

cancerlines



LINEBERGER COMPREHENSIVE
CANCER CENTER



3 Family ties make giving second nature for donors



4 Patient finds a way to stay positive in wake of cancer



5 Researcher tackles cancer disparities using hard data



8 Daughter's dedication drives community partnership

the inside lineup

Tiny Bubbles

Taking on cancer at a microscopic level

Microbubbles are not what you form when you run your hot tub jets at high speed. Rather, they're an artificial construct that consists of gas surrounded by a thin, fatty shell that ranges from one to 10 thousandths of a millimeter in diameter. These bubbles are one of the more exciting tools, when married with ultrasound, that are helping revolutionize cancer research and therapy.

At the forefront of that research is UNC Lineberger's **Paul Dayton, PhD**, professor in the UNC & N.C. State Joint Department of Biomedical Engineering. The joint department is a unique and important association that boosts collaborative research efforts across North Carolina by bringing medical and engineering expertise together to solve problems in health care.

"Our workplace is called the 'Non-Invasive Functional Imaging and Targeted Therapeutics Lab' because the two go hand-in-hand, especially since ultrasound and microbubbles are used in all of our projects," Dayton said. "Ultrasound is a really unique modality because it is both highly effective for imaging and for therapy, as we can do either independently as well as using imaging to guide therapy, the latter being crucially important for many non-invasive, targeted, non-pharmaceutical therapies."

Ultrasound is an imaging technique that has been in use for the past half-century. While major medical imaging tools, such as MRI, are quite large and are getting more expensive, ultrasound is getting smaller

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UNC Lineberger's Paul Dayton, PhD.

Scientists make donation when cancer hits close to home

Barbara Savoldo, MD, PhD, and **Gianpietro Dotti, MD**, have been members of the UNC Lineberger faculty for only six years, but they have quickly made profound contributions clinically and scientifically, and, most recently, philanthropically.

World-renowned scientists in the field of cellular immunotherapy, the two were recruited from Baylor College of Medicine in 2015 to lead UNC Lineberger's cellular immunotherapy program, a major initiative to harness the power of a patient's immune system to fight cancer.

During the past three years, UNC Lineberger has developed and opened 10 adult and pediatric novel chimeric antigen receptor T-cell (CAR-T) therapy clinical trials. The program's success is due to the efforts of many, including **Jonathan**

Serody, MD, director of UNC Lineberger's immunotherapy program and chief of hematology, and the clinical study leaders and study participants, but the program would not have grown as quickly or as robustly without Savoldo and Dotti.

While their CAR-T research has the potential to help people worldwide, for Savoldo and Dotti, a married couple, their research to develop a CAR-T therapy for glioblastoma (GBM), an aggressive brain cancer, has become personal.

In July 2019, Savoldo's youngest sister, **Sonia**, was diagnosed with

Gianpietro Dotti, MD, PhD, and **Barbara Savoldo, MD, PhD**, established the **Sonia Savoldo GBM Fund** to advance immunotherapy research for glioblastoma multiforme and to assist patients experiencing financial hardships. Below: Barbara with sisters Sonia and Alessandra Savoldo.



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Shelton Earp, MD

director's message

This new year has emphasized the impact of first-rate research on the world's health, yet we all know substantial challenges remain. Your cancer center and health care system are right in the thick of addressing the state's and our patients' needs. COVID-19 unfortunately didn't stop cancer, but your support of UNC Lineberger, its faculty and staff, keeps our "family" optimistic about the future. As I look ahead, I'm excited by our progress in science, research and clinical care. We want to share that excellence with the people of North Carolina and beyond.

While every aspect of cancer research and care is important, we have several priorities in the coming year. We are expanding, by almost three-fold, the size of our Advanced Cellular Therapeutics facility, a Good Manufacturing Practices (GMP) certified building. This is driven by the success of our group's push to bring new knowledge about the human immune system to bear on patient care. The GMP is where the magic of first growing, then harnessing, a patient's own immune cells, in ways that have never been tried before, occurs. Our group, led by Barbara Savoldo, Gianpietro Dotti, Jon Serody, Natalie Grover, George Hucks, Anne Beaven, Paola Gehrig and their remarkable colleagues are breaking new ground for patients with previously untreatable disease. With your help, we are making a multi-million dollar investment in the GMP, bringing a truly unique program to the citizens of North Carolina. And, of course, as we expand our physical space, new recruitment at all levels is getting underway. This is the year our program expands in truly unique ways, starting with research in advanced ovarian cancer and brain tumors. The latter will be supported by the wonderful gift from Barbara and Gianpietro featured on Cancer Lines' front page.

We also are strategically investing in several disease-specific centers for excellence in areas where our research positions us to make advances in cancer

prevention, early detection by molecular means and cutting-edge clinical research. We have presented our nationally renowned breast cancer program in previous issues of Cancer Lines. In the future, you will hear about headway we are making with bladder, endometrial, pancreatic and lung cancer studies, to name just a few areas in which our faculty are pursuing research. Our centers of excellence allow our basic, clinical and population sciences to work together to create new knowledge. Our aim is to improve cancer care in North Carolina and, through our discoveries, the world.

Our work in population sciences, particularly in cancer prevention, early detection and outcomes, is also on the cutting edge; it was clear from our last NCI review that UNC Lineberger's research in these areas is among the top five in the nation. It is thrilling that our science in these disciplines directly informs our statewide mission to care for everyone in North Carolina.

You'll learn more in this newsletter about some of the people behind those efforts and the work they are doing. Melissa Troester is working with patient advocates and experts in community outreach and engagement as they bring important perspectives to our cancer screening and prevention efforts. Paul Dayton is a great example of our efforts with pancreatic cancer, as he works with tiny, engineered microbubbles and ultrasound imaging to improve the activation of the immune system against pancreatic cancer. You'll also learn about donors following in their families' footsteps and passing along that philanthropic spirit to their children. You'll meet a patient who has been on a dark road with her cancer journey and is now able to find the light in her life.

I share these stories with you with great pride. We do the things I describe above in the midst of delivering compassionate, patient-centered care to thousands of new patients, even in the time of COVID-19. As donors, you are precious to our doctors, scientists, nurses, clinical staff and our patients. It is your generosity that helps us fund wellness and resilience efforts for our amazing staff and provides aid to so many of our cancer patients struggling with this disease during this time of the pandemic calamity. 8

BUBBLES *continued from page 1*

and cheaper. Many former limitations of ultrasound technology were related to electronics, but with the advances in integrated circuits and microchips, ultrasound systems are now as small as a cell phone, and they don't cost much more than a cell phone either.

Currently, ultrasound is mainly used to evaluate anatomy and tissue differences, such as observing suspicious lesions to see if they appear cancerous. It is also used to image blood flow patterns which might suggest disease or pathology, or lack thereof. With the latest advancements, Dayton's lab is exploring new ways to use ultrasound to look in great detail at the tiny blood vessels, or microvasculature, that course throughout the body.

"If there was a technique available that could image microvascular properties, it could tell physicians a lot about disease status," said Dayton. "So, we are working on techniques to enable ultrasound to visualize small blood vessels, and these techniques involve contrast agents, primarily microbubbles, that flow through, and thus highlight, the microvasculature."

Engineered microbubbles, which have been around for more than 30 years, scatter sound so they are easy to detect with ultrasound. Dayton's lab needs bubbles that can last up to five minutes for imaging projects, so they use fluorocarbon gas, which is inert. For treatment applications, however, they use a gas that tumors are short on – oxygen – which exits the bubble and can flow into a tumor and make it more susceptible to treatment by radiation.

Recently, microbubbles received expanded approval from the U.S. Food and Drug Administration for visualizing the liver to help characterize liver lesions. Most

Better treatments for cancer are the ultimate goal for Dayton's lab. For example, immunotherapies haven't been used extensively or effectively against pancreatic cancer, but it might be possible that stimulating the immune system with microbubbles could be effective.

crucially in the treatment realm, microbubbles can cause a range of biological effects. At low ultrasound intensities, such as those used for contrast ultrasound imaging, biological changes are believed to be very minimal, with adverse effects being less than other imaging contrast agents. However, at high ultrasound energies, microbubbles can have a range of effects, such as changing the permeability of blood vessels, enhancing immune response, and even destroying tissue at high intensity ranges. While these effects are not desirable for diagnostic imaging, they can also be helpful therapeutically if used in a controlled fashion, noted Dayton.

Better treatments for cancer are the ultimate goal for Dayton's lab. For example, immunotherapies haven't been used extensively or effectively against pancreatic cancer, but it might be possible that stimulating the immune system with microbubbles could be effective. However, there is much work to be done to make this a reality. "We are still trying to understand exactly what might be going on when trying to treat cancer with microbubbles. One hypothesis is that ultrasound using microbubbles induces mechanical agitation of diseased cells, leading to an increase in the release of antigens that could stimulate immune responses to attack cancer," he said.

Dayton's lab also works on targeted therapies. They are

developing delivery vehicles that can be activated by ultrasound to release a drug to the target site. The goal is that local delivery of a drug will have improved efficacy to the diseased tissue and reduced systemic effects. Additionally, they hope to use ultrasound to modify the tissue itself. One example would be locally modulating the blood/brain barrier to allow systemically circulating drugs to cross the barrier and treat a brain disease.

So, what's next? Dayton's lab is working with two local companies he co-founded to advance his research: SonoVol is developing and selling advanced ultrasound imaging systems; Triangle Biotechnology is developing reagents for ultrasound applications in genetic and genomic analysis.

Ultimately, though, low cost, portability, safety and the improved image quality of new ultrasound devices are all reasons why Dayton thinks ultrasound married to microbubble use is going to play an increasingly important role in the future of cancer research and public health.

Dayton said the success of translating laboratory discoveries into potential clinical advances speaks to the collaborative spirit of UNC Lineberger and UNC Health faculty. "We are actively developing lots of different technologies, and if we can get some of them into the clinic to save lives, that would be huge," he said. 8

Donors support giving across the generations

Family traits are passed down from generation to generation, and a love of UNC-Chapel Hill and a spirit of philanthropic giving has been instilled for years in Beth and Julian Williamson's family. The new members of UNC Lineberger's Board of Visitors are excited to be ambassadors to spread the word about the cancer center's mission of providing today's best care and tomorrow's best hope.

The Williamsons come from a long line of Carolina alums and got their first introduction to the great work being done at UNC Lineberger as basketball fans when they attended Roy Williams' Fast Break Against Cancer. Julian's mother, Blanche Bacon, a member of the Board of Visitors, bought the tickets for the couple, and they regularly attend the annual event that has raised more than \$3 million for cancer research.

UNC Lineberger's mission is important to the Williamson family, stretching across generations and one that the couple hopes to pass to their three daughters, Blanche, 18, Elizabeth, 15, and Pell, 21, a junior pursuing a degree in medicine at Carolina.

"His mom has instilled a philosophy of giving back and helping others, and we try to do what we can and impart that to our girls," Beth Williamson said.

The Williamsons say they stress the "three Ss" with their daughters, an idea Julian recalls his mother expressing about money — to share with others, spend a little and save the rest. The couple is proud that this idea has made an impression on their children — Pell even mentioned it in a speech she gave about her grandmother. The Williamsons continue to set a good example for their children, and their message of philanthropy has hit the mark; the girls have even donated to the Campaign for Carolina, the university's fundraising effort.

But UNC Lineberger remains close to their hearts due to their personal experiences with cancer. Beth Williamson's father, Hardy Duerson, also a longtime Board of Visitors member, was treated for cancer at the North Carolina Cancer Hospital, the clinical home of UNC Lineberger. The couple have had other relatives and friends diagnosed with cancer. The Williamsons stay focused on all the good done at the cancer center and want to support those efforts as best they can.

"We feel strongly about UNC Lineberger being a public cancer center, where people can get the best treatment and care regardless of whether they can afford to pay for it," Beth Williamson said. "I saw with my dad how expensive cancer care was, and with Julian's aunt, we



Top: Julian and Beth Williamson. Above: Daughters Pell, Blanche and Elizabeth Williamson with Willy and Harry.

think about people who can't afford those kinds of bills or are turned away for inability to pay."

Julian Williamson credits UNC Lineberger's leadership with having a clear vision to fight cancer and knows that

their gift to the cancer center will be in good hands.

"When you see tangible good being done, when you see the fruits of your labor, that's when it's rewarding," he said. "You can see the good they're doing. I like the positive nature of what you're trying to do."

Julian Williamson mentioned a recent video featuring **Stuart Gold, MD**, the chief of pediatric hematology-oncology, as a great example of that positivity. The video featured pediatric staff from the N.C. Cancer Hospital and UNC Children's dancing joyfully in the halls of the hospitals, and Julian said it was inspiring.

The couple is looking forward to supporting UNC Lineberger as Board of Visitors members. They have been inspired by the generosity of people who give to the cancer center and hope to inspire others, as well.

"Cancer is something we can all relate to. We are all in this together in the fight against cancer, and if you have the ability to give, do that," Beth Williamson said. "Cancer doesn't discriminate and affects people of all ages." 8

Give
UNC
3 • 30 • 21

Save the date for GiveUNC – a day like no other. Tar Heels will come together to support areas they are passionate about across UNC. We hope you will remember UNC Lineberger Comprehensive Cancer Center and make a gift on this special day!

Patient overcomes dark hours of cancer journey

When Janet Geisler feels herself beginning to go to a dark place in her mind, she knows how to leave those thoughts behind and bring herself to a place of light and peace. That's something the 71-year old, who splits her time between Emerald Isle, North Carolina, and Richmond, Virginia, has not always been able to do. It took an arduous journey with a second cancer diagnosis to achieve it.

In 2011, the mother of five was diagnosed with breast cancer. Her gynecologist in Greenville, North Carolina, found a lump in her breast and she had a lumpectomy, followed by radiation and aftercare appointments.

"At every visit my only complaint was a feeling of fullness and achy discomfort in the left side and flank area," she said. "I always reported it, but never said it was a big deal, and my lab results showed no sign of recurrent breast cancer. I'm a pretty tough cookie and don't like to complain. At day's end, I'd have a glass of wine, a couple ibuprofen and put a pillow under my arm, which eased the discomfort."

Although the symptoms lessened at times, they never went away. She became more and more uncomfortable during an extended visit to see her daughters in Massachusetts, especially on family hikes. "We knew something wasn't right," she said.

On her return to North Carolina, fever, loss of appetite and nausea brought her to her general practitioner. The doctor saw the pillow under Geisler's arm and ordered a scan. "That's how my cancer was found."

Geisler saw a recommended surgeon in Morehead City, North Carolina, but the tumor was large and involved, and she was sent to the North Carolina Cancer Hospital, the clinical home of UNC Lineberger. She saw UNC Lineberger's **Lawrence Kim, MD**, specialist in endocrine cancers, but a biopsy determined she had liposarcoma, not adrenal cancer. Kim offered to do the surgery, but told her UNC Lineberger had a sarcoma specialist on staff, **HJ Kim, MD**, and Geisler went to him for her surgery.

Before her surgery, Geisler developed pneumonia and was hospitalized for a week.

"They thought the cancer had spread to my lungs, and there was talk of just using comfort measures. That was a very low point for me," Geisler said.

Fortunately, tests revealed the cancer had not spread to her lungs. Geisler underwent a six-week course of radiation to help shrink the margins of the tumor before surgery. The treatment caused extreme nausea and weight loss, and the severity of the weight loss put her surgery in jeopardy.

Geisler became determined to build up her strength and improve her nutrition, which was difficult because food repulsed her, and she couldn't bite or chew.

"I climbed my stairs over and over, got stronger, and finally Dr. Kim said 'I think this is doable.' I realize he not only had faith in his skills but in my determination and strength," she said.

Her surgery was scheduled to last five hours, but it only took two hours, despite removing the tumor and her spleen, left kidney, adrenal gland, gall bladder and part of her pancreas. Geisler said her recovery was easier than expected.

Just making it through surgery was a testament to



Above: Janet Geisler, center, a mom of five, had the support of friends and family on her cancer journey, including (left to right) friend Ed Netland, daughter-in-law Caitlan Geisler, son Peter Geisler, daughter Joelle Haley, daughter Jessica Costello and son Rich Geisler. Below: Geisler at the beach with her grandson, Lawton.



her strength and HJ Kim's expertise, but Geisler knew her cancer had a high rate of recurrence and during recovery at home, she found herself in a period of deep depression. "I've gone through all this," she said. "living for years with the tumor, coming out of extensive surgery, and now thinking it's going to recur. I began to think, 'what's the point?'" She finally came to a startling realization.

"I can't do this by myself; I need help."

With the guidance of a New Bern, North Carolina, oncology psychologist, and the support of friends and family, Geisler got the help she needed. She started small, and joined a support and meditation group, restarted yoga classes — unable to do most poses, but trying. That led to Pilates, and walks with friends.

Geisler found herself dwelling on past regrets, like caring for her mother and other terminally ill family members and feeling she hadn't done enough for them.

And she held on to anger at the oncologist who never ordered a scan.

"Through meditation, I was able to understand that, yeah, those things happened, but I did the best I could. Don't put blinders on those feelings, but let them go, acknowledge them, and let them roll by," she said. "I'm better able to do that now, and I've realized that the stress, guilt and anger helped nothing, no one, and was only very detrimental to my health."

Geisler knows there are other patients who may be experiencing the same darkness, and she has some encouraging words for those who are not in a good place.

"It's so normal. It's so imperative that you do feel this way, that you do feel scared, helpless, alone, feel life's not fair. You have to feel that. I did. I had to come to where I felt 'what's the point?'" she said. "Even now, when I find those old demons taking over, I take a deep breath, go outside or speak to a friend and bring myself back to a place of peace and gratitude. I do owe that to myself and to all who helped me."

Rebuilding her health, both mental and physical, is a priority for Geisler, and she is focused on introspection and doing things differently. She has come to like herself a lot more and is more thankful for her sense of humor and her strength.

"I'm quicker to say 'yes' to life, to possibilities, to adventures, and much quicker to say 'no' if asked to do something I don't wish to or can't do. I no longer feel guilty about saying no," she said.

Geisler said she is always aware that her life is finite; she doesn't know what will happen in the future, and she's OK with that. "I have right now; I have this day. Be grateful and grab it for all it's worth.

"Cancer gave me motivation and freedom in many ways. I hope people can look forward to that. I want to somehow help them understand that this can be an empowering experience. It absolutely was for me," she said. "I have faced death, and I'm on the other side." 8

Melissa Troester: Stitching it together, piece by piece

Melissa Troester, PhD, has a lot of experience piecing different elements together to make them work as a whole. Raised in Minnesota, where a love of diverse forms of literature, from poetry to fiction to science fiction, was instilled in her at a young age, she also spent quality time quilt-making with members of her family. She has found that the quilting process has relevance in her scientific research as well. To understand cancer health disparities, she and her collaborators work together to assemble a wide range of components. “Our job is to bring together different pieces to develop a more integrated, holistic understanding of breast cancer,” she said.

Co-director of cancer epidemiology at UNC Lineberger, Troester leads the Carolina Breast Cancer Study (CBCS), which began in 1993 and continues its mission to serve participants nearly three decades later. The study looks at how the causes, treatments and long-term outcomes of breast cancer differ between Black and white women, particularly as they relate to survivorship.

Troester’s educational background is wide-ranging, which comes in handy when dealing with a study as expansive as the CBCS. She began her career in the lab and then transitioned to a focus on data science and working with interdisciplinary teams that are integral to many of the successful research projects in which she has played a vital role.

Her breadth of expertise is particularly helpful in leading the CBCS because of the extent of different types of data and information collected, including tumor biology and health care access statistics. To optimize the use of this treasure trove of information, Troester and her colleagues work closely with data scientists to stitch together elements that have historically not interacted much. From computer scientists to biostatisticians, to data scientists to clinical collaborators, the team is delving into answering important questions about how patient-level factors, like distance to care or referral patterns, might interact with tumor biology.

“It’s a great privilege to work with patient advocates and experts in community outreach and engagement as they bring important perspectives to our efforts,” Troester said. “The advocates have helped point out aspects of outreach that we may have missed. Additionally, our study participants have worked hard over many years to supply us with background and information we can use to change breast cancer outcomes.”

An especially positive aspect of her research efforts, she notes, revolves around the fact that North Carolina can be used as a model for the nation because it is a truly heterogenous state. Another providential attribute




UNC Lineberger’s Melissa Troester, PhD.

comes from the University Cancer Research Fund, a commitment of research money by the state legislature. This allows North Carolina to be one of the few places where many aspects of biology and access to care have been brought together in a single setting.

One of the more confounding factors that Troester is investigating is how cancer treatment outcomes can vary so widely across North Carolina. While clinical trials can be informative about whether a new treatment works better than an established treatment, trials’ outcomes doesn’t always inform how the treatment will work in diverse populations or whether everyone will have access to newer drugs. That’s where Troester’s research efforts step in. “We’re just unpacking information on treatment and disparities, including how different doctors in different settings interpret treatment guidelines,” she said. “We’re trying to develop new statistical methods for grouping patients by outcomes to determine where treatment disparities exist and why.”

The onset of the COVID-19 pandemic has presented some unique challenges, but Troester said it also has created some opportunities. The most obvious challenge is being able to reach out directly to people in the community. On the flip side, being in an office with mounds of digital information to parse, Troester and her team have had more time to delve deep

into the data and perform some complex analyses, which she hopes will better inform their community efforts once they can get back out into the field. “We need to look more closely at why African American women are 40% more likely to die from breast cancer in North Carolina. A larger participation by women of color in our studies would make a big difference, and we plan on renewed efforts to reach out to these women once the pandemic has abated.”

Just as the breast cancer study has evolved and grown during Troester’s tenure, her knowledge of diverse cultures in and around North Carolina has contributed to her own personal growth. This is exemplified in her ongoing interest in how American quilting has been influenced by many voices. “The women of Gee’s Bend, a small, remote, Black community in Alabama, have created hundreds of bold, colorful quilts out of common household items,” she said. “The Gee’s Bend women have profoundly influenced modern quilting, illustrating how impactful a small group of women with a unique perspective can be. In a similar vein, incorporating the wealth of culture, experience, and knowledge from the diverse women that comprise our study population is leading to insights that will improve health outcomes for all women in North Carolina,” she said. 

“We need to look more closely at why African American women are 40% more likely to die from breast cancer in North Carolina. A larger participation by women of color in our studies would make a big difference, and we plan on renewed efforts to reach out to these women once the pandemic has abated.”

- Melissa Troester, PhD

Researchers make case for CAR-T therapy in breast cancer and other solid tumors

Boosting immune system T-cells to effectively attack solid tumors, such as breast cancers, can be done by adding a small molecule to a treatment procedure called chimeric antigen receptor T-cell (CAR-T) therapy, according to a study by UNC Lineberger researchers. The findings are published in the *Journal of Experimental Medicine*.

CAR-T immunotherapy, where a patient's own immune cells have been engineered to fight their cancer, has been most effective in the treatment of patients with B-cell leukemia or lymphoma. But this new research, conducted in mouse models, points to the potential for using CAR-T therapy effectively against solid tumors.

"We know that CAR-T therapy is safe for patients with solid tumors, but so far they have not been able to cause significant tumor regression in the overwhelming majority of people treated," said **Jonathan S. Serody, MD**, the Elizabeth Thomas Professor of Medicine, Microbiology and Immunology and director of the Immunotherapy Program at UNC Lineberger. "Now we may have a new approach to make CAR-T work in solid tumors, which we think could be a game-changer for therapies aimed at an appreciable number of cancers."



Serody

Blood or marrow transplant patients show higher risk of dying from COVID-19

COVID-19 may be more harmful to people who have received a blood or marrow transplant (BMT), according to a study published in the journal *Lancet Haematology*.

The study used data reported to the Center for International Blood and Marrow Transplant® (CIBMTR®) and included 318 children and adults who contracted COVID-19 prior to August 2020, post-BMT.

One month after getting COVID-19, 30 percent, or three out of 10 people had died. Based on available data, this is much higher than patients who never had BMT.

"It's important for everyone to get vaccinated against COVID-19," said UNC Lineberger's **Marcie Riches, MD**, director of the BMT Program and a scientific director at the CIBMTR. "This will help protect people who need or had a BMT. It is unknown how well the vaccine works in patients who had BMT, but we encourage vaccination for patients more than 3 months from transplant."



Riches

Obesity-related comorbidities may contribute to breast cancer mortality gap

Obesity is a known risk factor for various cancers, and its rise over the past few decades has contributed to a rise in hormone receptor positive breast cancer rates that is greater in Black women than white women. At the same time, as overall breast cancer mortality rates have declined, the decline has been less pronounced in Black women, producing a 40% mortality gap.

In an analysis of women with early breast cancer, UNC Lineberger's **Kirsten Nyrop, PhD**, and her colleagues found

Black women had higher rates of obesity and other health conditions that can affect prognosis and survival, compared with white women. The findings were published in *Cancer*, a peer-reviewed journal of the American Cancer Society.

The study team analyzed health data for 548 patients treated at their hospital for early breast cancer. They found 62% of Black patients and 32% of white patients were obese, and higher percentages of Black women had obesity-related comorbidities, such as hypertension, diabetes and high cholesterol, compared to white women. Yet, despite significant differences in the prevalence of obesity and comorbidities, there were no differences between Black and white patients in treatment decisions with regard to type of surgery, chemotherapy, radiation or endocrine therapy.

"Early breast cancer is highly treatable, and survival rates have improved steadily due to treatment advances and early detection through mammograms," Nyrop said. "However, the high rates of obesity, overall comorbidities, and obesity-related comorbidities observed among women with early breast cancer — especially among Black women — can contribute to disparities in overall survival of these patients."

New machine learning method may lead to optimal cancer treatment decisions


Researchers at the University of North Carolina at Chapel Hill have developed a computational framework to generate evidence-based optimal cancer treatment decisions informed by a patient's genomic biomarkers. The findings, which may aid in the development of precision cancer treatments, are published in the *Journal of the American Statistical Association*.

UNC Lineberger's **Naim U. Rashid, PhD**, an assistant professor in the Department of Biostatistics at UNC Gillings School of Global Public Health and the study's first author, said the goal of the research was to develop and train new machine-learning methods to predict optimal treatment based on big data from large scale preclinical screens in patient-derived xenografts, or PDXs.

UNC Lineberger's **Michael Kosorok, PhD**, the W.R. Kenan Jr. Distinguished Professor of Biostatistics and professor of statistics and operations at UNC Gillings School of Global Public Health, is the paper's corresponding author.

Created by implanting part of a patient's tumor into immuno-compromised mice, a PDX line produces multiple models of the same tumor.

This makes it possible for researchers to more efficiently test and evaluate how an individual patient's tumor responds to different drugs. Molecular biomarkers may be collected on each tumor as well, and can be correlated with treatment response. Data derived from such studies are used to estimate the potentially most effective therapy for a patient.

In this new study, Rashid and his colleagues analyzed data from a large PDX screen spanning five cancers, 1,000 PDX lines and 38 unique treatments evaluated. 



Nyrop



Rashid



Kosorok

Honors and Awards

Honors

Kirsten Bryant, PhD, was named a 2021 Rising Star in Cancer Metabolism by New York Academy of Science. The designation honors Bryant's work and contributions as an early career researcher.

Veronica Carlisle, MPH, CHES, was honored with a Dean's Performance Award for Community Service in recognition of her exemplary work that has contributed to UNC achieving its vision of becoming the nation's leading public school of medicine.

Awards

Jennifer Elston Lafata, PhD, has been awarded a two-year, \$750,000 Health Equity Innovations Fund grant by Genentech to study how health care organizations are considering equity as they establish new virtual visit programs in cancer care, and how these programs can improve cancer care access, quality and patient outcomes.

Ronald Swanstrom, PhD, has been named the 2020 recipient of the Hyman L. Battle Distinguished Cancer Research Award for his expertise in the field of retroviruses and viral-associated cancers and for helping establish the University of North Carolina at Chapel Hill as a major hub for tumor virology and human retroviruses, including HIV.

UNC Lineberger researchers led by **Katherine Reeder-Hayes, MD, MSc, MBA**, and **Stephanie Wheeler, PhD, MPH**, have been awarded a two-year, nearly \$400,000 grant by The American Cancer Society and Pfizer to address racial disparities in breast cancer care quality in North Carolina.

UNC Tobacco Treatment Team researchers, led by **Adam Goldstein, MD, MPH**, have been awarded a Cancer Center Cessation Initiative enhancement grant by the National Cancer Institute to expand tobacco cessation treatment services for patients.

Corona Cares raises more than \$2.75M

Constellation Brands and Corona wholesalers across North Carolina held the annual Corona Cares program in November to support the mission of the North Carolina Cancer Hospital, the clinical home of UNC Lineberger.

The program donated 25 cents from every case of Corona Extra, Corona Light and Corona Premier sold and 100 percent of all donations from paper limes purchased at retail locations and convenience stores throughout the state.

Despite pandemic challenges, the campaign raised more than \$170,000 for UNC Lineberger's Comprehensive Cancer Support Program (CCSP), a multidisciplinary program at the N.C. Cancer Hospital dedicated to helping patients, caregivers and families with cancer treatment, recovery and survivorship. Corona Cares has raised more than \$2.75 million since its inception.

The CCSP offers support to patients who experience financial hardships. This can be caused by a range of issues, from the expenses of traveling long distances for appointments at the N.C. Cancer Hospital to missing work while receiving treatment, to the challenges of paying insurance copays while also covering routine monthly costs, such as utility bills, rent and groceries.

Donald Rosenstein, MD, director of CCSP, said the

team has made more than a thousand phone calls to high risk patients and more than doubled the number of patient counseling sessions. The expansion of the telemedicine capacity has made it possible to reach patients in even the most remote parts of North Carolina.

"This is precisely why this year's Corona Cares campaign is so critical to our mission of serving the people of North Carolina regardless of their ability to pay," Rosenstein said.



Rosenstein

She ROCKS reaches \$1M milestone

She ROCKS, an organization aimed at raising awareness and attention for ovarian cancer, recently reached a significant milestone in its efforts, contributing more than \$1 million to ovarian cancer research at UNC Lineberger since its inception in 2014. The group supports the work of UNC Lineberger's **Victoria Bae-Jump, MD**, and her work with ovarian cancer.

Bae-Jump leads a team of researchers focusing on advancing the prevention, early detection and treatment of ovarian cancer. Specifically, they are investigating approaches to detect ovarian cancer at the earliest pos-

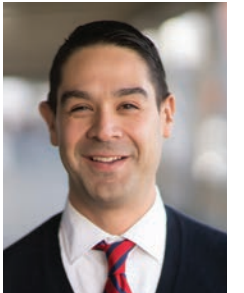
sible stage, when the prognosis is much better.

Recently, members of She ROCKS met with Bae-Jump and UNC Lineberger's **Shawn Hingtgen, PhD**, to present the 2020 funding for ovarian cancer research. With this 2020 gift, She ROCKS has been able to support Bae-Jump and Hingtgen's combined MASCOT (Manufacturing and Analysis of Stem Cells from Skin Cells for Ovarian Cancer Treatment) clinical trial, which now has four patients enrolled.

"I am so amazed at the She ROCKS donation for this year as well as meeting the \$1 million landmark in raising funds, all during COVID-19," Bae-Jump said. "I, my lab, and Shawn Hingtgen and his lab are so honored to be part of the mission of She ROCKS, and this foundation gives us such inspiration to continue our work in improving outcomes for women battling this deadly and unpredictable disease in ovarian cancer."



Bae-Jump



Hingtgen

DONATION *continued from page 1*

GBM. Knowing there are limited treatments for GBM, none of which is curative, and seeing the challenges Sonia has experienced, Savoldo and Dotti made a gift to UNC Lineberger to establish the Sonia Savoldo GBM Fund to advance immunotherapy research for GBM and to assist patients experiencing financial hardships.

"Glioblastoma is a tumor with a dismal prognosis, and novel treatments are urgently needed to improve outcomes," said Savoldo, assistant director of the UNC Lineberger Cellular Immunotherapy Program. "We created the fund to support immunotherapy research for glioblastoma and to support patients and their family members."

Sonia is receiving her care at the Carlo Besta Neurological Institute in Milan, Italy, which is two hours north of her home town and is regarded as the best hospital in Italy for the treatment of GBM. Coincidentally, UNC Lineberger started working collaboratively with the institution in 2016 with the goal to develop CAR-T therapies for GBM. Dotti said the preclinical research has shown promising results.

"I think Sonia is the most courageous person in our family," Savoldo said. "She has endured numerous treatments, including 'experimental' therapies. I think her choosing to enroll in experimental therapies is because she has heard us many times expressing our gratitude to all the patients who enroll in clinical trials here at UNC. I think she wanted to do her part. Because of our research and its translational aspect, she understands how important being helpful for others is."

Naming the fund in Sonia's honor has been meaningful for her and her family. It also made for a touching gift last Christmas.

Due to pandemic-related travel restrictions, Savoldo



UNC Lineberger's Gianpietro Dotti, MD, and Barbara Savoldo, MD, PhD.

and Dotti could not go home to Italy for the holidays. "I think the sad aspect of the past year has been the pandemic that has robbed us of many days together," Savoldo said. "Being this far away has been particularly difficult. For the first time we have not been able to spend the Christmas holiday together. The creation of the fund was her Christmas present, and it made her really happy. She said it made her feel like she is contributing to something, that it will be her legacy. I think that is true, regardless of the fund, because she has chosen to participate in research trials and helped others. That is the most valuable legacy."

Savoldo said her sister is fortunate to have access to some of the best care in Italy, but traveling there is challenging as the hospital is 110 miles from her

home in Mantova. "Though she has never complained about her own situation, Sonia has told me the most painful part of 'joining the cancer patient club' is seeing many families struggling, coming from much farther away, having to spend weeks or months away from home to access the best care," Savoldo said. "So, in addition to supporting research, we really wanted to make sure that anyone in need has access to such therapies regardless of their means."

Dotti, director of the UNC Lineberger Cellular Immunotherapy Program, said establishing the fund at UNC Lineberger made sense for several reasons. "UNC Lineberger is at the forefront of developing novel therapies for diseases like GBM. During the past five years, there has been increasing interest in moving successful immunotherapeutic approaches from other cancers to GBM. Being part of the UNC community, every day we see researchers working collaboratively to better understand what causes cancer, what drives it and how to treat it. We believe this fund will help in accelerating the translation of promising approaches to an actual therapy."

The couple also wants to support the North Carolina Cancer Hospital, the clinical home of UNC Lineberger, because they believe deeply in its commitment to provide the best possible cancer care to anyone regardless of their ability to pay.

They also want to ensure cancer research does not slow during the COVID-19 pandemic. "There is always an urgency in finding cures for any type of cancer, and we think funding should never be a barrier," Dotti said. "The COVID pandemic rightly is the focus of so many, but we want to make sure there is no pause or the pace doesn't slow for GBM research. Cancer patients cannot afford to wait for the world to go back to normal and for everything to resume as it did pre-pandemic."

calendar of events

August

28th Victory Ride to Cure Cancer, Raleigh

September

21st Golfing for the Gals, Chapel Hill

Ongoing

Chapel Hill Toffee: Chapel Hill Toffee will give a portion of the sale of every box of toffee to the Dina's Dynasty Ovarian Cancer Fund.

Peter Millar: Retailer Peter Millar will donate a portion of the sales from its UNC Lineberger collection to support patient care and research at UNC Lineberger.

For more information about these events and other UNC Lineberger news, visit www.unclineberger.org, or follow us on [f](#) [t](#) [i](#)

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Address service requested.



Above: Dina Bray and Christy Bray Graves at a White Party for UNC Lineberger.

Inset right: Christy Graves started the Dina's Dynasty Ovarian Cancer fund in memory of her mother.

Below: Graves with her youngest son, Kenan Bray Graves, and UNC-Chapel Hill mascot Rameses at the 2020 Lineberger Club event.



Daughter honors mother's memory with service, community support

Christy Bray Graves worked alongside her mother, Dina Bray, at UNC Lineberger fundraising events for years, teaming up to help raise funds for cancer research at Roy Williams' Fast Break Against Cancer, the White Party and Fire and Ice fundraisers. That changed in 2017, when Bray was diagnosed with ovarian cancer. Bray died three weeks after her diagnosis, leaving her family behind along with a legacy of giving back.

"She was my best friend, she was at our home every day helping me care for my children, and then suddenly, she was gone," Graves said. "Ovarian cancer is truly a silent killer, and it destroyed one of the most important pieces of my life. I have since vowed to do everything in my power to fight back."

Not content to let her mother's legacy live only in mementos and photographs, Graves established the Dina's Dynasty Ovarian Cancer Fund in memory of her mom. The fund supports UNC Lineberger in developing a reliable screening method for ovarian cancer and providing outstanding care for ovarian cancer patients. To get that message out to more people, Graves looked closer to home.


Graves and her husband, Mark, both work at Chapel Hill Toffee, his family's business that began in his mom's kitchen and soon expanded into selling the treats in more than 400 locations. In 2018, the company made a commitment to donate a portion of the proceeds from each box of Chapel Hill Toffee and Griff's Toffee to Dina's Dynasty. To date, they have raised more than \$15,000 to support ovarian cancer research at UNC Lineberger.

"Every box of toffee sold helps us in our mission to end ovarian cancer," Graves said.

Her mission is twofold, to spread as much awareness as she can about the disease and UNC Lineberger. She has even convinced others in her charity circles to give back to the cancer center. The Polar Challenge Golf Tournament, a community partner event that takes place every year in March, now donates its proceeds to UNC Lineberger, in part, guided by Graves and her good friend, Eddie Sidenstricker, who recruited her to help organize the annual tournament.

"As Eddie and I took on the planning and execution of the golf tournament, it was important to us to bring the funds raised back home into our own local community," she said.

As she continues to spread awareness about ovarian cancer, Graves is also reminded of the person who got her involved in making her community a priority and helping others.

"Building a fund and creating a cause with my mom's name on it has been the greatest source of healing for me," Graves said. "If cancer has left you feeling lost and scared, you don't have to feel helpless, you can make an impact! Raising money and spreading awareness have given me a way to channel my grief into action. Rather than sitting with my anger and sadness, building this fund has made me feel like I'm actually doing something." 



Due to COVID-19 restrictions, this year's Polar Challenge will be a virtual fundraiser. Go online and visit polar.maxgiving.bid to find out more.