



University of Cincinnati • UC Health • Cincinnati Children's



Co-Directors of the
UC Cancer Center,
Syed A. Ahmad, MD (left),
and William L. Barrett, MD

 **Health**TM
IN SCIENCE LIVES HOPE.

2019-2020 REPORT TO THE COMMUNITY

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WELCOME TO THE NEW UNIVERSITY OF CINCINNATI CANCER CENTER

The University of Cincinnati, UC Health, and Cincinnati Children's Hospital are excited to announce the formation of the University of Cincinnati Cancer Center (UCCC). Our vision is to build a nationally recognized center that excels in cancer care, research, training, and community impact. As the region's only academic health center, we are positioned to utilize the strengths of our university, as well as the resources our community provides. In the past, our research and clinical programs resided under the Cincinnati Cancer Center (CCC) and the University of Cincinnati Cancer Institute (UCCI). These activities will now be unified and enhanced in one entity as UCCC. The result will provide better collaboration among researchers and clinicians, and it will allow patients to receive "bench to bedside" state-of-the-art treatment options.

The name change also reaffirms our commitment to seek designation by the National Cancer Institute (NCI). The NCI designation represents the collective cancer research excellence of an institution. It also recognizes an institution's efforts to align the clinical care and research missions for the community they serve. We have made many positive steps toward this goal in recent years and remain confident that we can and will achieve this; however,

there is much work to be done. Obtaining this prestigious endorsement from the NCI and cancer research leaders and scientists from peer institutions is something our community deserves. Our goal is to make UCCC a place that fosters scientific discovery, recruits the most talented researchers and clinicians, and becomes a national destination for cancer care.

We want to thank you for your interest in our program. Our overwhelming priority is to do all that we can to minimize the suffering and mortality associated with cancer in the Greater Cincinnati region. This includes providing the best possible care for the patients whom we have the privilege of seeing, training personnel who work throughout the region, and being at the forefront of advances and new

discoveries in the field. As the region's academic medical center, we have subspecialized physicians and well-organized multidisciplinary working groups that focus on each cancer type. Every patient is treated as an individual, and specific treatment algorithms are formulated for them. Patients' situations, scans, and slides are reviewed in tumor boards with tremendous expertise in the room, including the particular surgeons, medical oncologists, radiation oncologists, diagnostic oncologists, and pathologists who focus on each particular cancer type.

Great care begins with a great plan, and we want patients to have an excellent plan of care from the start. Our mission is to raise the level of care throughout the region in any way that we can. No one wants the diagnosis of cancer; but if you have to face this adversary, we want Cincinnati to be the very best place to be.

Sincerely,



A handwritten signature in blue ink that reads "Syed Ahmad" with a stylized flourish at the end.

Syed A. Ahmad, MD
Professor of Surgery
Co-Director, UC Cancer Center



A handwritten signature in blue ink that reads "William Barrett" in a cursive style.

William L. Barrett, MD
Professor and Chairman of Radiation Oncology
Co-Director, UC Cancer Center



Rishabh Chaudhari, MD, and Katlin Kuhn, BSRT(R)(T), help a patient prepare for treatment.

FIGHTING CANCER IN A FLASH

The Flash may be one of the more well-known crime-fighting superheroes. But in Cincinnati, it's flash therapy that might someday be saving lives. Flash therapy uses high doses of proton beams delivered in just one second to attack cancer cells.

Those proton beams are created in a 120-ton particle accelerator, called a cyclotron. They are so precise that they can be focused to within 1 millimeter — the size of a coarse grain of salt.

The Cincinnati Proton Therapy Center, operated by UC Health and Cincinnati Children's Hospital Medical Center, in 2019 hit a significant milestone in researching flash therapy: It became the world's first proton therapy center to deliver a flash dose at therapeutic levels to a lung lesion phantom target within clinically acceptable tolerances. In biomedical research, phantoms are objects used as stand-ins for human tissue.

That test clears the way for flash therapy to move into clinical animal trials. That is the first step toward testing whether this therapy could be used in humans. If proven safe, it would mean that patients could get radiation therapy in just one to three sessions, one second each rather than multiple sessions lasting several minutes.

Cincinnati's Proton Therapy Center, which cost \$120 million to build, treats both children and adults but is unique among the 31 proton centers in the U.S. in that it includes a gantry dedicated solely to research. (A gantry is a three-story-tall, sphere-shaped structure that houses the machine used to deliver the proton therapy.)

The Cincinnati Proton Therapy Center is one of the founding members of the FlashForward Consortium, an international group researching flash therapy.

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The UC Cancer Center has been awarded **continuous accreditation by the Commission on Cancer since 1934**, making it one of the nation's top five longest accredited cancer programs.

CAN KETO BEAT BRAIN CANCER?

Trial looks at whether high-protein diet can improve glioblastoma treatment



Rekha Chaudhary, MD

Feed a cold, starve a fever. It's an adage our grandmothers said. Today, research by adjunct associate professor at the UC College of Medicine and UC Health oncologist **Rekha Chaudhary, MD**, is finding out if what you feed a specific type of brain cancer can make a difference.

Dr. Chaudhary and co-investigator Tammy Ward, RD, CSO, LD, a UC Health dietitian who specializes in oncology nutrition, are studying whether an Atkins-type ketogenic diet could help make treatments for glioblastoma, one of the most invasive and lethal brain tumors, more effective. Currently, even with treatment, just 3 percent of those patients reach the five-year mark.

This unique clinical trial, only being offered at UC Cancer Center, will follow 30 patients with glioblastoma over 11 weeks to see if a ketogenic diet paired with standard treatment (chemotherapy and radiation) improves outcomes and quality of life. They are looking to see if the ketones generated by the diet even reach the brain.

Cancer glioma cells are thought to rely on glucose to survive; however, there is data to show that glioblastoma cells can use sugars and ketones to survive. In animal studies, the keto diet combined with radiation cured nine out of 11 subjects. So, the hypothesis of the research is that perhaps ketones are potent radiation-sensitizing agents.

"This is why we think that ketones may act as a radiation-sensitizing agent, and this would explain the

significantly increased survival in the animal models on the ketogenic diet with radiation as compared to the models on the radiation alone," Dr. Chaudhary adds. The team hypothesized that the ketones are being taken up in the tumors, making them more sensitive to radiation.

"I believe in the power of medicine, and I believe in the power of food as medicine," she says. "We often think of diet as a prevention tool to thwart diseases but here, we are using diet and modern medicine to treat one of the most devastating diseases of all."



Billi Ewing

STARING DOWN A TUMOR

In August 2014, Billi Ewing was busy keeping an eye on her three children: one finishing college, one in middle school, and one entering kindergarten.

She was also busy with doctor appointments, trying to determine the cause of vision problems in her right eye. Thinking she might have to pause for LASIK or cataract surgery, Ewing was blindsided when she received her diagnosis: A benign tumor was wrapped around her optic nerve. Left untreated, it could lead to blindness.

Ewing was referred by her neuro-ophthalmologist to the experts at the UC Brain Tumor Center at UC Health, specifically to neurosurgeon **Mario Zuccarello, MD**, director of skull base surgery at UC Health.

The first time they met, Dr. Zuccarello told her they needed to move fast. The surgery was performed on her son's fifth birthday, and it was a success.

Four years later, Ewing is back to her busy schedule, which now includes advocacy work for brain tumor awareness.



U.S. News & World Report recognized UC Health as Cincinnati's only "high performing" cancer center in its 2019-2020 rankings.

In April 2019, UC Health celebrated the opening of the University of Cincinnati Gardner Neuroscience Institute. This new \$68 million, 114,000-square-foot clinical outpatient facility is home to more than 125 physician specialists — including brain cancer specialists — who provide comprehensive neurological expertise.



HALTING BREAST CANCER

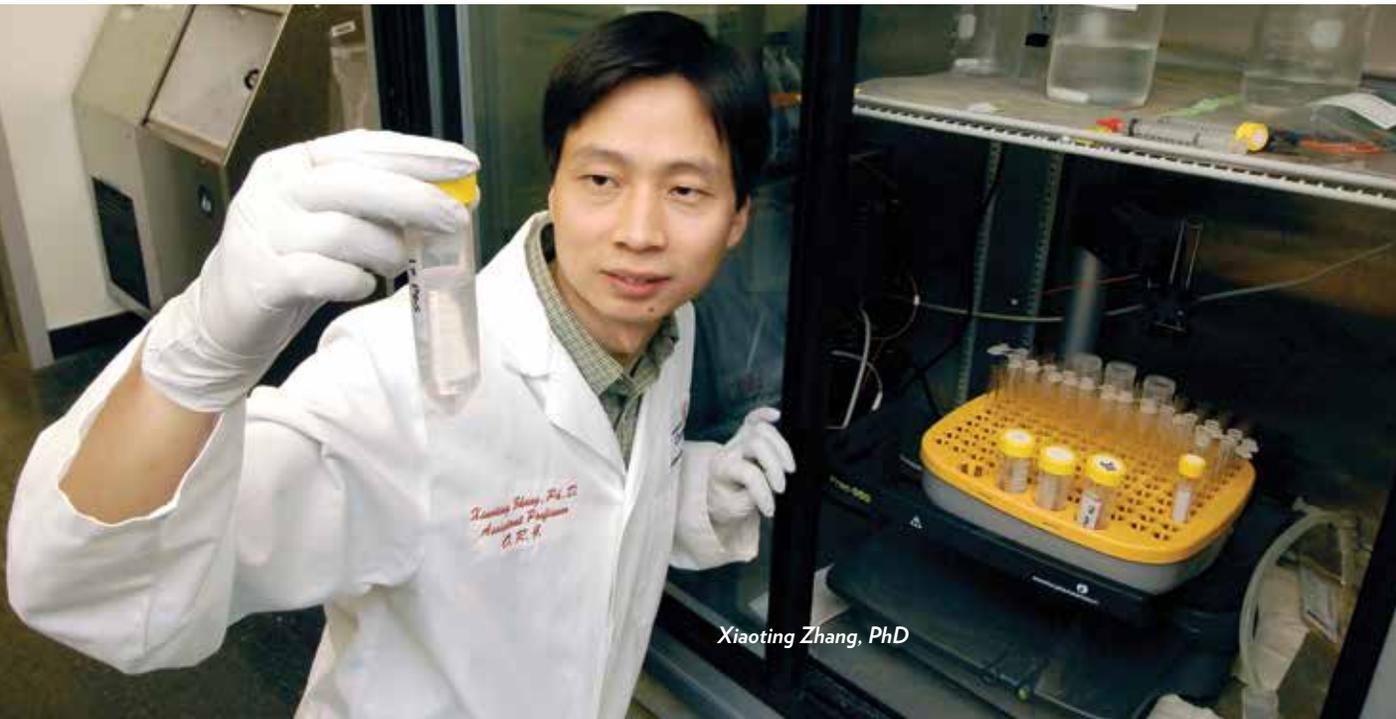
Small RNAs could be key to overpowering treatment resistance

Cancer research has been largely dominated by studying RNAs, which are the messengers that carry instructions from the DNA for controlling the function and production of proteins. Recently, however, focus has turned to small non-coding RNAs that impact the functioning of RNA.

Xiaoting Zhang, PhD, associate professor at the UC College of Medicine, has received an RO1 grant from the National Cancer Institute to study the role of one type of small non-coding RNA, called microRNA, in breast cancer metastasis. This is the second NCI research grant of this level Dr. Zhang has received.

Dr. Zhang's lab will use this funding to research molecular causes for treatment resistance and metastasis of ER-positive breast cancer, which makes up about 75 percent of breast cancers worldwide. Dr. Zhang will look at the role of microRNAs in the production of a key breast cancer protein (MED1) and how it controls another type of small RNA called enhancer RNA in breast cancer. He will further use an RNA nanotechnology-based approach to target these small RNAs to combat breast cancer treatment resistance and metastasis.

Dr. Zhang says he hopes that findings from this study will fill a knowledge gap in understanding small RNA function and how it impacts the way cancer is treated and spreads. He adds that this could lead to a new and better treatment strategy for a patient population that doesn't have many treatment options.



Xiaoting Zhang, PhD

2,223

women received mammograms through community screenings offered by UC Cancer Center in 2019



Our Comprehensive Breast Cancer Center is one of just 19 centers nationally to maintain triple accreditation from the National Quality Measures for Breast Centers (NQMBC), the American College of Radiology, and the National Accreditation Program for Breast Centers.

PINPOINTING LIFE QUALITY

Nearly two-thirds of women diagnosed with breast cancer have an early stage of the disease, which means most will live many years beyond their diagnosis. While that's good news, it also may mean living years with the side effects of treatment. That's one reason researchers are looking not just for treatments to save lives, but also for treatments that provide better quality of life after treatment.

One possible option being investigated by researchers in a new clinical trial at UC Cancer Center is using a superpowered form of radiation, called proton therapy. Proton therapy is not just strong, it's remarkably pinpointed. And that means less damage to healthy tissue.



This trial, led by **Teresa Meier, MD**, assistant professor of radiation oncology at the UC College of Medicine and a UC Health radiation oncologist, will include 21 patients with three years of follow-up. It is being funded by grant money from Ride Cincinnati.

Dr. Meier says this unique trial will hopefully shed light on ways proton therapy can be used to further combat cancer and possibly spare patients from some of the associated side effects to provide overall better quality of life.

The small pilot study will include women, ages 50 and above, who have been diagnosed with early stage breast cancer (stage 0 or IA) — a tumor that is less than 3 centimeters in size and has not spread to the lymph nodes.

Patients will undergo standard of care — surgery followed by proton radiotherapy. Partial breast radiation will be delivered twice a day, at least six hours apart, over five treatment days.

SURVIVOR SISTERS FACE CANCER TWICE



Sarah Steinway (left) and her sister, Laura Baumann

Sisters Sarah Steinway and Laura Baumann have shared many things through the years: secrets, hand-me-downs, and the occasional heated argument. Because they're sisters, they also share genes.

At age 47, Steinway was diagnosed with stage IIB breast cancer, and genetic testing at the UC Cancer Center revealed that she carried a CHEK2 gene mutation. They recommended that her siblings and children get tested for the cancer-causing gene mutation.

While her sister was completing chemotherapy and radiation, and undergoing a double mastectomy, Baumann, 51, was tested and discovered she had the same CHEK2 gene mutation.

Her initial care plan at UC Cancer Center included diagnostic mammograms and an MRI in six months — and then she got back to work supporting her sister. Unfortunately, Steinway needed to return the favor when Baumann was diagnosed with stage 0 breast cancer in July 2017.

When Baumann decided to have a lumpectomy followed by radiation, she knew she wanted the same team as her sister: oncologist Elyse Lower, MD; surgeon Elizabeth Shaughnessy, MD; radiation oncologist William Barrett, MD; and nurse navigator Andee Meyer, RN, all at UC Health's Barrett Cancer Center.

"I fully trusted the team of doctors because the trust had already been built," Baumann says.

Two days after finishing radiation, Baumann ran a half marathon. "Just to prove to myself that cancer wasn't going to win, and I was going to beat it," Baumann says. Fortunately, that mindset is one more thing the sisters shared.

UC Cancer Center Opens High Risk Breast Cancer Clinic

An average woman's risk of breast cancer development is less than one in 25 during a 10-year time frame. The UC Cancer Center's Breast Cancer Center opened a Risk Assessment and Management Program in 2019 — the only one of its kind in the region — that uses identifiable risk factors and instruments to identify women who aren't average and are instead at high risk for breast and ovarian cancers. By identifying these women, the cancer team can create a customized plan to catch cancer early if it develops through more frequent or different types of screenings.

TARGETED TREATMENT FOR PROSTATE CANCER

Unique lumpectomy-like therapy helps preserve prostate

The biggest thing Dick Weiss, 72, should have been celebrating in 2019 was his 50th wedding anniversary with his wife, Mary Beth. But he had another big reason to celebrate. After undergoing an innovative treatment for prostate cancer at the UC Cancer Center, he was declared cancer-free.

Weiss' prostate cancer journey started like that of many men before him. A routine PSA (prostate-specific antigen) blood test came back high in May 2017. A local urologist repeated the test and got the same results. He conducted a biopsy: prostate cancer.

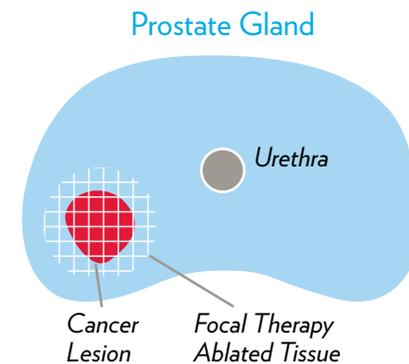
Soon after, Weiss learned of a new treatment offered at the UC Cancer Center that removed only the cancerous portion of the prostate.

The new treatment, called focal therapy, is the first prostate cancer treatment that addresses the fact that, in most cases, less than 25 percent of the prostate is affected.

“With focal therapy, which is similar to a lumpectomy for a breast cancer patient, we are able to target the cancerous area only, treat it more effectively, and save healthy prostate tissue to limit side effects, such as urinary issues or erectile dysfunction,” says **Abhinav Sidana, MD**, an assistant professor of surgery at the UC College of Medicine, director of urologic oncology at UC Health, and a member of the UC Cancer Center.

Using MRI scans to guide him, Dr. Sidana mapped the precise location of each tumor in Weiss' prostate. He then used a technique, called cryoablation, to insert tiny needles in the prostate and use gases such as argon and helium to freeze the cancerous tissue.

“I was so impressed because I learned that UC (Cancer Center) has a prostate cancer multidisciplinary clinic — a whole team of experts, including radiation oncologists, radiologists, a surgeon, and pathologists meeting to discuss each case,” Weiss says. “I wasn't just getting one person's opinion — I had a whole team working for me. And they were ready with a plan of attack.”



Rather than removing the entire prostate gland or treating it with radiation therapy, both of which can cause side effects such as erectile dysfunction, focal therapy removes only the cancerous portion of the prostate.



109

men received prostate screenings as part of the UC Cancer Center's community outreach in 2019



Tony Teunissen

SOMEONE TO CARRY YOUR BURDEN

When told to see a specialist regarding his elevated PSA level, Tony Teunissen, 76, made an appointment with the first name on his network's list: William Barrett, MD, medical director of the Barrett Cancer Center and UC Health radiation oncologist. Teunissen was diagnosed with prostate cancer and underwent brachytherapy. However, it's not the treatment that made the greatest impact, but the level of care he received. When scheduling his first appointment, Teunissen admitted he was worried about navigating the campus. Dr. Barrett had a nurse meet him at his car to personally escort him across the street to the hospital. Nearly 10 years later, Dr. Barrett still calls Teunissen to give him his annual test results, which is why he describes the physician as "someone who feels your pain, carries your burden, and cares for you when you need it most."



CHANGING THE STANDARD OF CARE

Research takes years. But the results can change care overnight.

That is the case with a prostate cancer clinical trial currently enrolling patients at the UC Cancer Center, says **Timothy D. Struve, MD**, assistant professor at the UC College of Medicine and radiation oncologist at UC Health.

The study is looking at whether combining hormone therapy with local treatment, such as surgery or radiation, will improve the outcome for men newly diagnosed with metastatic prostate cancer, compared with hormone therapy alone.

"Men who are diagnosed with prostate cancer when it's already spread to other parts of the body typically only receive palliative care, like hormone therapy," Dr. Struve explains. "If the results of this study are positive, it would be a significant change to the treatment of metastatic prostate cancer." That change, he says, could come in as few as five years.

And if the results aren't positive?

"While the study may not help the trial's participants, it will help future patients," Dr. Struve says. "The standard of care is based on patients who came before. There's a great deal of altruism being involved in clinical trials. But it also gives patients the opportunity to be on the cutting edge of medicine."

PERSONALIZING CANCER CARE

Offering á la carte cancer care with the creation of new clinical trials

Since no two pancreatic cancer patients and no two tumors are exactly alike, UC Cancer Center teams are focusing their efforts on tailoring treatments to individuals, while also looking for novel treatments to add to the menu of choices.

Davendra Sohal, MD, associate professor at the UC College of Medicine and UC Health medical oncologist, equates it to ordering at a restaurant. “We are moving away from the prix fixe menu, standard of care for every patient, and moving toward an á la carte menu, where we select different methods of treatment based on the individual tumor genes.”



Davendra Sohal, MD

Dr. Sohal and his team look at the genes of tumors to help determine the next best steps in treatment.

Along with **Syed Ahmad, MD**, professor at the UC College of Medicine and UC Health surgical oncologist, Dr. Sohal is part of an ongoing study to assess how chemotherapy before surgery in pancreatic cancer patients may improve outcomes.

“We’re also studying new drugs for cancer that has spread — we want to find the best, individualized therapy with the least side effects for each patient. Instead of giving a drug to everyone that only works for 30 percent of the population, we’re doing the work ahead of time, sparing the other 70 percent from enduring a treatment that will not work for them.”

Members of the gastrointestinal oncology team at UC Cancer Center (from left): Sameer Patel, MD; Laura Parker Jacobs, RN; and Syed Ahmad, MD

WHEN CANCER CARE GETS PERSONAL

Jordan Kharofa's medical career has been a series of life-changing moments.

As a third-year medical student at UC College of Medicine, Dr. Kharofa shadowed a radiation oncologist as part of his clinical rotations.

That was the moment he knew he wanted to be part of cancer care.

"You get to see these patients through a very rough patch in their life, and many of them do well," says Dr. Kharofa, who is now assistant professor of radiation oncology at the UC College of Medicine and a UC Cancer Center radiation oncologist.

During his residency at the Medical College of Wisconsin in Milwaukee, Dr. Kharofa took an interest in pancreatic cancer, spending a lot of time researching the disease.

Then came the moment it got personal.

"I got a call one day saying there's this question, there's some concern, and when I saw the images, I knew right away this was going to be pancreatic cancer, and this was not going to be something that was ultimately going to be removed through surgery," he says.

It turns out the scan was of his stepfather's pancreas. The visit to Milwaukee for Dr. Kharofa's residency graduation turned into a series of clinical visits.

Dr. Kharofa, accustomed to being the one who walks into clinic rooms and counsels patients, was now on the other side. Although his stepfather did OK for a while, eventually, the tumor couldn't be controlled any longer.

Nearly everyone has a someone in their life affected by cancer, Dr. Kharofa notes. "I think that's what draws a lot of people to this field. On a day-to-day basis, we're taking care of patients. But I think everybody has this team approach where we're committed to advancing the field, moving things forward, and not being satisfied with the status quo treatments."



Jordan Kharofa, MD



Read about how Dr. Kharofa and a team of colleagues won a \$100,000 research grant (Page 28).

A TEAM APPROACH

In August 2006, following a diagnostic colonoscopy, Cheryl Farris received a call that would change her life. Her gastroenterologist told her to go immediately to the hospital near her home in Berea, Ky. The exam had discovered a tumor that was blocking her colon, requiring an emergency ileostomy. After surgery, Farris' mother moved her home to Cincinnati.

That move led the family to UC Cancer Center and a new treatment team, including radiation oncologist William Barrett, MD. Farris, who was officially diagnosed with stage IV colorectal cancer, began a rigorous treatment plan consisting of five and a half weeks of daily radiation with concurrent weekly chemotherapy. After cancer was found in a majority of her removed lymph nodes, her team recommended an additional six months of biweekly chemotherapy. The treatment was aggressive, but she believes it was something more that led to her recovery: the tremendous team who surrounded her. "They are such kind, considerate people," she says. "They always made me feel special and that I could get through it."

KRAS CONUNDRUM

Fatty acid production may be key to stopping the unstoppable oncogene

KRAS is a gene that signals cells to grow. When mutated, KRAS signals those cells to grow out of control and become tumors. While KRAS is the most commonly mutated oncogene found in human cancer, causing half a million deaths each year, it's also one of the hardest to understand.

Pier Paolo Scaglioni, MD, professor of medicine at UC School of Medicine and division director of hematology oncology at the UC Cancer Center, leads a team that may have found a molecular key to the KRAS puzzle. The team is studying the effect of KRAS in non-small cell lung cancer, which accounts for 95 percent of all lung cancers in the U.S.

Dr. Scaglioni's team has found that KRAS regulates the metabolism of fatty acids to make the complex lipids necessary for cell proliferation. KRAS also helps cells replace fatty acids that are damaged by free radicals. By helping cells produce fatty acids, KRAS allows the cells to multiply out of control to form cancer tumors.

Because fatty acid production has long been studied by metabolic researchers, Dr. Scaglioni's team began looking at drugs used to treat conditions such as obesity and fatty liver as potential cancer treatments. A Phase I trial using one of those drugs was completed in 2018 to test safety doses in patients with non-small cell lung cancer. In that trial, the drug appeared to stop tumor growth in 11 of the 17 patients. The drug TVB-2640, manufactured by Sagimet Biosciences, is now in Phase II trials to measure its effectiveness. That trial opened at UT Southwestern Medical Center in late 2019 and is expected to open in Cincinnati this year.



Pier Paolo Scaglioni, MD



UC Health is the region's only FACT-accredited academic health system



94%

of patients would recommend their UC Cancer Center doctor to friends and family



98%

of all cancer patients were able to get a routine appointment in 2019 as soon as they needed it

A FIXER-UPPER PHYSICIAN

As a 20-year volunteer who builds affordable housing, **Ken Greis, PhD**, is no stranger to making repairs. In fact, he takes his enthusiasm for fixing things to the molecular level. A professor of cancer biology and associate dean for research core facilities at UC College of Medicine, Dr. Greis and his colleagues are using mass spectrometry to understand how cellular regulation is disrupted in certain blood disorders.



Ken Greis, PhD

Using this technique, Dr. Greis and his team recently identified a new DNA target, G-CSFR, involved in the growth of cancer cells in several types of leukemia. Mutations in G-CSFR harm the production of neutrophils, the team found. This finding points to the possibility that ibrutinib, an existing FDA-approved drug, could be an effective therapy for myeloid leukemias with G-CSFR mutations.



ALLIED AGAINST LYMPHOMA

It's not every day that your co-workers become your caregivers. But when Quinn Nguyen, MD, a busy anesthesiology resident for UC Health, was diagnosed with diffuse large B-cell lymphoma, he knew exactly who he wanted on his treatment team.

The physicians he trusted with his own life were the ones he worked alongside at UC Health. Among them: William Barrett, MD, UC Health radiation oncologist, and Tahir Latif, MD, professor of medicine at the UC College of Medicine and UC Health oncologist.

Dr. Nguyen's journey began with a sore shoulder. Suspecting a rotator cuff tear, he was surprised when four people came into the exam room to give him his X-ray results.

They showed damage to his shoulder bone that physicians at UC Health and Cincinnati Children's thought was caused by Ewing's sarcoma — a rare cancer with high mortality rates usually found in children. He was 26 years old.

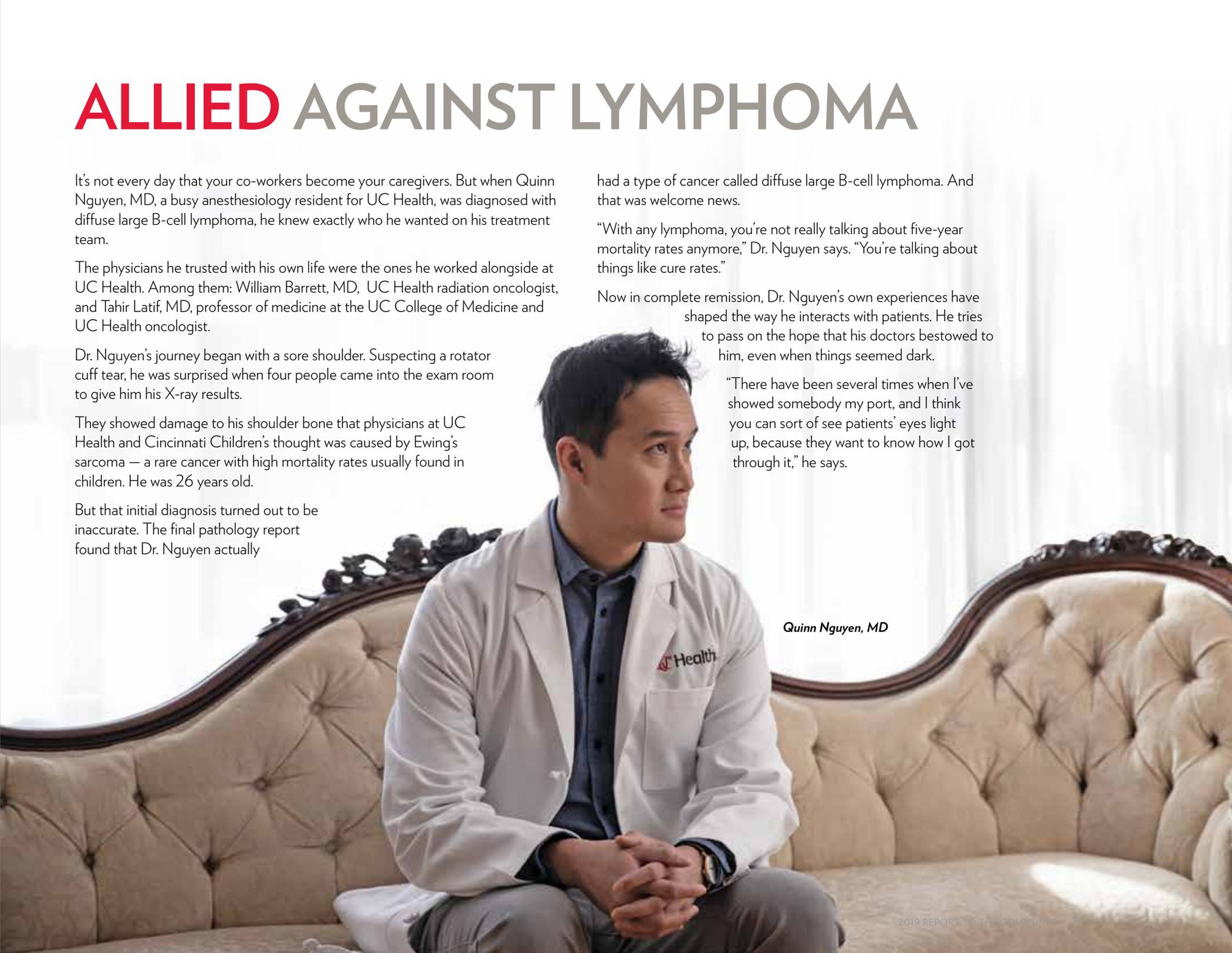
But that initial diagnosis turned out to be inaccurate. The final pathology report found that Dr. Nguyen actually

had a type of cancer called diffuse large B-cell lymphoma. And that was welcome news.

"With any lymphoma, you're not really talking about five-year mortality rates anymore," Dr. Nguyen says. "You're talking about things like cure rates."

Now in complete remission, Dr. Nguyen's own experiences have shaped the way he interacts with patients. He tries to pass on the hope that his doctors bestowed to him, even when things seemed dark.

"There have been several times when I've showed somebody my port, and I think you can sort of see patients' eyes light up, because they want to know how I got through it," he says.



Quinn Nguyen, MD

ON THE PATH TOWARD PROGRESS

New and emerging therapies for ovarian cancer offer a promising future



Thomas Herzog, MD

In clinical research, it's not always about finding a new treatment that works. Sometimes finding out what doesn't work can be just as important.

Thomas Herzog, MD, professor of obstetrics and gynecology at UC College of Medicine and deputy director of UC Cancer Center, has done both recently in his own specialty, ovarian cancer.

He recently published a two-part study, with part one looking at the role of anti-angiogenesis therapy in platinum-sensitive ovarian cancer. "The findings will really change the standard of care for these patients," he says.

Part two, published in the *New England Journal of Medicine* in November 2019, looked at the effectiveness of performing a debulking surgery called cytoreduction for platinum-sensitive, recurrent ovarian cancer, followed by chemotherapy. That study found that the procedure did not lead to longer overall survival rates, which could keep women from having a procedure that doesn't really help, Dr. Herzog explains. "It also opens up the option for us to use other tools like immunotherapy, PARP (poly ADP-ribose polymerase) inhibitors, and combinations of these drugs to treat them more effectively."

PARPs are a family of proteins responsible for repairing single-strand breaks in DNA. If you leave a single-strand break unrepaired, it can lead to double-strand breaks. By inhibiting the single-strand breaks in the first place, PARP inhibition is an effective strategy to treat cancers that are deficient in the repair of DNA double-strand breaks, such as those with the BRCA mutation that increases the risk of several types of cancer, including breast and ovarian.

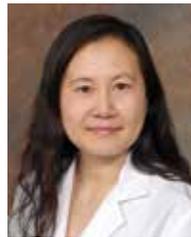
PARP inhibitors, immunotherapy treatment that uses the immune system to fight cancer, and targeted therapies like bevacizumab that work at the molecular level are groundbreaking discoveries made over the past decade, Dr. Herzog says. And the future looks even brighter — and more personal.

"The future of cancer care will be more personalized with treatment options based on the genetic makeup of the patient's specific tumor," he says. "In a few years, we'll also be able to prevent some types of cancer with gene editing or at the least get a very early diagnosis by using blood, urine, and saliva screening to detect cancer in preclinical or very early stages."

LOOKING FOR A BETTER COURSE

Meet BRUCE. BRUCE is a protein that helps repair DNA. Although that normally would be good, when it comes to ovarian cancer, BRUCE could be repairing the DNA of cancer cells weakened by chemotherapy. And that's not good.

As a result, BRUCE could be causing chemoresistance in some ovarian cancer patients, says **Chunying Du, PhD**, associate professor in the cancer biology department. Dr. Du received \$47,500 from the Ovarian Cancer Alliance of Greater Cincinnati to research this response.



Chunying Du, PhD

The results of the study, Dr. Du says, could mean that BRUCE protein levels could be used as a marker to help determine the best course of treatment for individual patients. Ovarian cancer patients with high levels of BRUCE protein who could be resistant to standard platinum chemotherapy would need an alternative treatment plan. But patients without the BRUCE protein could respond well to chemotherapy, radiation, and targeted therapy, such as PARP inhibitors.

“Chemoresistance in ovarian cancer presents the biggest challenge” to effective treatment, Dr. Du says. With more than 14,000 deaths from ovarian cancer annually in the U.S., new therapeutic approaches are needed to overcome this. “Considering that most chemo drugs are DNA-damaging agents, the contribution of increased DNA repair is understudied.”



UC Cancer Center is one of the few centers in the tristate area to specialize in oncofertility, which helps people with cancer and cancer survivors pursue options to preserve their fertility. As one of 50 participating sites in the Oncofertility Consortium, a nationwide program overseen by the National Institutes of Health, UC Cancer Center provides access to the latest clinical care initiatives and translational research in fertility preservation.

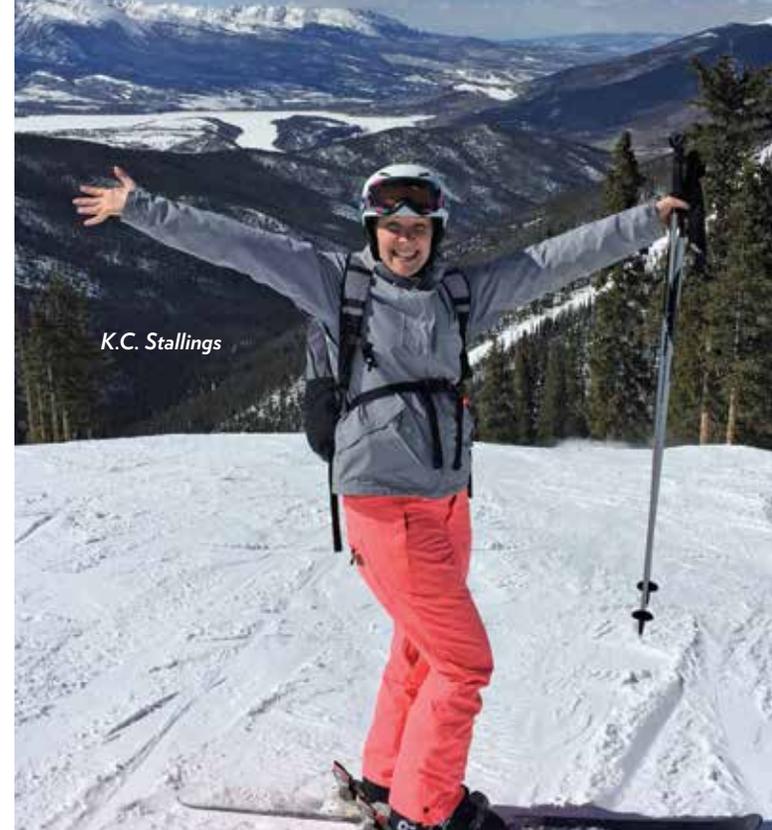
A MOUNTAIN WORTH CLIMBING

Ovarian cancer is a stealthy enemy. There is no screening, and women often write off symptoms like bloating and back pain to something else.

It was like that for K.C. Stallings. She had pain that felt like a pulled back muscle for several months, but it took a wakeboarding fall and a “shock wave” of pain to get her to the doctor.

After surgery to remove enlarged ovaries and finding out she had stage III ovarian cancer, she developed a singular focus on the day in front of her.

“I had to prepare like I was going into battle,” Stallings says. “And half the battle is staying positive. I visualized my cancer journey like a mountain trail before me that I had to climb. I knew it was going to be hard at times ... but through it all, I have not been alone. God has been so gracious to provide a supportive and loving community to help me to stay positive and move forward in hope.”



K.C. Stallings

TRIO TEAMS UP TO FIGHT CANCER

TRIPLE THREAT

In the circle of translational research — basic science, clinical research, and patient care — **Trisha Wise-Draper, MD, PhD**, is leading the charge on all three fronts. As a physician scientist specializing in head and neck cancers, Dr. Wise-Draper, associate professor at the UC College of Medicine and medical director of the Clinical Trials Office, draws upon her time spent in clinical practice to inform her research and vice versa.

“I use my clinical practice treating patients to return to the bench in an attempt to understand why patients respond or do not respond to various treatments,” she says.

Dr. Wise-Draper also is completing that circle for the next generation of researchers in her role with the Clinical Trials Office, which also puts her front and center in the university’s efforts to become a National Cancer Institute-designated center. Receiving NCI designation, she says, would help increase funding for cancer research, attract more talent to the university, and provide new opportunities for cancer patients. Now, that’s a triple threat!

RADIATION RESISTANCE

Veterans face double the rate of suicide and four times the rate of post-traumatic stress disorder as civilians. Did you know they are also twice as likely as the general population to be diagnosed with head and neck cancer?

Vinita Takiar, MD, PhD, associate professor at the UC College of Medicine and a UC Health radiation oncologist, received a \$1.4 million grant from the U.S. Department of Veterans Affairs to study radiation resistance in head and neck cancer in veterans.

“The head and neck is a difficult area in which to operate,” she says. “Radiation is a good option in certain cases. However, even after high doses of radiation, which cause significant side effects, the tumor can reappear within the treated area. We want to understand how this happens and then target those pathways to make radiation more effective.”

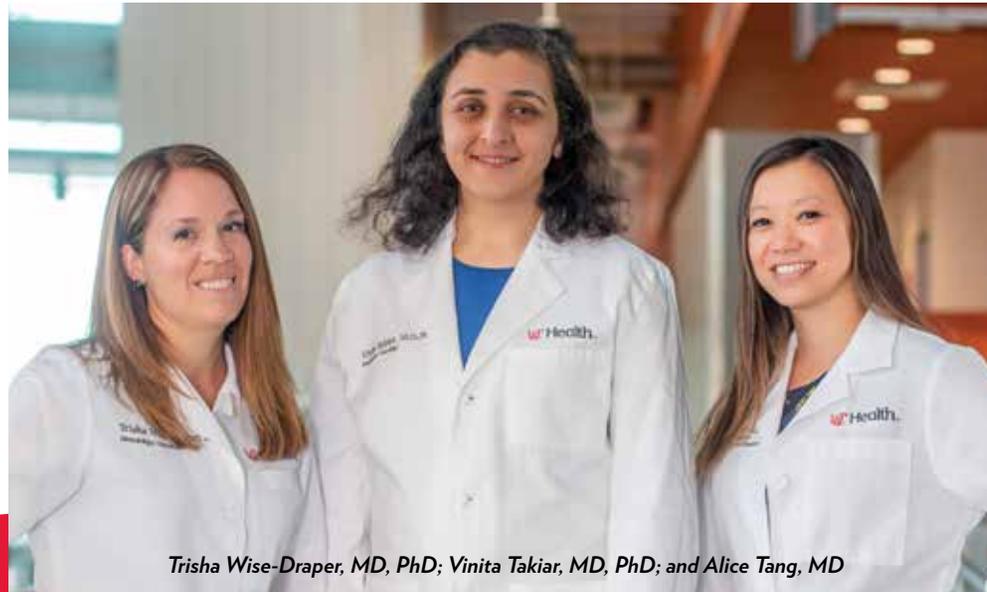
SCREEN TEST

Patients treated for oral cavity cancer are often left with deficits in eating, speaking, swallowing, and even breathing.

Alice Tang, MD, assistant professor at the UC College of Medicine and a head and neck surgeon at UC Health, is the lead site investigator with co-investigator Chad Zender, MD, for two studies to help detect and treat oral cancers earlier.

In the first study, researchers use a mouth swab to evaluate cells for a biomarker called human beta-defensins (hBDs). If patients with premalignant mouth lesions have this biomarker, the lesions can be removed or closely monitored. The test is less invasive than a biopsy, and hopefully can be used as a screening tool in the future for patients who have concerning ulcers.

The second study is looking at what role bacteria plays in oral cavity cancer development. “We’re looking at how the bacteria in our mouth changes when we develop cancer. That relationship also may tell us how aggressive the tumor may be,” Dr. Tang says.



Trisha Wise-Draper, MD, PhD; Vinita Takiar, MD, PhD; and Alice Tang, MD

FUELING THE FIGHT

Most everyone knows the value of good nutrition in preventing cancer, but most people with cancer don't understand its relevance in treating cancer.

The UC Cancer Center believes so much in the power of food that it has hired three registered dietitians who are board-certified specialists in oncology nutrition to work with patients. UC Cancer Center's dietitians are three of just 25 specialists in the state.



Caryn Taylor had an even bigger reason for needing nutrition advice. She was diagnosed with tongue cancer that had spread to lymph nodes in her neck. She met with otolaryngologist **Yash Patil, MD**, and radiation oncologist William Barrett, MD, who laid out a treatment plan that included surgery and 36 rounds of radiation.

But first, Taylor had to make a few plans. "I was told if I lost more than 10 or 15 pounds, I would need to be prepared for a feeding tube," says Taylor, who stocked up on Ensure so that she could keep up her weight during treatment. The plan worked and Taylor was able to eat and drink before, during, and after her treatment.



169

people received head and neck cancer screenings as part of UC Cancer Center's community outreach in 2019

360° SUPPORT

A large team of multidisciplinary specialists must tackle cancer treatment and support on many fronts to be successful. In addition to the physicians and teams that provide medical treatment, the UC Cancer Center provides a multitude of support services.

SPECIALIZED PROGRAMS AND SERVICES

- The only Primary Care Clinic in the region
- Cancer Exercise Program
- Cancer Rehabilitation and Physical Medicine and Rehabilitation
- Risk Assessment and Management Program (RAMP) for Breast and Ovarian Cancer
- Cancer Survivorship Program
- Cognitive Survivorship Clinic for Brain Tumor Patients
- Bone Metastases Program
- Oncofertility
- Integrative Oncology
 - Mindfulness groups
 - Acupuncture and auricular (ear) acupuncture
 - Massage therapy
 - YCAT yoga and Pilates
 - Tai Chi
 - Reflexology/acupressure
- Palliative care
- Pain and symptom management (dyspnea, anxiety, nausea, delirium, etc.)
- Advance care planning
- Spiritual support
- Managing transition of care upon discharge
- On-site, dedicated American Cancer Society navigation services, including:
 - Transportation to treatment
 - Emotional support
 - Organizing info
 - Lodging assistance
 - Financial support
 - Free wigs
 - Health insurance information and assistance

SPECIALIZED SUPPORT STAFF

- Dedicated, oncology-certified dietitians:
- Dedicated, oncology-certified pharmacists
- Dedicated patient navigators for breast, brain, genitourinary, head and neck, and lung cancers, as well as survivorship
- Dedicated American Cancer Society navigator
- Certified exercise physiologists trained in cancer rehabilitation

STRENGTH FROM WITHIN

Trials seek to stimulate immune system to fight lung and bladder cancers

Two Phase I clinical trials are being offered at the UC Cancer Center to investigate the safety and use of novel immunotherapies for lung and bladder cancers.

Only offered locally at the UC Cancer Center, these trials will study bioengineered antibodies being used to stimulate the immune system to attack cancer cells for a more direct and effective approach to treating cancer.

“These trials are Phase I trials, meaning they are the first step in testing therapies in humans; they are trials intended to evaluate safe dosages, the best methods of administration of a therapy, and frequency of administration,” says **John Morris, MD, PhD**, professor of medicine at the UC College of Medicine, UC Health oncologist, and principal investigator on these trials. The UC Cancer Center leads the UC Phase I Experimental Therapeutics Program, which is the only program of its kind locally.

For the first trial, looking at therapies for lung cancer, researchers are studying a bioengineered antibody with two parts to ramp up the body’s immune system to fight cancerous cells.

For the second trial, researchers are studying the use of a protein that stimulates the growth and function of T cells combined with a Food and Drug Administration-approved antibody treatment that has been used to treat other cancers, to target bladder cancer cells in patients who have not responded to standard therapy.

T cells are a type of white blood cell actively involved in the body’s immune response to seek out cancer cells and kill them.

“The hope with immunotherapies for cancer is to directly target the cancerous cells, leaving other healthy cells unharmed and eliminating side effects for patients,” Dr. Morris says.



*Donatien Kamdem Toukam, PhD (left),
and John Morris, MD, PhD*

PAINTING WITH PROTONS

Radiation therapy is a critical component in the treatment of non-small cell type lung cancer, which accounts for 80 to 85 percent of deaths from the disease. Although there have been major advancements to radiation in the past decade, many patients still experience side effects due to the location of their tumors.

One way to avoid those negative effects is with a more targeted treatment, such as proton therapy. Proton therapy “paints” radiation straight onto the tumor with remarkable precision, sparing healthy tissue.

UC researchers are conducting four new clinical trials to study how beneficial proton therapy can be for patients with different types of cancer. One of the trials, only being offered locally at the Proton Therapy Center, is looking at this treatment option for midstage lung cancer.

Emily Daugherty, MD, assistant professor at the UC College of Medicine and a UC Health radiation oncologist, is serving as local principal investigator of the study. She says the clinical trial will be conducted in patients with non-small cell lung cancer who have had standard radiation versus those who have had proton radiation. Both groups will also receive simultaneous chemotherapy.

“Patients will be randomized to receive either proton or standard radiation, and they will be monitored for at least two years to assess cancer control (whether or not it spreads) as well as quality-of-life outcomes and potential side effects.”

She adds that the study also will look at the cost effectiveness of each treatment. “We want to explore the most appropriate and clinically relevant technologies in order to provide patients with the highest standard of care,” she says. “We hope that this trial will provide further insight into the potential benefits of proton therapy for lung cancer and to provide another option for our patients.”



Emily
Daugherty, MD

TACKLING CANCER HEAD-ON

As the mother of a University of Kentucky football player, Terri Edwards, 56, was used to losing her voice from cheering on her son. However, in October 2018, she noticed that her hoarseness wasn't improving with time. Scans found the cause: An enlarged lymph node had paralyzed one of her vocal cords. A biopsy found lung cancer. So Edwards was sent to UC Cancer Center, where she worked with UC College of Medicine professors Emily Daugherty, MD, and John Morris, MD, PhD, to develop a treatment plan. She had radiation with concurrent chemotherapy for six weeks.

During treatment, further testing of Edwards' tumor found she had a positive ALK mutation, which often indicates a favorable prognosis. “I am blessed and thankful that it was genetic,” Edwards says. After the initial treatment, Edwards began immunotherapy. She tolerated the treatments well and continued working during the entire experience. Her voice is coming back, too; it's a good thing because she'll need it for rooting on her son, Mike Edwards, who was selected by the Tampa Bay Buccaneers in the 2019 NFL Draft.

1,937

people received lung cancer screenings at UC Cancer Center in 2019. UC Health's Lung Cancer Screening Program was the first lung cancer screening program in the region and the only one to have a multidisciplinary team of lung cancer experts who have expertise in lung cancer screening. It has been designated a Screening Center of Excellence by the Lung Cancer Alliance and is certified by the American College of Radiologists.

A TAN THAT HEALS

UC researcher receives funding for her topical cancer-preventing tanning agent



Zalfa Abdel-Malek, PhD

A revolutionary new tanning agent may make skin look darker but beneath the surface, it's actually erasing the damage done by the sun's UV rays, including skin cancer.

Zalfa Abdel-Malek, PhD, a professor at the UC College of Medicine, is leading the research team with funding from Melanoma Know More (MKM), a nonprofit dedicated to raising awareness about melanoma, the deadliest form of skin cancer.

The formula has the power to prevent skin cancer, repair sun damage, and tan skin. And it's one step closer to market, thanks to MKM's \$65,000 gift that created The Zalfa Abdel-Malek Melanoma Research Fund, allowing other members of the community to support her team's work.

"Dr. Abdel-Malek and her lab are on the cutting edge of change and if we can make even a small impact on their work, that is extremely important and has the potential for global results," says Leanne Marie Blair, MKM executive director

The research was initiated in 2006, when Dr. Abdel-Malek and her team were given \$1 million from the National Cancer Institute. That initial research, conducted in collaboration with other UC researchers, focused on the chemical modification of alpha-melanocyte stimulating hormone (alpha-MSH). Researchers were able to reduce alpha-MSH from 13 amino acids to four and then three to enhance its ability to target pigment-producing cells. Dr. Abdel-Malek's lab team found that not only did the alpha-MSH and these novel small derivatives increase skin pigmentation, but they also repaired precancerous damage from UV rays.

Dr. Abdel-Malek hopes the treatment will be available to the public in the next year. Until then, there's work to do. "Because melanoma is the deadliest form of skin cancer and its incidence is increasing faster than any other type of cancer, our research is more important now than ever before to prevent this disease."

STAGE IV COMEBACK

Connie Wagenknecht, MSN, APN-BC, AOCNP, has been in nursing more than three decades, including the past eight years at the UC Cancer Center. During that time, she's treated hundreds of patients and seen many advances in treatment. Every day in cancer care is interesting, she says. But there's one day she'll never forget.

She'd watched as patient Richard Dorn, who was initially diagnosed with stage IV malignant melanoma that metastasized to his liver, struggled for nearly a year with the side effects of treatment, including pain, weight loss, ulcers, and more.

Fortunately, Dorn's team — primarily adjunct associate professor at the UC College of Medicine and UC Cancer Center oncologist Rekha Chaudhary, MD, and Wagenknecht — recognized the state he was in and changed course. He says, "My team of experts saved my life and stuck with me through it all." But the help came from more than just his medical team. He was given hope and strength by his family, friends and even Teddy, a rescue dog who was an important addition to the family following diagnosis.

All the support and the treatment worked. Wagenknecht was in the room a few months later when the team got to tell him that his scan showed no signs of cancer. "Ten years ago, you'd never think a person with stage IV could be around in a year, let alone cancer-free. I'll never forget that day as long as I live," she says.

Neither will Dorn. Nor will he give up his hope. Having hope and something to fight for is of the utmost importance, he says. And it's a lesson he incorporates into his post-treatment life and hopes to share with others.



Richard Dorn (standing) and his family



346

individuals were screened for skin cancer at public screenings held by UC Dermatology in 2019

OVERSEEING THE FUTURE

Fellowship programs train the next generation of ocular oncologists

Basil Williams Jr., MD, assistant professor at the UC College of Medicine and director of the UC Cancer Center Ocular Oncology Center of Excellence, knew he wanted to specialize in ocular oncology before he even started medical school. During a job as a technician with a retina specialist, he witnessed the connection the ocular oncologist made with the family of a young girl with uveal melanoma. “Listening to how appreciative they were, even though she eventually lost her eye, helped me realize I was looking for an opportunity to make a difference in people’s lives — and that was the spark that I needed.”

He now experiences those same types of moments on a daily basis. “When you’re treating cancer, there’s a different level of emotional involvement. You truly feel a connection with the patients and their families.”

Perhaps the most impactful thing under Dr. Williams’ oversight is educating the next generation of ocular specialists. In 2020, UC College of Medicine will have its first yearlong ocular oncology fellowship, with a physician focused on training to be an ocular oncologist.

Currently, surgical retinal fellows rotate through the Ocular Oncology Department treating a range of diseases, including pediatric retinoblastoma, uveal melanoma, and patients with other types of cancer that have spread to the eye. But Dr. Williams doesn’t consider the wisdom he imparts on them to be what’s most valuable. In fact, it’s the opposite that he says he selfishly finds most important.

“A resident will ask a simple question, and it allows you to think about things in a way that you maybe haven’t before,” he explains. “When a resident comes at it from a purely inquisitive perspective, you realize they’re coming from the patient and family’s perspective.”

Ferdinand Rodriguez, MD, a 2019 surgical retinal fellow at the UC College of Medicine, has benefited greatly under Dr. Williams’ tutelage. “He is a brilliant diagnostician and clinician. Learning from his way of looking at things is not something you can learn in books. It’s something he’s cultivated with years of training at the best eye institutes in the world,” Dr. Rodriguez says.

1 in 12

UC Cancer Center is part of the Collaborative Ocular Oncology Group, a multicenter group of 12 ocular oncology centers in North America that is researching RNA characteristics of ocular melanoma to help predict the likelihood of it spreading to other body parts, which will help inform targeted therapy options.



From left: Maura Di Nicola, MD, research associate; Basil Williams Jr., MD; and residents Ferdinand Rodriguez, MD, and Hang Pham, MD

HEADING CANCER OFF AT THE PASS

“Ocular melanoma loves to go to the liver,” says **Abouelmagd Makramalla, MD**, assistant professor of vascular and interventional radiology in the radiology department and an interventional radiologist at UC Health. When the eye-related cancer metastasizes to the liver, that’s when Dr. Makramalla and his team step in.



Abouelmagd Makramalla, MD

Using a microcatheter inserted into the artery that supplies blood to the tumor in the liver, the interventional radiologist injects tiny beads of chemotherapy, radiation, or immunotherapy. Because the treatment goes straight to the tumor, it minimizes side effects.

Left unchecked, life expectancy is just three to six months. Interventional radiologists use a variety of noninvasive treatments to stop the cancer from growing and taking over the liver, sometimes more than tripling life survival time to 18-20 months.

One UC Health patient who benefited from these treatments lived three years and two months after his cancer had metastasized. “He lived long enough to witness with his wife the birth of their first grandson,” Dr. Makramalla says. What’s not to love about that?



UC’s total enrollment for the 2019-2020 school year set a new all-time record of 46,388 students

1,881
full-time faculty in UC College of Medicine in 2019

180
full-time faculty in the research track in 2019

SEEING A CLEAR PATH TO RECOVERY

For Dawn Dollenger, it’s easy to see the importance of regular eye screenings, including pupil dilation. That’s because routine monitoring may have saved her life. Her eye doctor noticed a freckle in her eye had changed. So Dollenger was sent to meet with Basil Williams Jr., MD, at the UC Cancer Center Ocular Oncology Center of Excellence.

After a biopsy, she was diagnosed with a Class 1B ocular melanoma. Dr. Williams recommended brachytherapy, otherwise known as plaque radiation therapy, a treatment that involves placing radioactive seeds on the

eye’s surface near the cancer. Dr. Williams surgically inserted the plaque, which stayed in place for four days before he removed it.

But Dollenger’s treatment soon became about more than the immediate treatment for the cancer. Dollenger started seeing Rekha Chaudhary, MD, who has refocused Dollenger’s attention on wellness. Dr. Chaudhary recommended meditation apps to help manage stress for recovery and to prevent recurrence.



Dollenger is doing more than listening. She completed two half marathons before this experience and has completed two 5K walks since treatment. Daily, she focuses on her health by going on walks, spending time with her dogs, and tackling creative home improvement projects.

She faced her diagnosis and treatment with a positive attitude, and she is feeling relieved about her recovery. “I survived, I am still here, and I think everything will be fine,” she says.

ON TO THE NEXT CHAPTER

Survivorship program provides a road map for life after treatment

Beth O'Connor, RN



When a person transitions from cancer patient to cancer survivor, it's cause for celebration. But it also can be cause for confusion as they take the first steps into life after treatment. What type of follow-up do they need? What if a side effect pops up years later? What if the cancer comes back?

The UC Cancer Center's Cancer Survivorship Program was designed with these questions and more in mind. "We know from research that patients are living many years after treatment is complete," says **Beth O'Connor, RN**, the only dedicated survivorship nurse navigator in the region. She says something may show up five or 10 years down the line that could be related to their type of treatment or the type of cancer they had. The survivorship program equips them to know what to look for and what to do if they have a concern.

The program offers a survivorship appointment to patients who have completed their cancer treatment at a UC Health facility, ideally during the first six months after treatment. During the 45- to 60-minute visit, which is scheduled with

the nurse practitioner who works with their oncologist, the patient receives:

- A head-to-toe assessment to identify and address any current issues, either with a follow-up visit to the patient's oncologist or referral to a psychiatrist, sleep specialist, or other provider at UC Health.
- A review of their treatment summary, including specific type of cancer, pathology results, the type of radiation or chemo they received, and the doctors and clinicians they worked with along with contact information.
- A survivorship care plan that tells the patient, based on their cancer type and treatment, what sort of side effects to watch for, a list of the ongoing tests they'll need and how often, and the type of follow-up visits to schedule and with whom.

After the visit, that information is shared with the patient's primary care physician so it's always available in their medical record.

SURVIVAL STRATEGIST

Beth O'Connor, RN, has devoted her career to cancer. Ironically, she's never been involved in cancer treatment. Instead, she spent 20-plus years as a grants administrator for a breast and cervical cancer screening program for uninsured women. For the past two years, she's served as nurse navigator for the UC Cancer Center's Cancer Survivorship Program. O'Connor says she finds helping people at this phase of the cancer journey fulfilling. Although some patients are skeptical at first, O'Connor says that nearly all of them after the visit say, "Oh, this was really beneficial." One patient even came back to tell her that the information she received through the program had changed her life. "I thought that was pretty amazing," she says.

Exercise and nutritious eating habits are healthy behaviors that are important for cancer recovery.

Cancer survivors want to know what types of exercise are safe for them, how to exercise correctly, and what

foods are most nutritious. The UC Cancer Center Cancer Exercise program offers answers to these questions



and provides a personal, comprehensive, and safe approach to physical fitness and dietary guidance based on the results of a medical examination, fitness assessment, and nutritional evaluation performed by our specialists.

THRIVING TOGETHER

Four years ago, Diana Abbott was helping her husband of 35 years, Steve, get back to life as normal after a prostate cancer diagnosis. The last thing she expected was a diagnosis of her own — stage I triple-negative breast cancer.

With no family history of breast or any other type of cancer, she found the news numbing.

“The first time they tell you that, you’re numb,” Diana says. “All thought goes out of your head.”

Diana believes that the early diagnosis and being in charge of her health were important. She and Steve did thorough research about what kind of care they wanted and where they wanted to get it from. They both came to the same conclusion: UC Health.

Diana saw Elyse E. Lower, MD, a professor at the UC College of Medicine and director of the UC Cancer Center’s Breast Cancer Center. Dr. Lower knew how challenging this journey was for the Abbotts.

“You worry about everything. Will you be able to work? How are you going to be able to afford it? What happens if one gets good test results and the other doesn’t?” Dr. Lower says. “These are not easy hurdles, but they faced them with courage and humor.”

Women with triple-negative breast cancer have a higher chance of recurrence in the first five years. Diana, who is now about four and half years out from her diagnosis, is trying her best to live a fun life with lots of laughs. That includes good food, wine, and time with Steve — who also has finished treatment and is doing well — and their three rescue dogs.

Diana and
Steve Abbott

SURVIVORSHIP GRANTS

In 2018, the UC Cancer Center awarded two grants for research projects into survivorship issues. Each grant was awarded \$50,000 for a two-year study. The grants were made possible with the generous support of the Robert and Adele Schiff Family Foundation. Grant recipients were:

Meghan McGrady, PhD
*Developing a Psychosocial
Assessment Strategy for Young
Adult Cancer Survivors*



Through this project, an assessment strategy will be developed to identify the psychosocial needs of young adult cancer survivors. The long-term goal of the research is to develop a scoring system that will increase the likelihood that young adult cancer survivors receive the right psychosocial care at the right time.

Lisa Privette-Vinnedge, PhD
*Investigating DEK as a Prognostic
Marker for Secondary Breast Cancer
in Female Survivors of Pediatric
Hodgkin’s Lymphoma*



This project is investigating the molecular and physiological determinants of increased secondary breast cancer risk following mantle radiation during adolescence. The preliminary data from this grant was presented at the Society of Postdoctoral Scholars in Lexington, Ky., in May 2019.

ADVANCING TREATMENT THROUGH TRIALS

Growing up, Bethany Fuhrman's mom was an oncology nurse at The Christ Hospital in Cincinnati. That fed her interest in medicine and science, which led her to study neuropsychology at UC. After working in marketing research, she felt pulled back toward health sciences and joined the UC Cancer Center team in May 2018 as a Phase I oncology clinical research coordinator. In addition to prescreening patients, she answers their questions, gets their consent to participate, and then follows them through the entire trial to guide their treatment and assess safety.

She feels good that trials like those at the UC Cancer Center allow them to offer patients an option after they've run out of the standard of care. "We can't guarantee that every treatment will work," she says. "But we hope it does. And even if it doesn't work for that patient, there's value in adding that knowledge to the database of what will work for others."

Fuhrman is also excited about the growth in UC Cancer Center's Clinical Trials Office. "With more staff members, more robust training, and improved workflows, we're going to be able to offer more trials to more people," she says.

#2

UC Cancer Center is the second top accruing NRG site nationally



UC Cancer Center's participation rate in interventional trials is higher than the national average of 3%, reported by the National Cancer Institute

From left:
Michelle Nguyen,
Sheena Lanverman,
Bethany Fuhrman,
and Lisa Schmid



SELECTED CLINICAL TRIALS

PHASE I

A Phase I Multicenter, Open-Label, Dose-Escalation and Dose-Expansion Study to Evaluate the Safety, Tolerability, Pharmacokinetics, Immunogenicity, and Antitumor Activity of MEDI9447 Alone and in Combination With Durvalumab in Adult Subjects With Select Advanced Solid Tumors.

Primary Investigator: Trisha Wise-Draper, MD, PhD

Phase Ib Dose-Finding Study of Niraparib, TSR-022, Bevacizumab, and Platinum-Based Doublet Chemotherapy in Combination With TSR-042 in Patients With Advanced or Metastatic Cancer.

Primary Investigator: Muhammad Riaz, MD

BRAIN TUMOR

A Phase 0/I Exploratory Pharmacokinetic and Pharmacodynamics Study of Letrozole in Combination With Standard Therapy in Recurrent Gliomas.

Primary Investigator: Trisha Wise-Draper, MD, PhD

Feasibility Study of Modified Atkins Ketogenic Diet in the Treatment of Newly Diagnosed Malignant Glioma.

Primary Investigator: Rekha Chaudhary, MD

BREAST CANCER

Pragmatic Phase III Randomized Trial of Proton vs. Photon Therapy for Patients With Non-Metastatic Breast Cancer Receiving Comprehensive Nodal Radiation and Radiotherapy Comparative Effectiveness (RADCOMP) Consortium Trial.

Primary Investigator: Teresa Meier, MD

Tomosynthesis Mammographic Imaging Screening Trial (TMIST).

Primary Investigator: Lawrence Sobe, MD

Randomized Phase III Trial Evaluating the Role of Weight Loss in Adjuvant Treatment of Overweight and Obese Women With Early Breast Cancer.

Primary Investigator: Neetu Radhakrishnan, MD

2D VS. 3D SCREENINGS

Radiologists at the UC Cancer Center are offering a clinical trial comparing the use of 2D images to 3D mammography, known as tomosynthesis, to determine if 3D images are more effective at diagnosing breast cancer at earlier stages in healthy women, ages 45 to 74. The randomized study, which hopes to enroll 165,000 participants nationally, is being led locally by **Lawrence Sobel, MD**, assistant professor at the UC College of Medicine, radiologist, and director of breast imaging for UC Health. Dr. Sobel says that researchers are also analyzing tissue collected from women who have biopsies during the trial, which will help in learning more about the biology of breast cancers detected through the two types of screenings.

\$921K

The UC Cancer Center awarded \$921,500 in 2018-2019 for research pilot grants

GASTROINTESTINAL CANCER

A Phase Ib/2 Study to Evaluate the Safety, Pharmacokinetics, and Clinical Activity of Oleclumab (MEDI9447) With or Without Durvalumab in Combination With Chemotherapy in Subjects With Metastatic Pancreatic Ductal Adenocarcinoma.

Primary Investigator: Olugbenga Olowokure, MD

A Prospective Pilot Study to Evaluate the Feasibility of Intensity Modulated Proton Therapy in Reducing Toxicity in Anal Cancer.

Primary Investigator: Jordan Kharofa, MD

GENITOURINARY CANCER

Gadoxetate Sodium Enhanced Magnetic Resonance Imaging (MRI) as a Biomarker for Aggressive Prostate Cancer.

Primary Investigator: Sadhna Verma, MD

University of Cincinnati Proton Boost for Prostate Cancer Utilizing MR Imaging.

Primary Investigator: William Barrett, MD



GYNECOLOGIC CANCER

Using Novel Objective Bio-Data to Improve Quality of Life Assessment in Patients Undergoing Cytotoxic Chemotherapy: An Interventional Pilot Study.

Primary Investigator: Thomas Herzog, MD

A Randomized Phase II/III Study of the Combination of Cediranib and Olaparib Compared to Cediranib or Olaparib Alone, or Standard of Care Chemotherapy in Women With Recurrent Platinum-Resistant or -Refractory Ovarian, Fallopian Tube, or Primary Peritoneal Cancers.

Primary Investigator: Thomas Herzog, MD

Randomized Phase III Clinical Trial of Adjuvant Radiation Versus Chemoradiation in Intermediate Risk, Stage I/IIA Cervical Cancer Treated With Initial Radical Hysterectomy and Pelvic Lymphadenectomy.

Primary Investigator: Thomas Herzog, MD

HEAD & NECK CANCERS

An Open-Label, Phase II Study of Durvalumab (MEDI4736) in Combination With Cetuximab in Previously Treated Recurrent or Metastatic Head and Neck Squamous Cell Carcinoma (HNSCC).

Primary Investigator: Shuchi Gulati, MD, FACP

A Single Arm Phase II Study of Adjuvant Nivolumab After Salvage Resection in Head and Neck Squamous Cell Carcinoma Patients Previously Treated With Definitive Therapy.

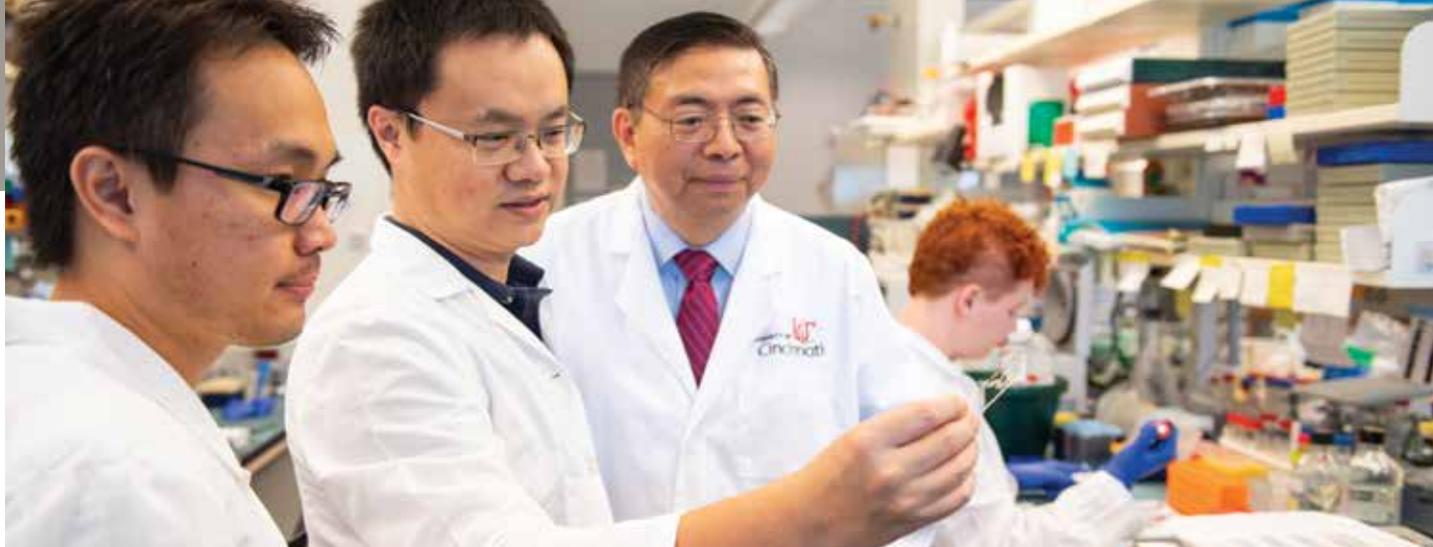
Primary Investigator: Trisha Wise-Draper, MD, PhD



49%
overall accrual rate
in clinical trials



87
interventional
treatment clinical
trials open to accrual



HEMATOLOGICAL MALIGNANCIES & BMT

Phase III Multicenter Open-Label Randomized Trial to Evaluate Efficacy and Safety of CPI-613 in Combination With High Dose Cytarabine and Mitoxantrone (CHAM) Compared to High Dose Cytarabine and Mitoxantrone (HAM) in Older Patients.

Primary Investigator: Zartash Gul, MD

A Phase III Randomized Study of Oral Sapacitabine in Elderly Patients With Newly Diagnosed Acute Myeloid Leukemia.

Primary Investigator: Stephen Medlin, MD

Feasibility and Safety of Intrathecal Rituximab Added to Standard Intrathecal Prophylaxis to Prevent CNS Relapse for CD 20-Positive Non-Hodgkin Lymphoma.

Primary Investigator: Tahir Latif, MD



The UC College of Medicine has 420,950 net square feet of research space

LUNG CANCER

Maintenance Systemic Therapy Versus Consolidative Stereotactic Body Radiation Therapy (SBRT) Plus Maintenance Systemic Therapy for Limited Metastatic Non-Small Cell Lung Cancer (NSCLC): A Randomized Phase II/III Trial.

Primary Investigator: Jordan Kharofa, MD

Randomized Phase III Assessment of Second Line Treatment With Docetaxel + Plinabulin Compared to Docetaxel Alone in Patients With Advanced Non-Small Cell Lung Cancer With at Least 1 Large Lung Lesion.

Primary Investigator: John Morris, MD

SARCOMA, SKIN CANCER & MELANOMA

A Phase II Randomized Study of Adjuvant Versus Neoadjuvant MK-3475 Pembrolizumab for Clinically Detectable Stage III-IV High Risk Melanoma.

Primary Investigator: Rekha Chaudhary, MD

A Randomized Phase III Comparison of IMO-2125 With Ipilimumab versus Ipilimumab Alone in Subjects With Anti-PD-1 Refractory Melanoma.

Primary Investigator: Rekha Chaudhary, MD

INSPIRING INNOVATION

UC Cancer Center retreat challenges clinicians to look for new ideas

It's not often one goes to a conference and comes home the same day with a \$100,000 grant for a research idea generated that day.

But that's exactly what happened to Jordan Kharofa, MD, associate professor of radiation oncology at UC College of Medicine and UC Health radiation oncologist, and his winning team at the 2019 UC Cancer Center Retreat for

Research. In June, clinicians, scientists, and researchers from across the UC campus gathered to learn, collaborate, and share innovative ideas that will change the future of cancer care. The retreat included an on-site research competition, awarding \$100,000 to the team who came up with the best research idea.

Dr. Kharofa's team won the competition and the research grant for a project entitled "Leveraging the Microbiome for Cancer Cures." In addition to Dr. Kharofa, the team included Alison Weiss, PhD; Thomas Herzog, MD; and Geetha

Kapahi, an IT application specialist. UC Health radiation oncologist Ralph Vatner, MD, PhD, has since joined the team.

"Traditional grant mechanisms usually rely on ideas that have preliminary science," Dr. Kharofa says. "It's harder to get funding for just an idea. This competition challenged people to think more broadly about ideas that may be possible."

Dr. Kharofa presented the nugget of the idea during the morning session, and then his randomly assigned group had two hours to flesh out the idea into a project presentation. He based the original idea on recent research showing the importance of some bacteria in the tumor environment.

"The question is: Can you take these bacteria and genetically manipulate them to create proteins or other products that will have a beneficial effect in treating cancer? And how can we use radiation to turn on or off the immune system's response to the cancer?" he explains.

The team already has made some genetically modified bacteria and irradiated those using different modifications to the genetic machinery. Initial results are positive, and the team is testing additional modifications. "We're pairing ideas of things that already exist in a unique way," Dr. Kharofa says.

The research project nicely picked up on the theme of the retreat, which included keynote speakers Mike Zelkind, co-founder and CEO of 80 Acres Farms, and Stuart Aitken, CEO of 84.51, who respectively talked about vertical farming and expanded growing seasons and how using advanced analytics to understand consumers will impact health care.



From left: Thomas Herzog, MD; team facilitator Rose Lambert; Senu Apewokin, MD; Jordan Kharofa, MD; Maria Espinola, PsyD; and Alison Weiss, PhD. Geetha Kapahi, IT application specialist, not pictured.

SUPPORT THE TEAM



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