical point of view, primary brain cancer, which originates in the brain, is a different disease than secondary brain cancer, which starts elsewhere in the body, such as the lung or breast. Still, a few years ago, neurosurgeon Peter Fecci, MD, PhD, started thinking that treatment for secondary brain cancer could benefit from the same collaborative and focused approach that has proven beneficial for patients with primary brain cancer at Duke's Preston Robert Tisch Brain Tumor Center, which is world-renowned among providers and patients alike.

Fecci wanted Duke to become a leader in treating all kinds of brain cancer, including secondary, also called metastatic cancer.

"When you look at our university and what our strengths are, all the ingredients were there to take the model the Tisch Brain Tumor Center had been built on—systematic multidisciplinary care with patient service and experimental therapies—and focus that same model onto brain metastasis," says Fecci, associate professor of neurosurgery.

The number of people with brain metastasis has risen rapidly in recent years because people with advanced cancer are living longer—and that gives the cancer time to spread to the brain. "It is an area ripe for forging new pathways," says Fecci. "There's a lot more to be done for these folks than 10 or 20 years ago."

About the same time that Fecci had his "aha moment," a spine surgeon with an interest in metastasis joined the Department of Neurosurgery: Rory Goodwin, MD, PhD, assistant

From left, Peter Fecci, Rory Goodwin, and Carey Anders at a weekly tumor board meeting, where providers come up with the best combination of treatments for each patient.



professor of neurosurgery. The spinal cord and the brain are both part of the central nervous system, so it was natural to expand the idea of the center to include the spine.

The Center for Brain and Spine Metastasis launched in 2017, with Fecci as director, Goodwin as surgical director, and John Kirkpatrick, MD, PhD, as radiation director. Last year, Carey Anders, MD, joined the team as medical director (*see sidebar on page 13*). The center is supported by Translating Duke Health, an initiative of Chancellor Eugene Washington that aims to harness the expertise and knowledge found at Duke to address society's most significant scientific and healthcare challenges.

Fecci says, "Our plan is to become the desti-

BY MARY-RUSSELL ROBERSON

Photos by Chris Hildreth

nation center for brain and spinal metastasis in the United States.”

HARNESSING SYNERGY

Combining the expertise of oncologists, radiologists, and surgeons creates a synergy that benefits patients at the Center for Brain and Spine Metastasis. At weekly tumor board meetings, the providers pool their knowledge to come up with the best combination of treatments for each patient.

“We’re unique in the depth and breadth of our capabilities in medical oncology, radiation oncology, neurosurgery, and palliative care, and our commitment to developing multi-disciplinary approaches,” says Kirkpatrick, professor of radiation oncology.

Kirkpatrick likens the multi-disciplinary approach to a symphony, with each provider playing a different instrument to create something new and powerful. Similarly, combining treatments from different disciplines can result in unexpectedly effective results.



Carey Anders during a clinic visit with Elizabeth Levene, a non-profit director who is fighting breast cancer that metastasized to her brain.

“In a center where we focus on one type of disease rather than one particular way of treating it, we can really realize the benefits of new technologies, particularly in combination,” he says.

TAKING CARE OF THE WHOLE PATIENT

In addition to treating the cancer, the team pays close attention to the person with the disease.

Palliative care providers are part of each patient’s team, offering a range of services, from

“WE’RE UNIQUE IN THE DEPTH AND BREADTH OF OUR CAPABILITIES IN MEDICAL ONCOLOGY, RADIATION ONCOLOGY, NEUROSURGERY, AND PALLIATIVE CARE, AND OUR COMMITMENT TO DEVELOPING MULTI-DISCIPLINARY APPROACHES.”

– John Kirkpatrick

pain relief to end-of-life planning. Each patient has unique goals, whether maintaining independence, not being a burden to others, or seeking relief from side effects. Palliative care can help with all of those. As Kirkpatrick says, “Our goal is not just to have people live longer, but to have people live better.”

To reduce stress for patients, the center strives to see new patients within 72 hours, and to streamline their complex care once treatment begins. New patients see all the members of their team sequentially in one day, usually in the same clinic.

In the past year, the center has hired a new-patient coordinator, two patient navigators (one for brain, one for spine), and an inpatient physician assistant to coordinate care for hospitalized patients.

Natalie Ashley, who used to be the sole patient navigator, has been promoted to program manager. In that role, she is involved with strategic planning and developing new systems for the rapidly growing center. She continues to be involved in patient advocacy as she manages the newly hired coordinators and navigators.

OFFERING THE BEST CARE TODAY

Patients at the Center for Brain and Spine Metastasis have access to cutting-edge techniques and therapies.

Stereotactic radiosurgery, for example, zaps metastases with high doses of radiation. (Although it’s not actually surgery, it is “surgically precise.”) Compared to the traditional whole-brain radiation, tumors receive more radiation and healthy brain tissue receives less. For patients, that means fewer disturbing side effects like difficulty with thinking, language, and memory. Stereotactic radiosurgery is used for spine metastases as well, where it can

be helpful in reducing pain.

LITT, or laser interstitial thermal therapy, is a minimally invasive surgical technique that kills tumors using heat generated by lasers. Rather than physically cutting out a tumor, surgeons drill a small hole in the skull and insert a laser probe. LITT can also be used to treat tissue that's been damaged by previous radiation. Duke is one of the highest volume centers for LITT in the United States.

Currently, LITT can only be used with relatively small tumors, but Fecci is working with Duke biomedical engineers to change that. The new technique uses gold nanoparticles called nanostars to improve the range of the laser. "It expands the heat coverage allowing you to treat a larger tumor," he says. In a collaboration with the NC State College of Veterinary Medicine, Fecci has begun testing the nanostars in a clinical trial in pet dogs that have developed brain tumors.

Using LITT in the spine is more complicated, but Goodwin and Muhammad Abd-El-Barr, MD, PhD, assistant professor of neurosurgery, are training in the new technique. Once they are up and running, Duke will become the second medical center in the United States offering LITT for the spine.

CREATING TOMORROW'S THERAPIES

Designing pharmaceuticals, immunotherapies, or other medical therapies for brain or spine metastasis is challenging because the blood-brain barrier keeps many compounds in the blood from reaching the central nervous system.

Anders, professor of medical oncology in the Department of Medicine, is not one to shy away from hurdles like this. She is actively looking for and evaluating medical therapies that will attack central nervous system tumors along with primary cancer elsewhere in the body. "My passion is developing clinical trials for patients with brain metastases," she says.

In the past, patients whose primary cancer had metastasized to the brain or spine were often excluded from clinical trials. Today, more trials are

accepting these patients (there are about two dozen at Duke Cancer Institute), but trials designed specifically for them are still rare.

That's a problem in the view of Katie Mackin, a young mother and physician assistant living with metastatic cancer (see "Living a Full Life with Metastatic Cancer," page 14). "It's really important to support research for stage 4 cancer," she says, "because stage 4 cancer is the one that kills."

Since Anders has joined the team, the number of clinical trials in the center's pipeline has ballooned. A dozen or so clinical trials are in development at the center, and several are set to launch this year,



CHRIS HILDRETH

including one that matches one of three medical therapies to the genetic signature of a patient's metastatic brain tumor. Other current or upcoming trials relate to radiation treatment, imaging techniques, and optimal sequencing of immunotherapy and surgery.

For patients with spinal metastasis, Goodwin is heading up a clinical trial that will create a registry of data on tumor genetics, treatment, and outcomes. The trial will also collect data about patient-reported outcomes related to quality of life. The data in the registry will be able to answer a wide variety of research questions. "Some questions are physician led," says Goodwin. "What is the best dose? How does this radiation treatment interact with this drug? But these studies also allow us to ask some questions about treatments that patients really want to know the answer to:

Rory Goodwin with spine metastasis survivor Chad Eddy and physician assistant Brice Painter, PA-C (in back).

HOW YOU CAN HELP

Your gift will accelerate progress in caring for even the most advanced cancers. Please visit dukecancerinstitute.org/DCBSM/support

What will my life be like? Will I be able to walk? How much pain will I be in? Should I go through with this?”

GENERATING NEW DISCOVERIES

Every clinical trial is built on a foundation of years, even decades, of pre-clinical research. A deeper understanding about how and when cancer metastasizes, how it reaches the central nervous system, and how it behaves once there can spark ideas for strategies to interrupt the process.

Throughout the center, and Duke at large, researchers are investigating many aspects of metastatic cancer and the central nervous system with their eyes on the prize of better treatment or prevention.

Anders is particularly excited about an upcoming project to sequence the DNA of banked brain tumors to try to discover similarities and differences among metastases arising from different types of primary cancer. She also wants to explore ways in which metastatic tumors differ



Neurosurgeon Peter Fecci (far right) works with biomedical engineering graduate student Miguel Salgado (black shirt) and fellow Vadim Tskvankin, MD, to develop ways to stop brain tumors from evading the body's immune system.

“IT HAS A TREMENDOUS
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FOR A NUMBER OF KINDS
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– Peter Fecci

genetically from primary brain tumors. Answering these questions could help reveal, among other things, whether treatments that work against one type of tumor would have potential for another.

Meanwhile, Fecci has been collaborating with others, including Nobel Laureate Robert Lefkowitz, MD, the James B. Duke Professor of Medicine, to come up with strategies to stop brain tumors from evading the immune system. One way brain tumors do this is by sending out signals that cause important immune players called T cells to sequester themselves in bone marrow rather than attacking the tumor.

“We have found a target in T cells that would help reverse sequestration, and when we go after the target, it actually does a lot more than that,” Fecci says. “It has a tremendous impact on survival for a number of kinds of cancer in mice, a lot more than we bargained for.”

When the target was genetically knocked out in mice, the researchers saw 50-100 percent long-term survival across several different types of cancer.

Before the idea can be tested in humans, several crucial steps remain, including identifying a compound that could be used as a pharmaceutical. “We’re screening compounds that have the activity that we want against our target, and the goal is to test it in mice in the near future,” he says. Fecci is optimistic that this new class of anti-cancer compounds could be ready for a clinical trial in humans in the next year or two.

And he’s optimistic about its potential. “It’s the best anti-cancer treatment I’ve ever seen in mice,” he says.



KEN HUTH

Hitting the Ground Running

Carey Kernodle Anders, MD, joined the leadership team of the Center for Brain and Spine Metastasis last year as medical director, and she hit the ground running.

"Under her leadership, we're developing a portfolio of clinical trials to help advance our care of patients with brain and spine metastases," John Kirkpatrick, MD, PhD, says. "She's got wonderful insights into the new developments that are taking place in molecular medicine and immunotherapy. Most important, she's a wonderful person to work with."

Anders came to Duke from the UNC Lineberger Comprehensive Cancer Center, where she specialized in breast cancer and brain metastasis. That expertise plus her experience in designing clinical trials made her the perfect candidate to round out the leadership team at the Center for Brain and Spine Metastasis.

"She has extensive experience in the brain metastasis world and the breast oncology world," Rory Goodwin, MD, PhD, says. "She's recognized as national leader, and she's going to push the field forward."

Anders grew up in Burlington, North Carolina, in a medical family. Her grandfather was a Duke-trained physician and the oldest of the Kernodle brothers who established the Kernodle clinic in Burlington. Her father is an orthopedic surgeon, and her mother is a retired nurse who established the school nursing program in Alamance County.

As a college student, Anders did not intend to go to medical school; she majored in psychology and French. But a volunteer stint in the Vanderbilt hospital her senior year ignited her interest.

Among all her medical relatives, she says it was her grandmother, a dietician, who influenced her career decision the most. "She was so smart and driven and wanted to go to medical school. She was told women weren't doctors," Anders says. "She encouraged me to cast a wide net and not be limited by being female. I credit her with the courage to go to medical school."

Anders spent a year after college catching up on prerequisites, then went to medical school at East Carolina University and completed her residency

(internal medicine) and fellowship (oncology) at Duke before beginning her career at UNC.

She immediately felt at home at the Center for Brain and Spine Metastasis. "The culture among our group is fantastic," she says. "We have a group of very bright, talented, pleasant individuals who enjoy working together. It really helps because this problem is not always happy, so it's very reassuring to have such fantastic colleagues who really support each other."

— Mary-Russell Roberson



SHAWN ROCCO

Breast cancer and brain metastasis specialist Carey Anders talks with Paula Lee, BSN, RN, in the clinic workroom at Duke Cancer Center.



MACKIN

LIVING A FULL LIFE WITH STAGE 4 CANCER

In November 2017, Katie Mackin was a 34-year-old mother of a six-month-old baby when she felt something in her back pop. Mackin is a physician assistant in an orthopedic practice, and her first thought was that she had a slipped disc. The pain kept getting worse, even after two months of physical therapy and anti-inflammatories. In January 2018, an MRI revealed tumors on her spine, which turned out to be metastases of breast cancer that Mackin didn't know she had. By



When he's not performing surgery, spine surgeon Rory Goodwin investigates new treatments for spinal metastasis. Here, he reviews data in the lab with Assistant Professor in Neurosurgery Catherine Praxede Lavau, PhD.

"I CAN'T SAY ENOUGH GOOD ABOUT HIM. HE MAKES YOU FEEL LIKE YOU'RE A PERSON, NOT JUST ANOTHER PATIENT-NUMBER."

– Katie Mackin

February, she was having spine surgery at the Duke's Center for Brain and Spine Metastasis.

Fast forward to March 2020. Mackin missed only about five months of work, and is able to keep up with her two-and-a-half year old son. "I'm able to do most of the things I want to do," she says. And she attributes that to the care she's gotten from providers at the Duke Cancer Center, including spine surgeon Rory Goodwin, MD, PhD.

"He has been fantastic," she says. "I can't say enough good about him. He makes you feel like you're a person, not just another patient-number."

When Mackin first met with Goodwin, he explained that surgery to remove cancer and stabilize her spine carried a risk of paralysis, but doing nothing carried a higher risk of paralysis. "It was a no-brainer," she says. "I felt super confident with him. He had every scenario covered." The surgery went well, and Mackin started back at work, part-time at first, just five months later.

Mackin had radiation before surgery for pain relief in her hip and lower back, with the goal of making post-surgical rehab easier. She also started on Trastuzumab (Herceptin) and Pertuzumab (Perjeta), which she continues to this day, at three-week intervals. After the surgery, and more radiation to kill any remaining cancer cells, she also underwent several rounds of chemotherapy.

Since then, she's done well. "When you're stage 4, you never get told you're in remission," she says. "But I've been stable since August 2018, and I hope to be stable for a lot longer."

— Mary-Russell Roberson

FINDING HER BALANCE

In October 2018, Elizabeth Levene learned that her breast cancer had figured out a way around the targeted therapies she'd been taking and had metastasized to her brain. Duke's John Kirkpatrick, MD, PhD, immediately treated her with a stereotactic radiosurgery procedure to "zap" the five brain tumors, and repeated the procedure when one more tumor was discovered the following June. She was getting MRIs of her brain and PET scans of the rest of her body every three months to keep an eye out for any cancer recurrences.

For Levene, continuing to work full-time (often from Duke Cancer Center) was a way to survive through it all. She serves as executive director of the local non-profit Helps Education Fund, which, with a close-to \$1 million budget, engages teachers, parents, and volunteers to improve student learning.

In September 2019, her brain scan came back totally clear. A little less worried, and with virtually no side effects from treatment, Levene proceeded to do things she'd been putting on hold like visiting her brother in South Carolina, the state where she grew up.

In February 2020, Levene had a seizure and had to undergo a craniectomy—a bilateral removal of two cerebellar lesions, performed by Peter Fecci, MD, PhD. She also underwent

more stereotactic radiosurgery. Because of a new anti-seizure medicine she must take, Levene found it hard to read and to respond to emails and texts, so she took the months of February and March off from work. "I don't remember the whole month of February," she says. "But people say I'm talking better, I'm looking good. I feel like I'm getting better. This is not my forever."

—Julie Harbin



Patient Elizabeth Levene with John Kirkpatrick and nurse practitioner Karen Allen, MSN, ANP-BC.

WHO'S WHO AT THE CENTER FOR BRAIN AND SPINE METASTASIS

Surgeons

- PETER FECCI, MD, PHD, Director
- RORY GOODWIN, MD, PHD, Surgical Director

Medical Oncologists

- CAREY ANDERS, MD, Medical Director
- APRIL SALAMA, MD, Associate Medical Director

Radiation Oncologists

- JOHN KIRKPATRICK, MD, PHD, Radiation Director
- SCOTT FLOYD, MD, PHD, Associate Radiation Director

Program Manager

- NATALIE ASHLEY, BN, GradDipAdvN



FECCI



GOODWIN



ANDERS



SALAMA



KIRKPATRICK



FLOYD



ASHLEY

For more information, or to become a patient: DukeCancerInstitute.org/DCBSM



“WITH EACH PATIENT, I MUST LEARN WHO SHE WAS BEFORE SHE CAME TO MY OFFICE.”

KEN HUTH

BEYOND THE CHART

Lola Fayanju, MD, MA, MPHS, is determined to understand her patients as people and to break down the barriers that keep African American women from getting better breast cancer care.

BY WHITNEY J. PALMER

AS A THIRD-YEAR STUDENT AT Washington University School of Medicine, Oluwadamilola "Lola" Fayanju, MD, MA, MPHS, met a patient who taught her that the women she serves are far more than the information in their medical records.

While completing a rotation in a surgical specialty care clinic for patients who either had no insurance or couldn't pay for care, Fayanju encountered an African American woman who was about her age at the time—late 20s to early 30s—but with distinctly different circumstances. The woman couldn't see a doctor regularly as she had no insurance, and she was also an immigrant, far from her family.

By the time she saw Fayanju, who is now a Duke surgical oncologist focusing on breast cancer, she had a late-stage malignancy. "After she left, I was struck by how sad it was she was seeing me with such advanced disease," Fayanju says.

Meeting such patients face-to-face solidified Fayanju's determination to chip away at barriers that keep African American women from getting the care they need—such as mistrust of the health care system, provider bias, and lack of health insurance. Although black women suffer fewer new breast cancer cases than white women, recent National Cancer Institute statistics report they experience a mortality rate that is 40 percent higher than that of their white counterparts.

With her medical training complete, Fayanju came to Duke in 2016. Now, through several roles (see "Many Hats," page 17) she investigates racial disparities while providing superior breast cancer care.

"With each patient, I must learn who she was before she came to

my office,” she says, noting a woman’s circumstances play a significant role in how she’s able to access and use health care services. “And, it’s my job to find out about the life she’ll go back to when she leaves.”

MEETING MEDICAL NEEDS

Despite a busy schedule in the operating room and a research career, Fayanju takes the time to write essays that explore these problems and highlight the urgent need for a solution. In December 2019, she published an opinion piece in the *Journal of the American Medical Association* that from a first-hand perspective detailed how, by taking off her white doctor’s coat and walking the hospital halls, she sees how black women in America become invisible, slipping through the health care system’s cracks.

“I have a strong kernel of rage that persists when we have the resources to correct these barriers to care,” she says. “Women should never feel they’re external to the decision-making process. They should feel they’re advocating for their own care.”



Lola Fayanju (far right) with the staff of the breast clinic at the Durham Veterans Affairs Medical Center.

Beyond the clinic and the operating room, Fayanju conducts research to discover effective ways to improve health at the individual and population levels. Her investigative efforts are supported by a Career Development Award from the National Institutes of Health (a K08 award).

First, she’s pinpointing modifiable risk factors for women who don’t receive sufficient or timely breast cancer care, as well as what prohibits the group from clinical trial participation. Second, she’s develop-

ing improved data- and evidence-based practices for the most aggressive breast cancers, and lastly, she’s analyzing how value-based health care principles can be applied to improving breast cancer care.

FACE-TO-FACE IMPACT

Perhaps the most important part of Fayanju’s quest is her in-person interactions not only with her Duke patients but also with women in the Durham community.

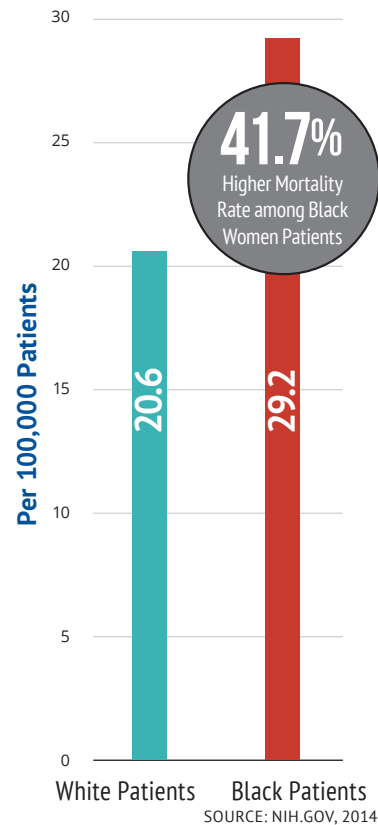
According to nurse navigator Valarie Worthy, MSN, RN, Fayanju has broken through breast cancer fears in Durham’s African American community. For example, in 2017, she launched the Women’s Health Community Engagement Task Force to reach medically underserved women with breast disease. As a part of this endeavor, she meets with community organizations to discuss breast cancer and the need for medical care in terms lay persons can easily understand. Taking that time and demonstrating that level of concern goes a long way to forging a bond of trust, Worthy says.

“There’s always been a stigma in the community about cancer; for a long time, people thought cancer and death were synonymous,” Worthy says. “For an oncologist to come into the community and provide education to people that otherwise wouldn’t have gotten it—to dispel myths—is incredibly caring, and it raises the bar.”

Additionally, representatives from Lincoln Community Health Center and the North Carolina Breast and Cervical Cancer Control Program, which provides free or low-cost breast and cervical cancer screenings to women throughout the state, attend the monthly task force meeting Fayanju leads. The task force works with Duke clinicians and researchers to meet the health needs of Durham’s women and refer those who need specialty care to Duke.

“There’s a community saying of ‘We don’t care what you know until we know that you care,’” Worthy says. “People have always known that Duke was a great place to get care, but there’s a difference in providing care and showing care. By being present in the community, Dr. Fayanju certainly brings in that dimension.”

MORTALITY RATES OF WOMEN FROM BREAST CANCER PER 100,000 PATIENTS



MANY HATS

Lola Fayanju, MD, MA, MPHS, works to reduce health disparities in her many roles, including:

- Surgical lead for **Duke Cancer Institute’s Inflammatory Breast Cancer Clinic**.
- Director of the breast clinic at the **Durham’s Veterans Affairs (VA) Medical Center**. She sees patients there on Fridays and founded the monthly Breast Cancer Support Group.
- Associate Director of **Disparities and Value in Health Care for Duke Forge** — Duke University’s big-data, health-care-improvement initiative.

CRUSHING COLORECTAL CANCER, Virtually. Due to COVID-19, the Annual Crush Colorectal Cancer 5K Run/Walk in March 2020 went virtual. Participants shared photos of their solo and family runs, sporting past CRUSH event shirts, Duke blue, or colorectal cancer blue for the occasion. Even with the short-notice change in plans, the event raised **\$44,869**.

» **FENCE FOR THE FIGHT.** Duke Fencing and DCI partnered this season in a campaign in honor of breast cancer survivor Elizabeth Beguinet, the beloved director of administration and recruiting for the team, and also wife of Duke Fencing head coach Alex Beguinet. Donors could pledge funds for every win a team member scored. The effort raised **\$30,144.55**.

Beguinet juggled chemotherapy infusions with her busy schedule of recruiting trips, competitions, and team functions. She says that fencing skills are good life skills and good coping-with-cancer skills. “Be in the moment. If your opponent beats you and you are coming off the strip, you can’t dwell on that loss because that next opponent is waiting for you,” she says. “And if you come in wearing the defeat that you just encountered, then you are coming in defeated. From one day to the next, there’s always some new thing that’s being presented to you.”

—Julie Harbin



The Duke Fencing men's and women's teams in their fencing whites at Northwestern University, Feb. 1, 2020. Team manager Elizabeth Beguinet (center) is flanked by team captains Eoin Grootingsater (to her right) and Lindsay Sapienza (to her left), who organized the fundraiser in her honor.



» **LUCI AND GINGER,** pictured here, and all of the Pets at Duke therapy dogs are temporarily “unemployed” because of COVID-19 precautions. But you can meet all 29 of the dogs and their handlers via **Quarantine with a Quadruped** dispatches on the Facebook pages of the [Duke Cancer Patient Support Program](#) and [Duke Cancer Institute](#).

» **PROTECTIVE GEAR.** Eight-year cancer thriver **Ryan Switzer**, a Durham, North Carolina, homebuilder, joined with his co-workers to collect **1,200 gloves, 500 N95 masks, and 250 safety glasses** for Duke Health’s COVID-19 response. Switzer has often pitched in to raise funds for DCI; this was another gesture of thanks to the Duke doctors and nurses who treated him for cancer and treated his wife for a brain aneurysm.





DON'T LET CANCER WIN

"We can't let cancer win. And the only way we can be sure that it doesn't is through research."

CHRIS HILDRETH

After her younger brother died of leukemia at the young age of 25, Duke University alumnus Ross Harris took five years to sit with the pain and the anger she felt.

Then, she says, she decided to become a survivor.

As she moved back to North Carolina from Chicago, where she had a successful career in advertising, Harris, who received a bachelor's from Duke in 1978 and a MBA in 1980, decided to begin serving on the board of the Duke Comprehensive Cancer Center (now Duke Cancer Institute) and the board of the Preston Robert Tisch Brain Tumor Center.

"The more I understood and learned about cancer, the more the anger went away," she says. "I felt like I could put my arms around cancer and say 'Okay, I'm not going to run away. I won't let you do this to anyone else, and I will no longer allow you to have power over me,'" says Harris, a former member of the Duke University Board of Trustees.

"The challenge isn't insurmountable. It really isn't," Harris says. "We can't let cancer win. And the only way we can be sure that it doesn't is through research."

She says it was a simple decision to make an estate gift benefiting Duke Cancer Institute, the Preston Robert Tisch Brain

Tumor Center, and Duke University.

"We have absolutely no idea what is going to happen to us tomorrow," Harris says. "I wanted to be deliberate about where I want my assets to go. And Duke makes it easy."

"Planned giving is doing something that's bigger than yourself. It's thinking about what it is that you want to accomplish and making sure that happens. It's a way to create your legacy."

To learn more about planned giving to Duke Cancer Institute, please contact Executive Director of Development Michelle Cohen, 919-385-3124, or michelle.cohen@duke.edu.



Duke Cancer Institute

YOU CAN SUPPORT THE FIGHT

Gifts to Duke Cancer Institute help us develop new treatments and provide compassionate care. To make a gift, visit bit.ly/dcsummer2020. Thanks for your support!

DCI Office of Development
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MAKE AN IMPACT

Each year, DCI treats more than **71,000 patients**. And we never stop working to discover, develop, and deliver tomorrow's cancer care...today.

The **DCI Director's Strategic Initiatives Fund** ensures that we keep moving toward better cancer treatments and, ultimately, cures. Your donations provide **DCI Executive Director Michael Kastan, MD, PhD**, with resources that he can apply quickly to accelerate Duke Cancer Institute's most important work, including:

- ▶ Supporting frontier research and development of innovative diagnostics and treatments
- ▶ Enabling leading-edge cancer surgeries and procedures
- ▶ Attracting and energizing the brightest young minds in cancer research

To make a gift, visit gifts.duke.edu/dci.