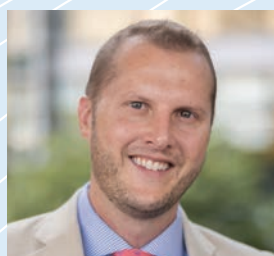


cancer lines

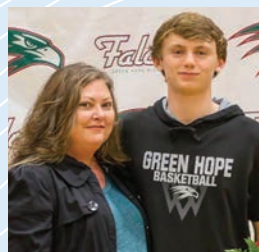
—in this edition—

3



Physician-scientist is focused on RNA discoveries in the lab and the clinic

Young entrepreneur honors mom's legacy with gift, new clinic plan



4

5



Patient values advocacy work as a cancer survivor

— coming soon —

UNC Lineberger recently hosted President Joe Biden's Chief Science and Technology Advisor Arati Prabhakar, PhD, who met with leading researchers to discuss the Cancer Moonshot program and cancer prevention efforts. Story coming in the Spring 2023 edition of Cancer Lines. Stay tuned!



PARTNERSHIP OFFERS BENEFITS ACROSS NORTH CAROLINA

UNC initiative aims to improve cancer screening, outcomes



Left to right: UNC Lineberger's Dan Reuland, MD, MPH, co-director of Carolina Cancer Screening Initiative (CCSI), Kim Schwartz, Roanoke Chowan Community Health Center CEO, and CCSI Deputy Director Alison Brenner, PhD, MPH.

One of the most effective ways to improve outcomes for several of the most common types of cancer is through preventive screening for early detection – yet geographic and demographic inequities often mean that underserved populations have insufficient access to potentially lifesaving tests.

To address these inequities, the UNC Lineberger Comprehensive Cancer Center launched the Carolina Cancer Screening Initiative (CCSI) in 2016. Initially supported by UCRF funding and since bolstered by foundation and federal grant funds, the CCSI leverages UNC Lineberger members' expertise in research-backed interventions – along with a network of community, academic, and government partners – to improve the quality

and accessibility of cancer screening programs throughout North Carolina.

One key research partnership has been UNC Lineberger's work with the Roanoke Chowan Community Health Center (RCCHC), which has helped boost cancer screening rates in northeastern North Carolina while providing new insights into how to effectively improve cancer prevention in rural areas.

“What we know about colon cancer screening is that if you do it, it reduces cancer mortality,” said CCSI Co-Director Dan Reuland, MD, MPH. “We are taking evidence-based practices that are known to improve screening rates, and we are learning how to adapt those practices in this

SEE CCSI, PAGE 7

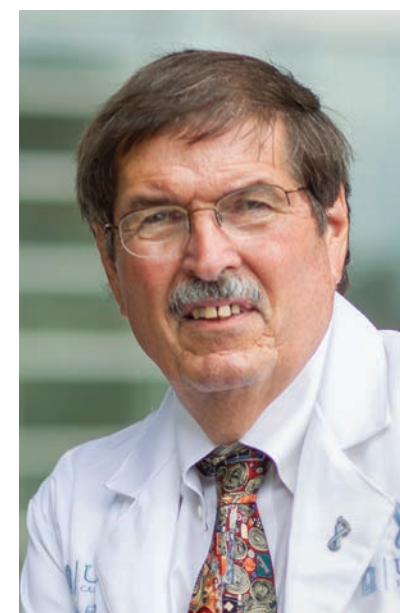
director's message

H. Shelton Earp, MD

I'm pleased to share with you that we've made it through the winter season, some definitive “cold snaps” but can spring be far behind. Your cancer center is renowned for its blend of science and technology, a cross fertilization that's always happening at UNC Lineberger, but particularly this year in our GMP facility, the space that makes our incredible cell therapies research possible. The major expansion of the facility and its operating expenses

are substantial, but this is changing the lives of our patients, and through UNC Lineberger research, lives across the world. The hidden costs are the regulatory, reporting and protocol development expenses and keeping up with the important oversight of the U.S. Food and Drug Administration. But what a potential payoff for patients and loved ones, as the commercial says “priceless.” Our GMP clean room

SEE DIRECTOR, PAGE 7



— honors & awards —



The V Foundation awarded Ian Davis, MD, PhD, a \$1 million, five-year grant for “Novel mechanisms to improve CAR-T cell therapy for pediatric solid tumors.”



The National Cancer Institute has awarded Jennifer S. Smith, PhD, and Lameck Chinula, MD, a five-year, \$3 million grant to help develop studies to assess approaches to scalable, cost-effective screening and treatment strategies to prevent invasive cervical cancer in North Carolina and abroad.

Twelve UNC Lineberger members were named to Clarivate’s 2022 Highly Cited Researchers list, which recognizes scientists who published papers that ranked in the top 1% of cited publications in their field during the past decade. UNC Lineberger members named to the 2022 Highly Cited Researchers list included:

- Ralph Baric, PhD
- Noel T. Brewer, PhD
- Gianpiero Dotti, PhD
- Kelly R. Evenson, PhD
- Katherine A. Hoadley, PhD
- Leaf Huang, PhD
- Charles M. Perou, PhD
- Barry M. Popkin, PhD, MS
- Kurt M. Ribisi, PhD
- Bryan L. Roth, MD, PhD
- Barbara Savoldo, MD, PhD
- Jenny P.Y. Ting, PhD

— upcoming events —

april
22 Tar Heel 10-miler, Chapel Hill, N.C.

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

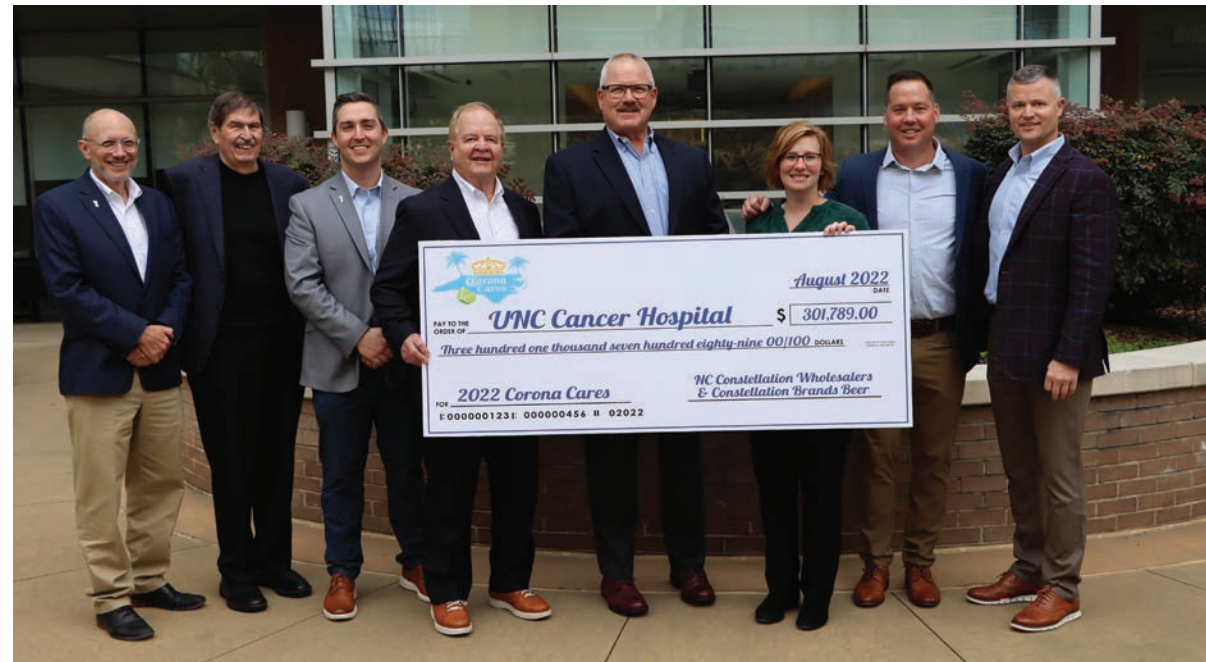
20 The Victory Ride to Cure Cancer, Raleigh, N.C.



26 Chris Perri Memorial Fishing Tournament, Morehead City, N.C.

october
16 Marshall Insley Classic, Springfield, N.J.

Corona Cares supports patients



Constellation Brands and Corona wholesalers across North Carolina have contributed nearly \$3 million to the North Carolina Basnight Cancer Hospital’s Comprehensive Cancer Support Program, which helps patients through every stage of their cancer journey, from diagnosis to survivorship.

For the past 13 years, Constellation Brands and Corona wholesalers and retailers across North Carolina have shown their support for the mission of the North Carolina Basnight Cancer Hospital through the Corona Cares program, raising nearly \$3 million from wholesalers, retailers and convenience stores.

Corona Cares donates 25 cents of every case of Corona Extra, Corona Light and Corona Premier sold during August, as well as 100 percent of all donations from paper limes purchased at cash register checkouts, to the N.C. Basnight Cancer Hospital and Comprehensive Cancer Support Program or CCSP, a multidisciplinary program dedicated to helping patients, caregivers and families with cancer treatment, recovery and survivorship.

Rodney Long, of Long Beverage, was the driving force behind the Corona Cares program, supporting the CCSP in honor of his late wife, Mary Anne, who died from colon cancer. The family wanted Mary Anne’s memory to live on to help other cancer patients during their cancer journeys. The Brighter Image Boutique offers wigs for cancer patients, and the Mary Anne Long Patient and Family Resource Center offers the same support to patients, but on a larger scale and with more resources.

At a recent event to thank Corona Cares program donors and supporters, UNC Lineberger Director Shelley Earp, MD, spoke about the importance of the CCSP and the Mary Anne Long Patient and Family Resource Center, with its focus on improving the lives of cancer patients and their families.

“Close to \$3 million has been used to improve the lives of people who have this disease, and their caregivers and their family members. What you have done for the people of this state and people who come to the state’s cancer hospital is wonderful. And consistently knowing that Constellation Brands are out there thinking about our patients and our families is a thrill to me.”

CCSP Director Don Rosenstein, MD, said the

Linnea Van Pelt, BSN, RN, CMSRN, OCN, LMBT, patient services manager, UNC Oncology Support Services, shared a letter from a Spanish-speaking patient who would often share items from his garden or just stop in to say “hello” to PFRC staff. “He knew that this was a safe place to go, and he would always find help and support here,” Van Pelt said.

“I just wanted to let people know how grateful I am for everything everyone at UNC has helped me with. From support to resources for transportation, lodging, financial assistance to emotional support. The help with lodging helped so much when I had to stay for treatments, and my family and friends had to go back to work during the week, and I had no one to bring me every day.

For them it was hard sometimes, but with the gas card program, I was able to pitch in for gas so they could bring me to my appointments, otherwise I would not be able to make them. I was even given food bags which helped when I had to stay in the SECU house for weeks, and I had no money. Without these programs and resources, many patients would be lost and struggling to get by. Thank you for everything and everyone who gives to these programs. Especially the resource center – the people are so caring and always help me get what I need.”

CCSP’s success serves as a stellar example among cancer centers across the nation for what can be done to support patients, and it wouldn’t be possible without the generosity of Corona Cares donors each year. The CCSP’s programs are also needed across North Carolina, and with a National Cancer Institute-funded study, Rosenstein and his team are able to offer financial assistance and navigation to cancer patients and their families in rural UNC Health locations.

“We have something very special here, and it doesn’t just happen,” Rosenstein said. “It comes from the commitment and vision and resources from a great group of people. To be able to have this support, so steadily, means that great things are possible.”

RNA discoveries drive oncologist’s next chapter

When UNC Lineberger’s Chad Pecot, MD, was studying biomedical engineering as an undergraduate student at the University of Miami in Florida, his aspiration was to one day create medical devices that could change the lives of patients. But at the age of 20, it was his life that was changed when he was diagnosed with testicular cancer.

While undergoing treatment at the same university where he was studying, his newfound perspective as a patient led him to start thinking of a different future than the one he had planned.

“As a patient, I got to live at the American Cancer Society Hope Lodge, similar to our SECU House at UNC, and I got to hang out with a lot of people who also had cancer. It was there that I decided that I wanted to help treat people just like them,” he said.

Pecot’s experience motivated him to go to medical school and pursue a career in medicine. He met his first mentor, the late Pierre Massion, MD, a lung cancer researcher and pulmonologist, while doing an internal medicine residency at Vanderbilt University Medical Center, which piqued his interest in pursuing lung cancer as a specialty. But it was a fellowship at MD Anderson Cancer Center in Houston that made him take up the research mantle, where he met another mentor, Anil Sood, MD, who recommended he consider UNC Lineberger to grow his career as a physician-scientist.

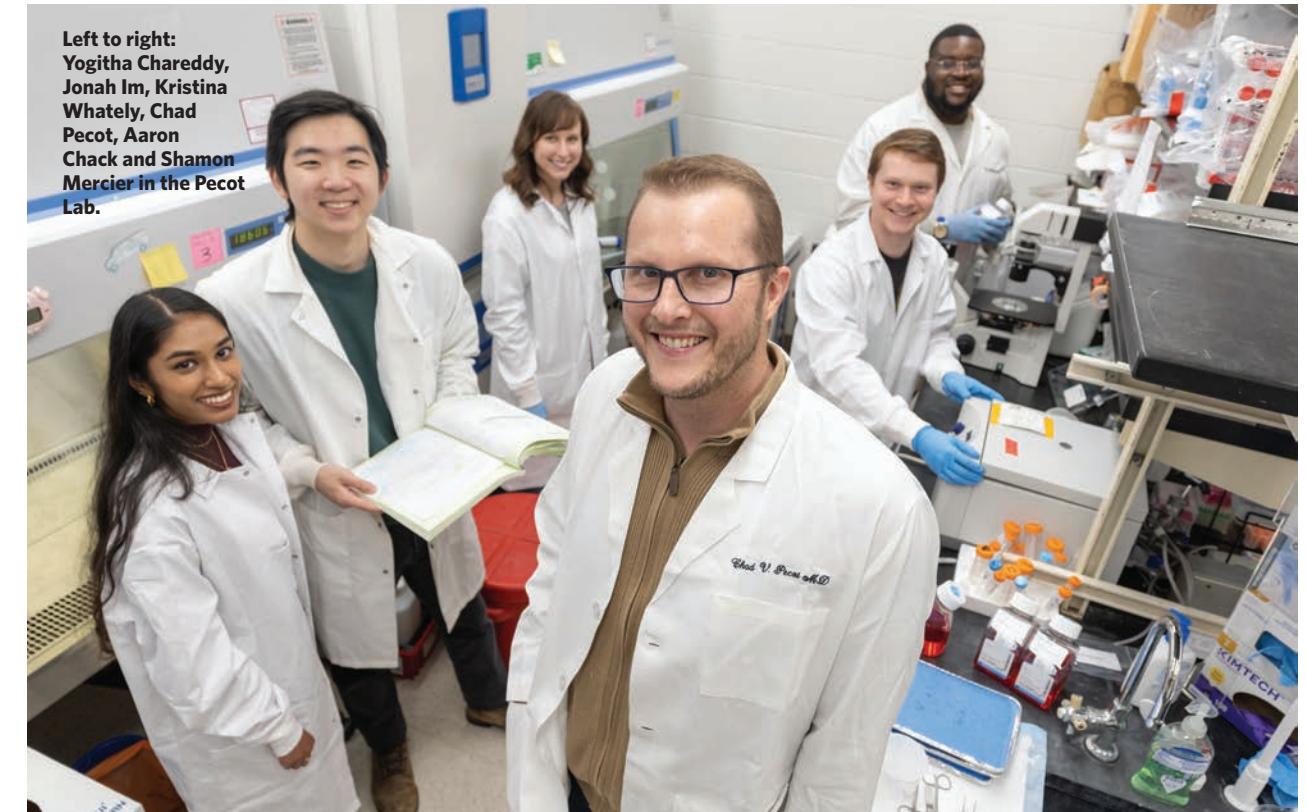
“I was looking for faculty jobs and ended up hearing back from UNC, and Sood strongly recommended that I look there,” he said. “When I came for a visit, it was a place that felt like home. There is a culture of people being friendly and collaborative and excelling at their research. It’s a very collegial environment, and they sold me on that. I’ve believed it ever since, and now I’m nine years in.”

Pecot specializes in caring for patients with lung cancer and conducts research into how various types of RNAs promote the spread of cancer. His lab at UNC Lineberger also studies how RNA can be engineered into cancer therapies. His focus on RNA has led to an appointment as the director of the newly established UNC RNA Discovery Center, an inclusive community of scientists dedicated to investigating all aspects of RNA biology, and he is also the CEO of his own biotechnology company, EnFuego Therapeutics.

“I’m most excited about using engineered RNA molecules as a therapy, which ironically can be used to target ‘bad’ RNAs within the tumor. We recently developed new ways to target these RNA medicines into tumors to interrupt the tumor’s growth,” he said.

Funding helps sustain the forward-thinking research that happens in the Pecot Lab. Pecot’s work has garnered seed grant funding for his work on EGFR-directed Chimeric siRNAs for Dual KRAS+Myc Targeting, a project that combined protein and oligonucleotide engineering, work he completed in collaboration with UNC Eshelman School of Pharmacy’s Albert Bowers, PhD, a UNC Lineberger member.

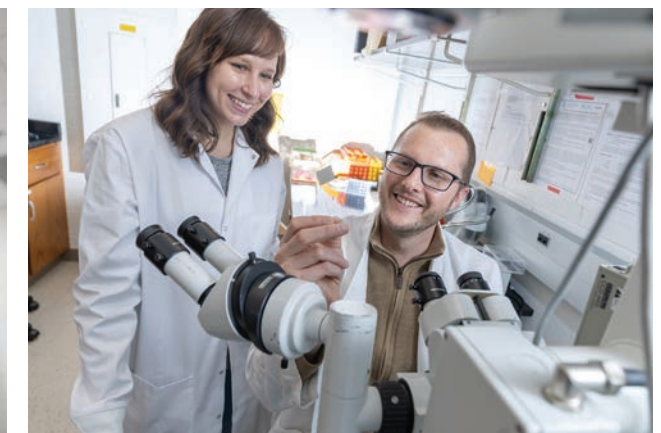
The research involved newly designed chimeric RNA molecules that were engineered into a two-in-one drug for previously “undruggable” cell targets. “Many cancers that have a KRAS mutation also activate MYC down-



Left to right: Yogitha Chareddy, Jonah Im, Kristina Whately, Chad Pecot, Aaron Chack and Shamon Mercier in the Pecot Lab.



Pecot and Chareddy review documents in the lab. At right: Whately and Pecot review slides.



stream, and both are largely considered undruggable targets. For nearly four decades we’ve lacked drugs for these targets, although a lot has been learned about their roles in cancer and how they work in concert together. We’ve found that when we target them both together, you get way more bang for your buck compared to targeting just one or the other.”

“The UNC Lineberger grant allowed us to develop and optimize the RNA molecule and turn it into a drug, then we were able to see what it was doing in tumor models,” Pecot said. “This allowed us to obtain additional funding from the Lung Cancer Initiative of North Carolina, and now we can start studying how the tumor adapts to the drug. Once we get more data about how the tumors develop resistance, I’m hoping to pull this work into a National Institutes of Health RO1 proposal, thus leveraging the work into grants with a broader scope and budget.”

As director of the RNA Discovery Center, Pecot is focused on capitalizing on the advancements made in RNA research and moving it further into the future with possibilities like cancer vaccines, using engineered RNAs as medicine, or using small molecules to drug RNA. One of the ultimate goals of the RNA Discovery Center is to

see RNA medicines be given to patients being treated at UNC, truly bringing the bench to the bedside.

Pecot hasn’t forgotten his time as a patient and those experiences still guide him in his clinical work and research today.

“I think about how I’ve really come full circle, from where I started with cancer as a college student, to becoming a cancer doctor and developing medicines that could hopefully help society,” he said. “Getting cancer made me focus on cancer patients, and the innovation of how we create medicines for others is energizing for me. Seeing the patients in the clinic, running a lab, discovering the ways in which cancer grows and spreads, and engineering the molecules to create new medicines is a lot to juggle, but it’s really fun.”

And UNC Lineberger gives Pecot the opportunity to innovate and grow as an entrepreneur, as well. “I feel appreciated and supported, and it’s such a fertile environment to grow and be happy in. It’s a special place,” he said.

When he is not in the lab or the clinic, Pecot enjoys spending time with his family – he and his wife have two daughters – and he enjoys walks on the beach and mountain biking near his home in Pittsboro, North Carolina.

Mom’s memory inspires new parenting clinic

Chris Hall, 22, a senior at UNC-Chapel Hill, has taken a low point in his life and turned it into something positive, all in memory of his mother, Lynn, who died of triple negative breast cancer in 2018 at age 47. With a head for business and a drive to help others, Hall is working with the North Carolina Basnight Cancer Hospital, the clinical home of UNC Lineberger, to help fund a Parenting with Cancer Clinic through the hospital’s Comprehensive Cancer Support Program, CCSP.

The CCSP provides support to patients and their families, from diagnosis to treatment and into survivorship, and its goal is to help families just like Hall’s.

Hall, a business major who graduates this spring, already has put his business savvy to work, amassing more than \$1.5 million in sales from his online enterprises, monetizing advertising on his social media channels and selling those for a profit, all to keep a promise he made to his mother when she was diagnosed with breast cancer.

“She was declared in remission when I was in eighth grade, and it sparked a little fire,” he said. “It made me think a little bit. I promised myself that I’d pay off her mortgage before I’m 25.”

But his mom’s cancer returned when Hall was a senior in high school. “She sits me down and says ‘it’s come back,’ and we both knew if it came back that that was the end. She had three to six months to live, and the promise I made, that got taken away from me,” he said.

Hall said his mom came from modest means, and her goal in life was to be a lawyer and help other single moms and their children navigate legal issues like custody agreements, divorce proceedings and other complex issues that require legal professionals. But her cancer took a toll, and she wasn’t able to accomplish her dream, sidelined by treatment side effects, time spent getting care and taking care of her son.

At the time, Hall’s online businesses were just getting started, and while he said he raised some funds, it wasn’t nearly enough.

“I couldn’t accomplish the original goal, but I really wanted to keep going and find a way to re-purpose that goal. I gave the gift in a way to honor her,” he said. “This is repurposing what I wanted to do and helping other people in our situation.”

The Lynn Hall Parenting with Cancer Clinic Fund will support the new clinic, co-led by UNC Lineberger’s **Justin Yopp, PhD**, and **Cindy Rogers, JD**, with support from CCSP Director **Donald Rosenstein, MD**, and **Lauren Lux, MSW, LCSW**, director of the Adolescent and Youth Cancer Program. The clinic’s mission is twofold – to help cancer patients with minor children talk to their children openly and honestly about their cancer and to help with legal issues that can accompany cancer, such as end-of-life decisions, wills, trusts and custody agreements.

“We’ve seen more than a few parents have to make hurried decisions for children at the last minute, and that’s not the ideal time. Or they don’t get done at all,” Yopp, a clinical psychologist, said. “By meeting parents where they are and helping them plan these discussions, our hope is to tackle and address them early on so they won’t have to think about it.”



Chris Hall with his mother, Lynn Hall.

Yopp will lead the clinic with Rogers, who has a legal background, and can better guide patients and families who have questions to the right resources to address their concerns. Rogers said patients often need help with legal and health care powers of attorney documents, advance directives and wills, and single parents often need help with custody arrangements in case something happens to them. While the cancer hospital has these resources available, there is often more than just a connection that needs to happen.

“What’s missing is a referral portal for helping our families find competent legal representation for issues of estate planning and guardianship of minor children. This is where we are partnering with the legal community to identify legal resources across the state that can serve as a referral source,” Rogers said. For patients with financial means to retain a private attorney, we’ll help them begin the process of getting help documenting their wishes. For our families with a financial barrier to finding and retaining legal services, we are working with the North Carolina legal community to offer low and pro bono estate planning services.”

Rogers said they hope parents will embrace the clinic’s resources and not be afraid of having discussions of this type with their children and families.

“By engaging early with counseling and legal services

geared specifically for parents with cancer, we hope to support patients while having difficult conversations with their children, partners and other family members, and we hope to help them plan for their future,” Rogers said. “We hope to normalize end-of-life discussions. Putting your affairs in order does not mean giving up hope. It’s a gift to your family to have a plan. Rather than worrying about what might happen, patients can have peace of mind that their families will be taken care of.”

Yopp said the clinic will also feature a research component as he and Rogers learn more about what parents need while going through cancer and can identify areas that need further study.

“Our primary mission is to provide these services for these families, but we imagine we’ll learn a lot and want to do it in a systematic way and figure out what’s most helpful for these families and, disseminate what we do to other cancer centers,” he said.

The cancer hospital is already a national leader with its CCSP program, and Yopp said he isn’t aware of other programs that include both parenting and legal services.

“This isn’t happening at a lot of cancer centers,” Yopp said. “There aren’t programs that integrate a legal component like ours, especially being free of charge to families, so this does feel in some ways like we’re trailblazers.”

“We’re hoping the Parenting with Cancer Clinic will increase referrals from providers for a parent or guardian who may have a minor child, and we’re looking to help.”

The clinic is slated to open in late March and will be available to patients on Wednesday afternoons, with a dedicated space at the Mary Anne Long Patient and Family Resource Center and through telehealth for those who can’t travel to Chapel Hill.

Hall said his mom would be pleased with the clinic’s mission, and she would be proud of what her son has helped build to honor her legacy.

“I think she would say she told me so,” Hall said. “She said ‘you can do whatever you put your mind to, always leave something better than you found it.’ She’d say ‘I knew you could do it,’ and ‘I’m proud of you.’”



Yopp



Rogers

Experience sparks patient’s passion for helping others

Janine Jones has one mission in her life – to be a voice for fellow cancer patients, helping others navigate their cancer journeys, through diagnosis, treatment and survivorship. Jones, 46, is a married mom from Raleigh, and didn’t expect to be on this path when she first heard she had non-Hodgkin lymphoma in 2014.

“At the time I was a CrossFit athlete, and I was in the best shape of my life,” Jones said. “I’d had a cough for a month, and thought it was allergies, and my wife said ‘you need to get it checked out.’”

Jones was generally symptom-free, but after one hard workout, she felt like she had a fever and the flu. After another, her chest felt tight. A nurse at the time, she thought she had strained a muscle, but using a lacrosse ball as a massage tool on her pectoral muscle made her wheeze and cough. A chest X-ray revealed a white shape; a CT scan and a biopsy confirmed it. Jones had cancer.

“They discovered it was lymphoma and was the size of a grapefruit in my chest,” Jones said. “The doctor said ‘we need to get you into the hospital, tonight or tomorrow. I felt scared, because there were a lot of unknowns, but I was excited because I thought we’re going to get it taken care of.’”

Jones was admitted to the North Carolina Basnight Cancer Hospital, the clinical home of UNC Lineberger, the next day, and it was a good thing she was. Doctors told her the cancer was pressing on the upper lobe of her lung and actually pushing her heart out of place, leaving her vulnerable to stroke.

“I had no idea how sick I was. They told me if I didn’t treat it, I’d have two weeks to live,” she said. “That was pretty eye opening. I made the decision to fight, with everything I had.”

She was extremely impressed with her oncologist, who sat down with her, offered her information on completed lymphoma clinical trials and allowed her to think over her treatment options. “It was very empowering to me to know that I was in control,” she said.

Jones went through six rounds of chemotherapy during the next six months. She was admitted to the hospital for a week, and she endured debilitating side effects, including fevers, severe mouth sores and a blood transfusion, but she knew these were the steps she had to take to save her life.

“Through it all, I was the most positive cancer patient you’ve ever seen. I was fighting for my life,” she said.

After chemotherapy, a scan revealed her cancer was down to the size of a Skittle, and she opted for radiation to finish the job. But after treatment, like a lot of patients, Jones wasn’t sure how to go back to her old way of life. She felt lost and fundamentally changed.

“You can’t go back to the old you, when you’ve had a life-threatening diagnosis,” she said. “It’s like going to battle; you’re not the same person when you get out.



Janine Jones used her experience with non-Hodgkin lymphoma to support other cancer patients.

In cancer, you’re in a battle with yourself, and your life is changed. I now see the world in a whole new way.”

But that change in Jones prompted her to give back to others, and she joined the Patient and Family Advisory Council at the N.C. Basnight Cancer Hospital. For the past nine years, she’s dedicated herself to helping patients and their families at the hospital that saved her life, often offering the patient perspective to doctors, nurses and staff to help improve the patient experience.

“I bring the patient voice everywhere I can,” she said. “I teach the medical students, teach the new oncology nurses [how to talk to patients], and I sit in on the cancer hospital executive committee meetings to help bring the experience I had at UNC and illustrate that as learning opportunities moving forward. I like to

“It’s like going to battle; you’re not the same person when you get out. In cancer, you’re in a battle with yourself, and your life is changed. I now see the world in a whole new way.”

– Janine Jones

bring both sides of the perspective. As a former nurse and as a patient, it allowed me to learn a lot and be able to tell my story to help improve processes.”

Jones is also continuing her outreach with patients, offering advice for every step of their cancer journey. She advocates for asking as many questions as possible and having a friend or family member attend appointments to write down pertinent details that overwhelmed patients may miss.

“It’s hard to take it all in and really comprehend what’s



going on day to day. It’s important to have someone you trust to be your voice when you can’t speak for yourself,” Jones said. “My wife never left my side, she was working from the hospital room. She was my rock.”

Jones also stresses that survivorship can bring about its own set of challenges for patients and their families, including depression and other mental health issues, as well as feeling out of place. Following the completion of treatment, some cancer survivors can feel adrift because so much of their time and energy was spent fighting the disease.

“Throughout cancer you’re doing something; you’re taking action. Doing radiation, seeing a doctor, taking chemo, and then everything just drops. You’ve been so focused on this action for so long, if it stops, you’re left hanging,” Jones said. “It’s important to address that post-cancer life,

and see what health care providers can do to provide guidance to survivors.”

Jones’ own experience led her to focus on her mental health, and she urges other survivors to take advantage of support groups specifically tailored to the needs of patients after cancer.

“I have a deep appreciation for how short and fragile life is, and I wish I could bottle that new perspective that you gain and sell it,” she said. “I wish everyone could get that perspective without having to go through what I went through.”

research briefs

SCIENTISTS ID PROTEIN THAT HELPS VIRUSES EVADE IMMUNE RESPONSE

Led by researchers in the lab of **Blossom Damania, PhD**, a study in *Nature Communications* shows how Kaposi sarcoma-associated herpesvirus and Epstein-Barr virus hijack a human protein to help the viruses evade innate immune detection to spread undeterred.



Damania

The viruses Kaposi sarcoma-associated herpesvirus (KSHV) and Epstein-Barr virus (EBV) have been linked to several cancers. Scientists have discovered these viruses use a human protein called barrier-to-autointegration factor 1, or BAF, to evade our innate immune response, allowing the viruses to spread and cause disease.

These findings suggest that BAF and related proteins could be therapeutic targets to prevent these viruses from spreading and leading to cancers, such as Kaposi sarcoma, non-Hodgkin lymphoma, Hodgkin lymphoma, multicentric Castlemann disease, nasopharyngeal carcinoma, and gastric cancer.

“Viruses are in a constant battle with the cellular immune system, which includes the protein cyclic GMP-AMP synthase, or cGAS, which binds to viral DNA and sounds the alarm to trigger immune responses and fight the viral invaders,” Damania said. We’ve discovered that KSHV and EBV use a different host cell protein, BAF, to prevent cGAS from sounding the alarm.”

RACE AND GEOGRAPHY LINKED TO RISKS OF BREAST CANCER TREATMENT DELAYS

For patients with cancer, lengthy delays in treatment can decrease their chances of survival. In an analysis of patients with breast cancer in North Carolina, Black patients were more likely to experience such treatment delays than non-Black patients. Also, patients living in certain geographic regions of the state, regardless of race/ethnicity, tended to experience delays. Their findings were published in the journal *CANCER*.



Reeder-Hayes

Katherine E. Reeder-Hayes, MD, MBA, MS, examined data on patients with stage I-III breast cancer who received surgery or chemotherapy as their first treatment.

Among 32,626 patients, 19% were Black. Investigators found that 15% of Black patients

experienced treatment delays compared with 8% of non-Black patients. Also, patients living in certain regions of the state were more likely to experience delays, with those in the highest-risk region being twice as likely to experience a delay as those in the lowest-risk region. This was the case for both Black and non-Black patients.

IMMUNE SYSTEM B-CELLS CAN HELP PREDICT CANCER TREATMENT RESPONSE

UNC Lineberger researchers have found that measuring activation of immune-system B-cells may be better than measuring either T-cell activation or the total number of immune cells in and around a tumor, called tumor-infiltrating lymphocytes (TILs), in predicting whether HER2-positive breast cancer responds to treatment.

The investigators combined the results of two large clinical trials, CALGB 40601 and PAMELA, to look at different measures of immune system activation. Six signatures of immune cell gene activation from B-cells were better at predicting whether the drugs would completely clear the tumor than measuring immune cell numbers on a microscope slide. These results may allow doctors to be more precise in choosing which drugs and how many drugs to use in treating HER2-positive breast cancer.

“When there are active immune cells circulating around a tumor, the cancer tends to be easier to treat and cure,” said **Lisa A. Carey, MD, ScM, FASCO**, deputy director of clinical science and the L. Richardson and Marilyn Jacobs Preyer Distinguished Professor in Breast Cancer Research at UNC Lineberger and corresponding author of the study that was published in the *JAMA Oncology*. “This is important because determining immune cell activity may allow us to identify which women with HER2-positive breast cancer will do well with standard, or even minimized, therapy.”



Carey

PHYSICIAN TRUST CRITICAL TO ENROLL BLACK CLINICAL TRIAL PATIENTS

Two studies looking at relationships between Black patients with multiple myeloma and their hematologists found that trust, at multiple levels, along with perceived differences in the power structure between patients and physicians, were critical elements that needed to be addressed in order to enhance the enrollment of Black participants in cancer clinical trials.

Shakira Grant, MBBS, the studies’ principal investigator, shared the findings during oral presentations at the annual meeting of the American

Society of Hematology (ASH) in New Orleans on Dec. 10.

Hematologists perceived trust at multiple levels, between the patient-provider and the patient-health care system, as influential determinants of Black patients’ enrollment in clinical trials. Factors that fostered patient-hematologist trust included the length of the relationship, transparent and empathic communication, and shared racial identities of patients and hematologists. They also viewed lack of time, trial availability, and adequate clinical trial infrastructure as barriers to discussing and enrolling Black patients in clinical trials.



Grant

GENETIC ANALYSIS OF BLADDER CANCER OFFERS TREATMENT OPTIONS

A comprehensive genomic analysis in more than 200 patients with metastatic urothelial carcinomas may help inform how a patient would respond to immunotherapy. About 90% of urothelial carcinomas are bladder cancers. The findings were published in *Nature Communications*.

When mutations occur in urothelial cells, which line the urinary system, they can develop into urothelial carcinoma, the most common form of bladder cancer.

“These findings provide a potential way to predict response to immunotherapies by integrating clinical and molecular features,” said **Matthew Milowsky, MD, FASCO**, the George Gabriel and Frances Gable Villere Distinguished Professor.



Milowsky

“Two of the likely reasons for limited use of sequencing-directed treatment were the absence of FDA-approved targeted therapies at the time of patient accrual and the approval and use of immune checkpoint inhibitor therapy during the course of the study,” said lead author **Jeffrey S. Damrauer, PhD**.



Damrauer

CCSI

Continued from page 1

resource context to improve screening in rural areas.”

In 2015, an American Cancer Society study identified northeastern North Carolina as one of three hotspots in the country for colon cancer, with higher-than-expected death rates for disease even after accounting for known risk factors. As a federally qualified health center that provides clinical services throughout five northeastern counties, RCCHC had already been working to improve screening rates by adjusting their operations and improving patient outreach – doubling their screening rates within a year of the ACS hotspot study.

“Our aggressive efforts to improve screening rates is what caught Lineberger’s attention, especially with the dynamic of those national headlines,” said **Kim Schwartz, RCCHC’s CEO**. “They reached out with some conceptual ideas, and we had many meetings and conversations. Their focus has always been, ‘What can we do as a research process that would fit in with what you’re doing – how can we add more value?’ From day one, it has felt like we are all in this together. It’s been a great team.”

Prior studies had already found mail-in fecal immunochemical tests (FITs) can be an effective preliminary colon cancer screening approach when added to usual (visit-based) screening. Partnering with RCCHC to tailor that approach and to build on the center’s existing work and vision, UNC researchers provided technical support to help determine who was due for a screening, mailed screening tests to eligible residents in RCCHC’s service area, gathered results for those tests, and embedded a patient navigator in the northeast to help guide patients whose mail-in kits yielded positive results.

“It’s so easy to do – you do it in private, in your own home,” said RCCHC Lab Manager **Regina Jacobs**, who championed and implemented the center’s operational and outreach initiatives that successfully doubled its screening rates. “You send it in, we get it processed, and we get the results. If it’s positive, we get you on the right path to get help – and we potentially save a life.”

“Keeping these screening rates as high as possible will make a measurable difference in long-term outcomes, so the hope is that we can find some way to transition this from a resource-intensive, randomized control trial to a more sustainable program.”

- Alison Brenner, PhD, MPH

UNC also partners with Blue Ridge Health in the western part of the state as a second site for the study, which is now in its fifth and final year. While the last bits of data are still being collected and analyzed, initial results indicate that sending out FIT tests was an effective screening approach: Of the nearly 2,000 eligible residents who received a FIT kit in the mail, about 25% completed and returned the tests – and more than 80% of patients whose FIT results were positive also followed up with a colonoscopy.

CCSI Deputy Director **Alison Brenner, PhD, MPH**, said the next step is to determine how to sustain the screening initiative to improve long-term outcomes. “Keeping these screening rates as high as possible will make a measurable difference in long-term outcomes, so the hope is that we can find some way to transition this from a resource-intensive, randomized control trial to a more sustainable program,” she said. “But you need resources to do that. Part of the reason we took this on is because the clinics don’t have the resources to do it all.”

In addition to colorectal cancer, the CCSI focuses on breast, cervical, colon, liver, and lung cancer screening research. UNC Lineberger was recently named as one of three southeastern U.S. cancer centers on Stand Up 2 Cancer’s Lung Cancer Health Equity Research Team, which – thanks to a \$3 million, four-year grant – are working with federal health centers in Virginia and North Carolina to establish a sustainable infrastructure to improve screening, diagnosis and treatment of lung cancer in the Black community. Black Americans are disproportionately impacted by lung cancer and by social determinants of health, which can increase their risk for smoking and limit their access to lung cancer screening and care.

As the colorectal screening study wraps up, **Geniene Jones, MD, RCCHC’s chief medical officer**, hopes to continue the center’s partnership with UNC Lineberger and improve screening for other cancers, like lung cancer. “Cancer is our No. 1 killer, so we are always looking for ways to address it, especially in terms of equity and special populations,” she said.

director *Continued from page 1*

spaces allow engineering of patients’ own cells that we “arm” with virus induced genes that recognize the patient’s own cancer.

Drs Dotti and Savoldo and colleagues develop and create viruses with genes to alter and empower a patient’s T-cells. Drs. Grover, Serody, van Le, Rauf, Hucks and many others are moving us forward in clinical areas never before tested. We’ve been successful at treating leukemias and lymphomas, and possibly some germ cell tumors, and we’re looking ahead to using CAR-T immunotherapy to treat osteosarcoma, neuroblastoma and ovarian cancer. We have just opened a remarkable trial of a new target for glioblastoma, one of the deadliest cancers. Plans are also underway to open trials for pancreatic cancer, and with the amazing support from Lisa Carey’s Triple Negative Breast Cancer Center, a trial in that disease will open later this year. These trials are pushing UNC Lineberger into the national spotlight and are greatly aided by the generous support of our donors.

All that is to say that this is an exciting time here at UNC Lineberger, and you’ll read about some other efforts in the coming pages. You’ll read about a lymphoma survivor who now works with the North Carolina Basnight Cancer Hospital, the clinical home of UNC Lineberger, to help other patients and their families, as well as physicians and oncology nurses and staff communicate better with their patients. Our own **Chad Pecot**, a physician-scientist, will share his latest research insights, as well as what drove him to become a researcher and a doctor. You’ll hear from a current student here at UNC that made a donation to our Comprehensive Cancer Support Program to help create a Parenting with Cancer Clinic, something that sprung from his own personal experience.

I would like to end on a personal note, relaying for those who don’t know, that I lost my amazing wife, **Jo Anne Earp** in November. We were together in a loving partnership for 50 years. She was a wonderful wife and mother and a powerhouse for good in so many spheres of her life and academic career. She served as the department chair at the UNC Gillings School of Public Health and mentored literally hundreds of students as a faculty member, many of whom are now in the national spotlight for their accomplishments. She cared deeply about others, and her career was focused on research that improved people’s lives. I miss her, but continue to think about her legacy and love every day.

GiveUNC
3 · 28 · 23

events



1

SHE ROCKS

1-4: SheROCKS raised \$135,000 for UNC Lineberger at its annual event in Greensboro. The group was founded to bring awareness to ovarian cancer through funding groundbreaking research at UNC Lineberger and to help patients undergoing treatment in their communities.

UNC GYMNASTICS

5: The UNC Gymnastics team held a cancer awareness meet with fans encouraged to donate to UNC Lineberger. The event raised more than \$2,000 when the team hosted N.C. State University.



5



2



3



4