

—cancer lines—

—in this edition—

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UNC Lineberger's Office of Community Outreach and Engagement has launched a data-driven initiative to describe the cancer burden in North Carolina

Researcher's interest in public health leads to major advances in communicating about vaccines and the risks of smoking



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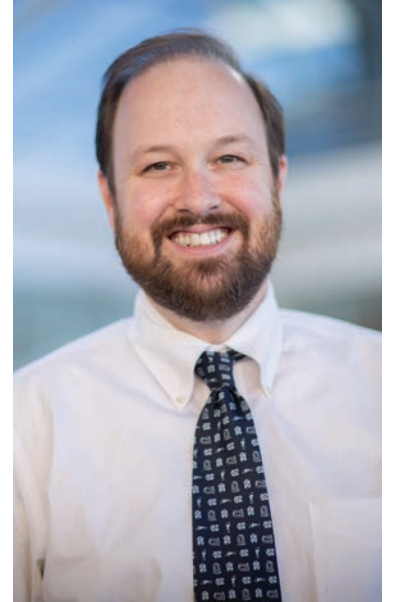
Corona Cares annual campaign raises more than \$300,000 for UNC Lineberger's Comprehensive Cancer Support Program

Husband and wife don't let cancer diagnoses interfere with marriage, children or their futures

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UNC, DUKE TARGET METASTATIC BREAST CANCER



Left to right: Katie Hoadley, PhD, Melissa Troester, PhD, and Benjamin Vincent, MD, each have been awarded a \$500,000 grant to conduct research with colleagues at Duke University.

Komen grants fund Triangle cancer research projects

Susan G. Komen®, the world's leading breast cancer organization, has awarded three \$500,000 grants to support new research projects focused on metastatic breast cancer (MBC). The grants are part of the Susan G. Komen Metastatic Breast Cancer Collaborative Research Initiative, an innovative, first-of-its-kind collaboration between Komen, the University of North Carolina Lineberger Comprehensive Cancer Center and Duke

Cancer Institute. The initiative is an effort to pair researchers from each of the organizations to work together to advance patient care and improve patient outcomes.

"We know that finding the cures for breast cancer will only be accomplished by working together through innovative research," said Paula Schneider, Komen's president and CEO. "It's this strong belief

SEE KOMEN, PAGE 4

—director's message—

H. Shelton Earp, MD

As we approach the end of 2021, I'm optimistic about the year to come for your cancer center. We've had some challenges this year with COVID, but we've still managed to make great progress in cancer research and care, thanks to our dedicated team of researchers, physicians and staff. This forward motion is very much your doing, as well. We couldn't make the strides we do without support from donors like you.

As our cancer center evolves, we

want to put our best foot forward and highlight what sets us apart. Our research excellence and top-notch clinical care for all patients, remain key points of pride. We want to get this message out to as many people as possible. Communicating these ideas with a broad range of audiences is a key strategy for us, and as you can see, we have updated the look and feel of our Cancer Lines publication into a new, more modern direction to better reflect what's going on at

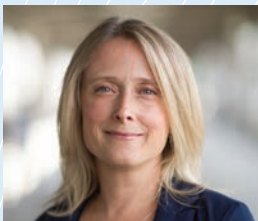


UNC Lineberger and the North Carolina Cancer Hospital, the clinical home of your cancer center.

SEE DIRECTOR, PAGE 7

— honors & awards —

Marjory Charlot, MD, MPH, MSc, was named the 2021 recipient of the Conquer Cancer Advanced Clinical Research Award for Diversity and Inclusion by Conquer Cancer, the American Society of Clinical Oncology (ASCO) foundation.



Melissa Troester, PhD, was named a Komen Scholar by Susan G. Komen®, the world's largest nonprofit funder of cancer research. Troester is one of six breast cancer researchers and three patient advocates who will serve in an advisory role to Komen.



Jenny P. Ting, PhD, was honored with the 2021 ICIS-Pfizer Award for Excellence in Interferon and Cytokine Research in recognition of her outstanding discoveries in the fields of immunology, molecular biology, genomics, and microbiology.

The National Institute of Dental & Craniofacial Research has awarded Antonio (Tony) Amelio, PhD, a five-year, \$2.49 million research project (R01) grant to investigate the molecular mechanisms that control tumor cell differentiation in mucoepidermoid carcinomas.

Rachel Hirschey, PhD, RN, has received a five-year, \$795,103 National Institute on Minority Health and Health Disparities Mentored Patient-Oriented Research Career Development Award.

UNC Lineberger Comprehensive Cancer Center recently recognized Hao Guo, PhD, Christine Roden, PhD, and Chase Andrew Weidmann, PhD, for the Pagano Award.

UNC Lineberger awarded Juan Carvajal Garcia, PhD, and Dan Michaud, PhD candidate, with Graduate Fellow Awards in Basic Science.

— upcoming events —

march The Blue Ribbon Run will be held in late March in Wilmington, N.C.

april 14 8th Annual She ROCKS Fundraiser Luncheon, Wilmington, N.C.

may 7 Derby and Dancing, Chapel Hill, N.C.



21 The Victory Ride to Cure Cancer, Raleigh, N.C.

Expanded community data project will improve understanding of cancer

For UNC Lineberger, involving the community in cancer research programs is critical in developing a better understanding of cancer and its impact in all 100 counties in North Carolina. This is the mission of UNC Lineberger's Office of Community Outreach and Engagement (COE), which has begun a major, new data-driven initiative that will comprehensively describe the cancer burden in North Carolina, including factors that influence cancer patterns and outcomes, and especially the needs of cancer patients throughout the state and the resources available to support them.

"Our goal with this comprehensive effort is to generate insights that will improve our understanding of cancer in all 100 North Carolina counties. We are thinking broadly and deeply about the best ways to get answers to what we don't yet know," said UNC Lineberger Director Shelley Earp, MD. "These insights will influence how we approach cancer prevention, early detection and treatment research as well as cancer and survivorship care. It will also help to increase cancer awareness for patients, communities and the public."

The Community Health Assets and Needs Assessment (CHANA) contains three phases and eventually will be

a one-stop resource for downloadable, shareable, aggregate and deidentified data, including:

- Collation and analysis of existing public datasets: CHANA is compiling information that is already collected by a range of sources, such as the U.S. Census, and making them available in a downloadable, understandable format.
- In-depth analysis of other secondary data: the Cancer Information & Population Health Resource (CIPHR), a data-rich core internal resource UNC Lineberger built with funding from the University Cancer Research Fund contains state cancer registry data, health insurance claims data and other information used by UNC researchers to study screening patterns, cancer treatment, outcomes, survivorship and end-of-life care patterns, and other trends for population-based studies of cancer. Under the leadership of Chris Baggett, PhD, CIPHR faculty director and assistant professor, relevant data will be pulled from CIPHR for this project to shed more light on cancer care and patient experiences in North Carolina.
- Primary data collection: Population-level surveys and qualitative focus groups and interviews with people who have had cancer and with the public at large will provide information about patient experiences, preferences and resources across the state. UNC Lineberger has already awarded six pilot grants to healthcare providers, patient advocacy groups and other community organizations to begin to conduct these assessments within their communities.

"For us, the compilation of these data is a way to clarify in a more comprehensive way the cancer needs and

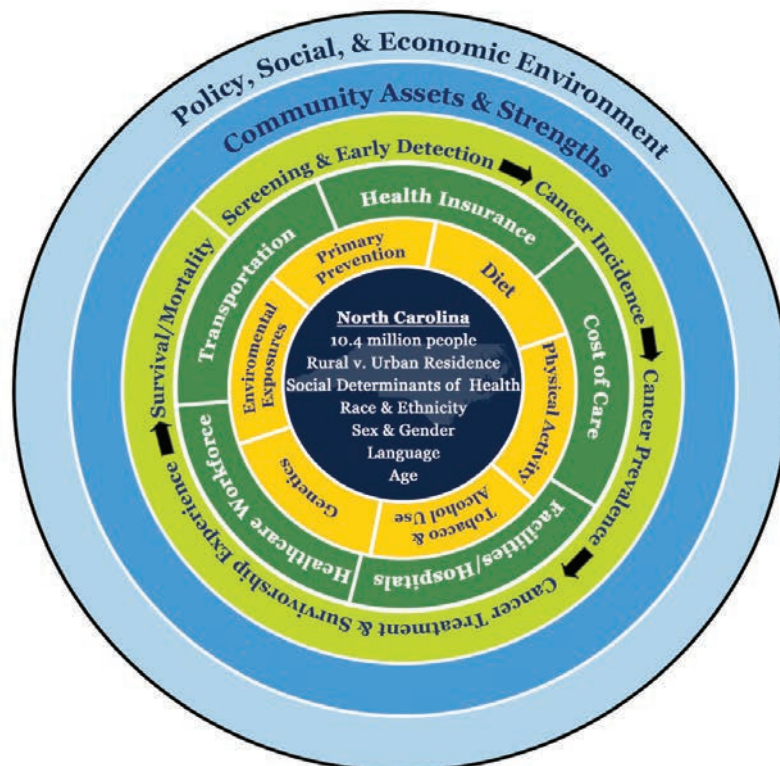
SEE CANCER, PAGE 7



Wheeler



Olshan



North Carolina Cancer Health Assets and Needs Assessment

- NC Population Characteristics
- Cancer Risk Factors
- Healthcare Resource and Access
- Cancer Burden and Needs
- Local Context
- State and National Context

Public health leads researcher to communication advances

UNC Lineberger's Noel Brewer, PhD, has always been fascinated by health behavior. Why do we respond to the things we do? What triggers our preventive actions one way or another?

Brewer, the Gillings Distinguished Professor in Public Health, thought he'd find the answers to these questions while studying economics at University of California Santa Cruz, but he found that economic theories of behavior didn't satisfy his curiosity. That led him to psychology and then to public health.

"I discovered I cared more about the health outcomes than the psychological explanation, and public health allows me to focus on those outcomes and how people are living their lives," Brewer said.

He was involved in public health efforts in San Francisco, where he volunteered with the Stop AIDS project to help educate other gay men about safe sex. He started thinking about graduate school and wanted to pursue something that piqued his interest, since he found his volunteer work rewarding. At Rutgers University, Brewer pursued a master's degree and doctorate in psychology, focusing on psychological science with an emphasis on medical decision making, and began working in vaccination behavior as a post doc. A faculty position opened up at UNC Gillings School of Global Public Health, and Brewer headed south to Chapel Hill.

"UNC has an unusual nexus of outstanding schools and departments," Brewer said. "Public health and medicine, nursing, pharmacy, psychology, journalism, economics, all within a few minutes' walk, with the cancer center helping stitch everything together. I can't think of another university with similar excellence in all these areas."

Brewer often collaborates with researchers on his work with cancer prevention behaviors, and it has expanded far beyond those days he spent talking to small groups in San Francisco about health issues. Currently, he researches topical issues like communicating about vaccines and health warnings about e-cigarettes and smoking. The work Brewer is doing at UNC Lineberger has national and global implications.

Brewer and his team just received \$11.7 million in funding from the National Cancer Institute to study health care systems in both urban and rural settings to learn how a provider's entire team can contribute to HPV vaccine recommendations, what motivates providers to recommend HPV vaccines, who should facilitate training, and what kind of communication interventions are most cost effective.



UNC Lineberger's Noel Brewer, PhD.

The interventions will leverage Announcement Approach Training (AAT), developed by Brewer and UNC Lineberger's **Melissa Gilkey, PhD**. This training aims to make discussions about HPV and other adolescent vaccines quick and effective for primary care providers.

"Parents value vaccines, but they have more questions about HPV vaccine than any other adolescent vaccine," Brewer said. "The Announcement Approach helps providers communicate quickly about HPV vaccine, letting parents know it prevent six cancers. If questions come up, the provider slows down to learn the main concern and address it using research-tested messages."

Brewer's vaccine communication approach is now considered a best practice by the Centers for Disease Control and Prevention and the American Academy of Pediatrics, and the methods are being used in 17 states and have been implemented by more than 1,700 providers, becoming the standard of care.

Brewer also led a clinical trial that examined the effects on smoking behavior caused by adding pictorial warnings to the fronts and backs of cigarette packs. He and his team, including UNC Lineberger's **Seth Noar, PhD**, and **Kurt Ribisl, PhD**, found that smokers whose cigarette packs had pictorial warnings were more likely to try to quit during the four week trial, with

40 percent of smokers in the pictorial warning group making an attempt to quit compared with 34 percent in the text-only warning group (a relative increase of 18 percent). In part due to the trial findings, the U.S. Food and Drug Administration is implementing the pictures in the coming year on all cigarettes sold in the U.S.

With the global pandemic, Brewer's vaccine work is more relevant than ever, but he also has a personal stake in cancer care and prevention, since both his parents succumbed to the disease.

"I originally took on this work to understand why people get cancer screening tests and HPV vaccine. It was as close to decision making psychology as you can get in public health," he said. "My mother's death from cervical cancer reminded me how important this work is, and slowly I was able to make sense of her passing. It does add meaning to the work."

Philanthropic support has also been integral for Brewer's successes in the lab. NIH grants are often large, money-wise, but are slow getting into researchers' pockets. Brewer said having access to private philanthropic funds allows for a quicker turnaround.

"Some of my most important work has been funded by donations, some from foundations, the cancer center, and other organizations," he said. "Rapid access to these funds puts me two or three years ahead of the competition. It keeps me and UNC on the cutting edge. We're competing with large endowments at other research centers, and we need every advantage we can get."

While the impact of Brewer's reach is felt across the globe, at home in Chapel Hill, his role is husband to Jon Mozes, and raising their two children, ages 1 and 3. His days are spent at children's museums or the farmer's market, where he can spend quality time with his family. His guilty pleasure is watching online bridge games. "Some people like to watch sports, but I like to watch online bridge. It's amazing to watch these players use an insight about their opponents' cards to conjure a win out of thin air. It's like science, but the results come in minutes not years," he said.

Brewer grew up in northern California, and still has a brother in San Francisco, but he said he is content to stay in Chapel Hill. He's been to lots of places but said he has yet to find somewhere better.

"Staying here is a deliberate choice," he said. "UNC has one of the best cancer prevention and control faculties in the world. It's hard to imagine going somewhere else that is less on the ball with behavioral science. It's a wonderful place." 🦋

"Some of my most important work has been funded by donations Rapid access to these funds puts me two or three years ahead of the competition. It keeps me and UNC on the cutting edge. We're competing with large endowments at other research centers, and we need every advantage we can get."

- Noel Brewer, PhD, Gillings Distinguished Professor in Public Health

CORONA CARES

Corona Cares campaign raises more than \$300,000

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

This year's campaign reached an exceptional milestone, bringing in more than \$300,000 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. The program has raised more than \$3 million during the past 10 years.

The campaign donates 25 cents

of 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.

Among its array of services, 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 utility bills, rent and groceries.

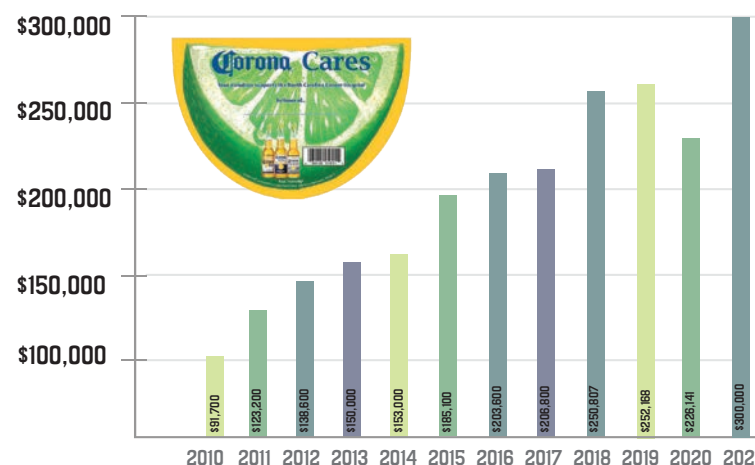
"It makes it a little bit easier for patients to make it to their appointments, if they don't have

to choose between a copay and their rent," said CCSP Director Donald Rosenstein, MD. "We get so many people from all corners of the state, and what we're able to do for those with limited resources is augment our clinical services here at the hospital."

Corona Cares was the idea of Rodney Long, CEO of Long Beverage. Long and his daughters, Corie and Macey, wanted to give back after they lost their wife and mother, Mary Anne, to colorectal cancer.

In addition to creating the Brighter Image Boutique and naming the Mary Anne Long Patient and Family Resource Center after her, Long was looking for other ways to help the cancer community.

FUNDS RAISED EACH YEAR GOING TO SUPPORT CANCER PATIENTS AND THEIR FAMILIES



"I wanted to do an ongoing thing, and we needed a program to help raise annual revenue," Long said. "I came up with Corona Cares. It's been a very successful program, and it continues to amaze me that we're

able to raise as much money every year. Ongoing annual fundraisers become more difficult every year, but we are successful through the graciousness of Constellation Brands and all my fellow North Carolina wholesalers." 🍹

komen *Continued from page 1*

in the power of collaboration to advance discovery that led to this novel partnership between some of the leading researchers at two institutions that are known for their rivalry."

These three grants fall under Komen's two primary research priorities, which are to find new ways to prevent, detect and treat metastatic and aggressive breast cancers, as well as to understand and overcome the inequities that lead certain people and communities to have higher rates of mortality from breast cancer.

"This bold investment by Komen and its supporters is aimed at changing our fundamental understanding of metastatic breast cancer," said UNC Lineberger Director **Shelley Earp, MD**.

"Combining the creative minds of two of the country's premier cancer centers is the way to probe the long-standing problem of breast cancer spread. Each of these approaches will yield groundbreaking knowledge to develop better, more effective treatments by harnessing a patient's own immune system and will identify the biological and societal drivers that contribute to disparities in breast cancer outcomes among Black and white women," said **Lisa Carey, MD, FASCO**. Carey and **Chuck Perou, PhD**, co-leaders of UNC Lineberger's Breast Cancer research program, led the selection process.

"Metastatic breast cancer remains a major challenge and this visionary funding mechanism brings together outstanding investigators and physicians from two neighboring institutions in collaborative projects that will make a difference for women in the state of North Carolina and around the country," said Michael B. Kastan, MD, PhD, executive director of the Duke Cancer Institute.

Research project grants

Breast Cancer Disparities Collaborative Research Grant

Thanks to a \$500,000 lead gift by Blue Cross and Blue Shield of North Carolina (Blue Cross NC), the Susan G. Komen and Blue Cross NC Metastatic Breast Cancer Disparities Collaborative Research Grant was awarded to a research team led by Jennifer Freedman, PhD, and Steven Patierno, PhD, of Duke Cancer Institute, and **Katie Hoadley, PhD**, of UNC Lineberger, who will investigate how the ancestry of different populations impacts the immune response to metastatic breast cancer.

The study leaders identified biological differences in certain genetic events (called RNA splicing) in tumors between those with African versus European ancestry. The team seeks to determine if these differences cause breast cancer cells to grow and spread more quickly in patients of African descent and contribute to higher metastasis and death rates among Black women. Improved understanding of these underlying molecular mechanisms may lead the way to better treatments and outcomes.

North Carolina Metastatic Breast Cancer Collaborative Research Grant

Thanks to a \$500,000 gift by Gilead Sciences, Inc., the Susan G. Komen and Gilead Sciences, Inc. for North Carolina's Metastatic Breast Cancer Collaborative Research Grant was awarded to a research team led by UNC Lineberger's **Melissa Troester, PhD**, and Terry Hyslop, PhD, of Duke Cancer Institute, for their project that will seek to use information on tumor biology and social factors in UNC's long-standing Carolina Breast Cancer Study (CBCS) to understand racial differences in breast cancer metastasis and death. Researchers will also evaluate how life stress contributes to higher metastasis rates and

worse breast cancer outcomes in Black women when compared to white women. They aim to develop specific interventions to reduce metastasis that consider multiple factors from basic biology to societal factors to order to improve outcomes for Black women.

"As metastatic breast cancer disproportionately impacts Black women, this innovative research to better understand evidence-based solutions to improve outcomes for Black women is crucial," said Bill Grossman, MD, PhD, Senior Vice President, Oncology Therapeutics, Gilead Sciences.

Supporting triple negative breast cancer research

Thanks to funds raised by individuals and organizations in North Carolina and across the country, Komen awarded a research team led by **Benjamin Vincent, MD**, of UNC Lineberger and Zachary Hartman, PhD, of Duke Cancer Institute, with a \$500,000 grant for their project to develop a personalized anti-tumor vaccine strategy for patients with advanced Triple Negative Breast Cancer that would mobilize the body's immune system (T-cells) to shut down tumor growth and metastasis.

Spearheaded by Komen Development Director Pam Kohl, who is living with MBC, the Komen Collaborative Metastatic Research Initiative seeks to raise funds with the hope of accelerating discovery by connecting leading researchers from these two leading institutions. These three grants are the initial awards from this initiative.

"Currently, there is no cure for MBC and the treatments are difficult at best," said Kohl. "Research is HOPE for the far too many of us who are living with MBC. This disease is smart, and it is relentless, but I know that these brilliant researchers at UNC and Duke will work every day to help give us the gift of time." 🍹

Couple unified throughout cancer, caregiver struggles

When a significant other is diagnosed with cancer, it can be just as hard on the loved one as it is on the patient. They often attend doctor's appointments, infusion sessions and take on caregiver roles while at home. One Cary, North Carolina, couple, however, found themselves experiencing both roles when they were each diagnosed with cancer years apart.

Stephen and Jackie Alston were planning to get married in 2016 when Jackie Alston, 58, got an annual physical that wasn't so routine. At the time, the single mom of two was showing no symptoms, but her platelet counts were unusually low and kept dropping. Her doctor ordered a bone marrow biopsy, and shared the results with UNC Lineberger's **Joshua Zeidner, MD**, at the North Carolina Cancer Hospital, the clinical home of UNC Lineberger.

"He called me and said 'I have all the results, but something just isn't lining up.' I thought it was a bad dream," she said. Another biopsy revealed Jackie Alston had leukemia, something that shocked her to her core.

"How do I go from prepping for a half marathon, running a 5K, and then having leukemia?"

Jackie Alston's diagnosis had thrown their family and their wedding plans into disarray. Their wedding was set for September 2016, but Zeidner told her she'd be recovering from her bone marrow transplant then. She had plans for the year that included graduations and dropping a child off at college on top of her nuptials.

"It was tough because we'd just gotten engaged," she said. "I said 'I'm OK if you want to call this off, because this is not what you signed up for,'" she said.

But Stephen Alston, 64, was all in. He eagerly accepted his role as a caregiver and soon-to-be groom, and the pair were married in June, 2016, ditching their September plans and making it work so family members and friends could attend both Jackie's daughter's high school graduation and their wedding.

"I was her caregiver," Stephen Alston said. "When she got through it all, it was an adjustment for me to stop being a caregiver and be a husband."

But that changed in 2019, when Stephen Alston became the patient and Jackie Alston took on caregiver responsibilities. Stephen was having trouble swallowing, and his physician referred him to the N.C. Cancer Hospital. After blood work and an examination, he was diagnosed with oral cancer and was treated with chemotherapy and radiation, which took a toll on his body.

"It wasn't a walk in the park," he said. "I lost 30 pounds and was close to getting a feeding tube."

But Stephen Alston's care team had other ideas. Working with UNC Lineberger's **Bhisham Chera, MD**, and **Shetal Patel, MD**, Alston was enrolled in Chera's de-intensification clinical trial, something Stephen Alston said was the right decision for him.

"I feel like I stumbled into the best possible solution," he said. "If I had to do standard of care, I'd have had a feeding tube. [Chera] helped me. The clinical trial reduced the chemo and radiation, duration and intensity for all that. I was really grateful that it turned out the way it did."

The Alstons both count their blessings daily, and they said their faith helps them keep them motivated and an active lifestyle keeps them going.

"My faith is important," Jackie Alston said. "I can't begin to imagine going through this without faith. I don't know how people go through times like this without prayers to God. I had too much to live for. I wanted to see my grandkids, and I was embarking on a new life with Steve. I was not giving up. There was fight in me."

"Our faith was a stronghold," Stephen Alston said. "We had support from our friends from church. You shouldn't be bashful to take people up on offers to help. It blessed us to allow them to do that."

The couple stay active, too, focusing on clean eating and keeping their bodies in motion, something they did before their cancer but now find makes a bigger difference in their lives.

"We're still active, and when [your care team] encourages you to get out of the bed and do something, we took that to heart," Stephen Alston said.

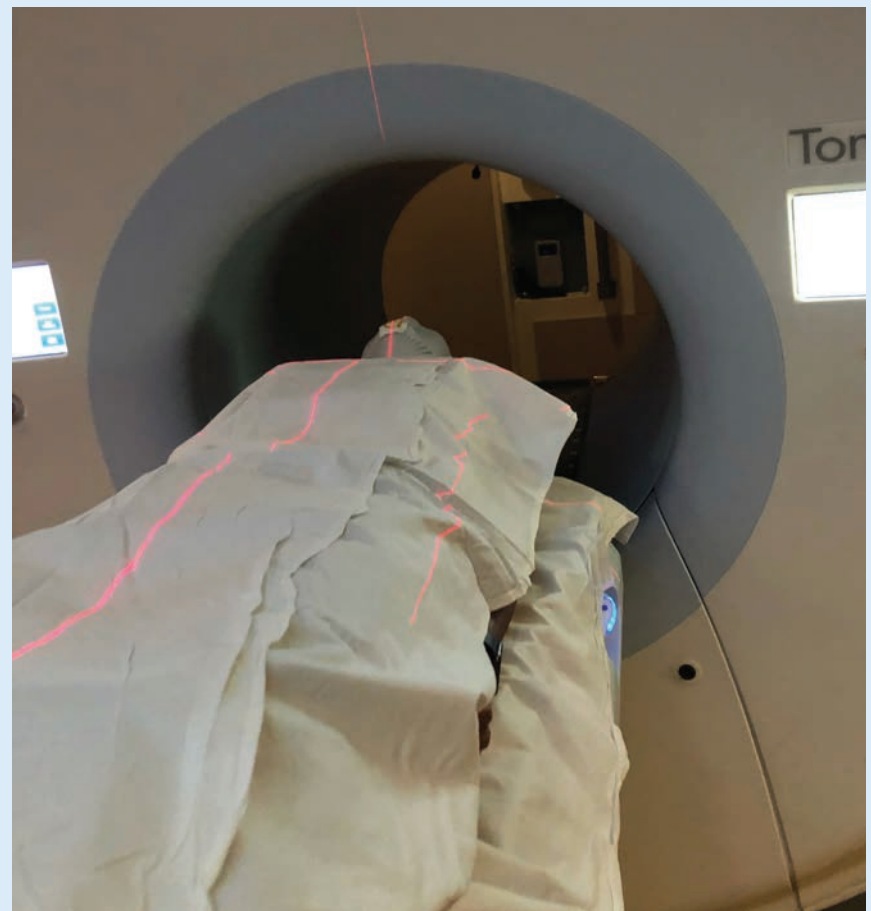
Stephen Alston is still doing follow-up appointments, and he has been under active surveillance for prostate cancer since 2005. Jackie just had an appointment with UNC Lineberger's **Kataryzyna Jamieson, MD**, and has had no recurrence of disease.

The Alstons are grateful to each other for taking on caregiver roles and their care teams at the N.C. Cancer Hospital for helping them get healthy again.

"Both of us connected at a personal level with our caregivers, our nurses, our radiology techs. We'd have conversations with them, and it added a personal touch," Stephen Alston said. "We are grateful for the entire team at the N.C. Cancer Hospital, especially the people in the trenches." 🙏



Above: Jackie and Stephen Alston got married while dealing with Jackie's cancer diagnosis. Below: Stephen Alston received treatment for head and neck cancer.



Zeidner

Chera

Patel

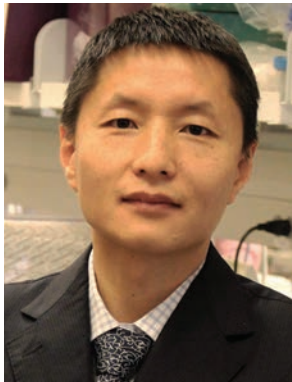
— research briefs —

THERAPY USING DUAL IMMUNE SYSTEM CELLS CONTROLS NEUROBLASTOMA

A newly developed immunotherapy that simultaneously uses modified immune-fighting cells to home in on and attack two antigens, or foreign substances, on cancer cells was highly effective in mice implanted with human neuroblastoma tissue, according to UNC Lineberger researchers. The dual targeting restricted regrowth of the tumor as well as prevented the neuroblastoma cells from evading the attacking immune cells.

“Tumor cells are characterized by a mixed expression of antigens, and we engineered dual immune-system T-cells to maximize their capacity to prevent tumors from evading detection by the immune system,”

said **Hongwei Du, PhD**, a postdoctoral fellow at UNC School of Medicine. “Furthermore, the modified T-cells were also able to receive important signals, which is somewhat unique as there have been many challenges in getting certain types of immunotherapies to overcome the unfriendly tumor environment found in solid tumors.”



Du

“We know that certain CAR-T therapies are safe for patients with solid tumors, but so far treatments have not led to the degree of tumor regression we would like to see,”

said **Gianpietro Dotti, MD**, co-leader of the Immunology Program at UNC Lineberger. “We ultimately designed a strategy that simultaneously addresses the most challenging tasks in solid tumors, such as generating CAR-T modified cells that rapidly eliminate the tumor and persist in controlling tumor growth.”



Dotti

GEL ENHANCES CAR-T BENEFITS IN BRAINS WITH GLIOBLASTOMA

Pairing a newly developed gel with immunotherapy that was delivered to post-surgical mouse brains with glioblastoma, a highly malignant and deadly cancer, improved the immunotherapy’s effectiveness.

In this mouse study, the CAR-T modified cells and gel were placed to fill in the area where a glioblastoma had been surgically removed.

“We developed a gel made of fibrin, a protein most often associated with helping blood to clot. Applying a gel substance to an area of the brain to

aid CAR-T therapy is unique in glioblastoma treatment,” said **Edikan Ogunnaike, PhD**, a biomedical engineer at UNC. “The gel aided CAR-T distribution in the brain by acclimating the T-cells to the post-surgical wound environment while also stopping the tumor from recurring.”



Ogunnaike

The researchers used concentrations of human fibrinogen, a protein produced by the liver, which was transformed to fibrin with enzymes to develop a porous gel that was mixed with CAR-T modified cells and placed in the post-surgical brain area. The gel created web-like fibrin scaffolds in the brain, where the modified T-cells enmeshed themselves into the pores of scaffolds. Nine of 14 (64%) mice that received the gel and T-cells were tumor free 94 days after treatment, compared to two of 10 (20%) mice who only received T-cells.

“Our approach was beneficial in glioblastoma and we believe that it could also control growth or return of tumors in the brain, eye and other organs,” said UNC Lineberger’s **Gianpietro Dotti, MD**.

CHEMOTHERAPY, IMMUNOTHERAPY BENEFICIAL FOR BLADDER CANCER OUTCOMES

UNC Lineberger researchers reported the beneficial use of chemotherapy plus immunotherapy before surgical removal of the bladder in muscle-invasive bladder cancer (MIBC) in the *Journal of Clinical Oncology*. The regimen reduced the invasiveness of the cancer in 56% of patients in a Phase II clinical trial.

“Downstaging, or treating tumors so that they become less invasive prior to surgical removal, is an important tool in muscle-invasive bladder cancer,” said UNC Lineberger’s **Tracy Rose, MD, MPH**. “If we can treat a tumor pre-surgically so that it regresses to a stage where it is superficial and does not invade the bladder muscle wall, the chances of long-term survival are better.”



Rose



Milowsky

Nearly 25% of all bladder cancers are muscle invasive. Surgical removal of the bladder is performed in many MIBC cases, but often microscopic cancer cells have already spread to lymph nodes, greatly reducing chances of a cure.

“Optimal management of MIBC is a huge unmet need,” said UNC Lineberger’s **Matthew Milowsky, MD, FASCO**, the George Gabriel and Frances Gable Villere Distinguished Professor of Bladder and Genitourinary Cancer Research. “We think that the combination treatment used in our trial may improve outcomes compared with chemotherapy alone, with the aim of ridding micro-metastatic disease so that even a modest improvement in response rates translates to higher cure rates.”

SCIENTISTS UNCOVER NEW MECHANISM THAT ENABLES CANCER DEVELOPMENT

Researchers at UNC-Chapel Hill and UNC Lineberger have uncovered a new mechanism that activates specific genes, leading to the development of cancers.

They showed that a mutation that fuses two unrelated genes can promote a process called liquid-liquid phase separation that occurs inside a cell’s nucleus and enables the formation of compartments with various physical properties that can promote cancers such as acute leukemias.

“Phase separation and its role in cancer has been a missing puzzle piece in understanding the development of human cancers,” said UNC Lineberger’s **Greg Wang, PhD**. “This finding is among the first to link phase separation to development of these terrible diseases.”

The discovery brings new insights to a complex, multistep process that bridges biology and physics. To help unravel this process, the investigators performed laboratory experiments in cancer cells that carried a common gene fusion called NUP98-HOXA9. This aberrant fusion is found solely in blood cells of patients that develop leukemia.

“Because similar gene fusions have been observed in other malignancies, the mechanism we elucidated could explain other types of cancer as well,” said UNC Lineberger’s **Douglas H. Phanstiel, PhD**. “We believe that our research could open up new and innovative avenues to attack cancer cells.”



Wang



Phanstiel

cancer *Continued from page 2*

strengths statewide, so that we can be more strategic in where we invest our and the state's resources, where to grow and expand recruitment and training infrastructure, and where to expand community partnerships," said UNC Lineberger COE Associate Director **Stephanie Wheeler, PhD, MPH**. "But beyond Lineberger, we hope this will serve as a research tool for other researchers and academic institutions, a source of information for policymakers and the legislature, and an easy-to-use resource for patients and communities. Having data about your own community can be powerful."

UNC Lineberger's Associate Director of Population Sciences **Andrew Olshan, PhD**, is lending his epidemiological expertise to the project. He's also connecting CHANA to other efforts on campus, such the environmental mapping work of **Rebecca Fry, PhD**, the Carol Remmer Angle Distinguished Professor in Children's Environmental Health, whose research focuses on environmental exposures to toxic substances are associated with human disease in North Carolina.

"Part of our goal is to provide stakeholders with the big picture and access to specific data that factors into cancer occurrence and cancer outcomes," said Olshan, the Barbara S. Hulka Distinguished Professor in cancer epidemiology at UNC Gillings. "Environmental factors, smoking, obesity, social determinants of health, other community factors all can play a part. If this project is describing the cancer problem from a holistic approach, it can point to ways to intervene or improve prevention to reduce the burden of cancer and improve outcomes. We are striving to make it the best and most informative resource and build a sustainable effort that will be refreshed on a regular basis with new data and new insights."

Lisa Spees, PhD, is an assistant professor in health policy and management at UNC Gillings and an expert in survey methodologies and data compilation. As operational lead, she's

constantly updating the outline of what CHANA will encompass, managing student assistants, and determining how to fill the data gaps.

"Our cancer center's catchment area is the whole state, and that's unique," Spees said. "Because it's so comprehensive, we are collecting data that has not been compiled before. For example, we realized how little information we have about survivorship care, especially those who are off treatment. What supports do they need not just physically, but emotionally and mentally and financially, and what assets are available to them already in the community?"

Highlighting those assets is something that sets CHANA apart from other health assessments, which focus primarily on the burden of cancer and the needs of patients and survivors. That's why community engagement is such a big part of the project – from helping to define what and where the problems are, to providing local resources to help, and to working with researchers on understanding the data and moving forward with solutions.

"From the beginning to the middle and until the end, community is integral to the work that we do," said **Veronica Carlisle, MPH**, COE's senior community health educator, who has built and maintained relationships with countless people and community groups across the state since joining UNC Lineberger in 2002. "Survivors, caregivers, community-based organizations whose focus is on cancer, and faith-based organizations have their finger on the pulse based on their experience and their work. We are looking to address cancer concerns and needs by working together. We can't do it without each other." 🧡



Carlisle

director *Continued from page 1*

We are still sharing great stories on research breakthroughs, dedicated physicians and compelling patients, but we are moving into a new direction visually to help us show off our wonderful faculty and staff in an updated way. You'll still enjoy wonderful stories like our partnership with Susan G. Komen and Duke University to fight metastatic breast cancer. You'll learn about researcher Noel Brewer, whose work on communicating about vaccines is more relevant and topical than ever, and how a husband and wife were both stricken with cancer years apart, but managed to squeeze in a wedding, sent their kids off to college and ran some 5Ks, all while they were on their cancer journeys.

We hope you enjoy our new look, and we look forward to keeping you informed on all the exciting things going on at UNC Lineberger. We continue to make great strides in cancer research, creating advanced care, and your role in that cannot be overstated. We are grateful to donors like you who make our work possible and the cancer journey of thousands of patients with limited means more possible. The new year promises to be a great one as we make the lives of countless patients and families better through therapeutic innovations and patient-centered, compassionate care for the people of North Carolina and beyond. 🧡

Need a last minute gift for the holidays and want to give back to a great cause at the same time? Chapel Hill Toffee generously donates a portion of the proceeds from every box of toffee sold to UNC Lineberger and Dina's Dynasty. Shop at chapelhilltoffee.com/shop



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2



3



5



4

GOLFING FOR THE GALS

1-3: Golfing for the Gals was recently held at the Governor's Club in Chapel Hill on Sept. 20. The annual event, organized by Lisa Milligan, raises funds for UNC Lineberger to support uterine cancer awareness, research and education. This was the second year for the event, and next year's tournament is set for Sept. 19, 2022, at the Governor's Club.

SHEROCKS

4-5: SheROCKS (Research Ovarian Cancer Knowledge Support) the Triad held its dinner and silent auction event recently. The evening featured a picnic supper, program and curated silent auction at Summerfield Farm's Pole Barn in Summerfield, North Carolina. The organization has raised more than \$1 million for UNC Lineberger through events in Wilmington and Greensboro.