

—cancer lines—

—in this edition—

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Sascha Tuchman, MD, MHS, specializes in multiple myeloma, amyloidosis and related conditions at UNC Lineberger

Longtime supporters Tom and Nancy Chewning make a gift to support CAR-T research



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Richard Kohn, professor emeritus of History, Peace, War and Defense at UNC-Chapel Hill, fought a personal battle with cancer

Former UNC men's basketball coach Roy Williams spoke at the annual Roy Williams' Fast Break Against Cancer

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AUTOPSY SAMPLES YIELD NEW RESULTS

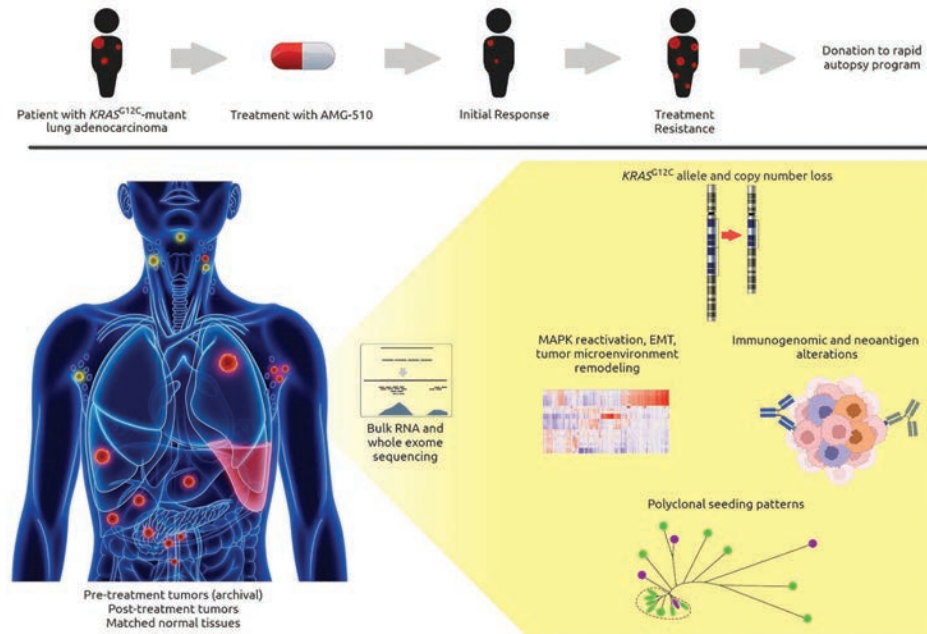


Image courtesy of Journal of Clinical Investigation

Graphical abstract of a rapid-autopsy case of a patient who had a KRAS^{G12C}-mutant lung adenocarcinoma. Using deep-RNA and whole-exome sequencing comparing pretreatment, post treatment, and matched normal tissues, the researchers uncovered numerous mechanisms of resistance to direct KRAS inhibition.

Patient sacrifice expands lung cancer breakthroughs

A UNC Lineberger Comprehensive Cancer Center patient's selfless act has generated insights into a cancer gene mutation that has proven to be so pervasive and perplexing that it has confounded researchers for decades. It even spurred the National Cancer Institute to develop an entire initiative to try to solve numerous mysteries involving RAS gene mutations.

In findings reported January 2022 in the *Journal of Clinical Investigation*, UNC Lineberger's Chad Pecot, MD, and colleagues revealed how they

used tissue and tumor specimens from the patient just after he succumbed to lung cancer to unravel how a KRAS mutation (the most common mutation in the RAS family) developed resistance to a new treatment that had initially proved effective.

"To my knowledge, this is the first and only study in the world thus far using autopsy samples to explore how tumors become resistant to drugs that inhibit KRAS. Ours was a unique approach and we learned a lot from it," said Pecot, an associate

SEE LUNG, PAGE 7

director's message

H. Shelton Earp, MD

As we are hopefully coming out from a difficult two years of pandemic-related problems, I'm amazed and grateful for all the support you have shown us. Our patients have dealt with a number of issues as have our providers and staff, but we're emerging stronger for the experience, and you've been with us every step of the way. I want to take this opportunity to make note of the remarkable advances we've been able to make

at UNC Lineberger with your help, in spite of COVID-19 disruptions.

First and foremost, your support has helped countless patients and their families through the Comprehensive Cancer Support Program. So many during this pandemic had even a harder time with a diagnosis of cancer. Your support has helped them through this difficult time.

You believed in our ability to tackle

SEE DIRECTOR, PAGE 4

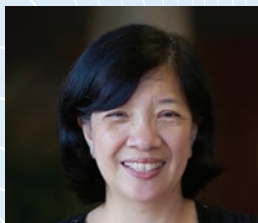


— honors & awards —

Blossom Damania, PhD, left, and Dirk Dittmer, PhD, right, are each 2021 recipients of the Hyman L. Battle Distinguished Cancer Research Award. The two are being honored for their individual high impact research accomplishments that have advanced the field of tumor virology, their service to the UNC School of Medicine and university during the pandemic and their leadership in global oncology and virology programs.



Ralph Baric, PhD, left, and Jenny P. Ting, PhD, right, have been elected to the American Academy of Arts and Sciences, which was founded in 1780 to recognize and celebrate artistic and scientific excellence and to convene researchers from various areas, professions and perspectives.



Paul Dayton, PhD, the William R. Kenan Distinguished Professor of Biomedical Engineering, has been named chair of the Joint UNC-NCSU Department of Biomedical Engineering.



Trevor G. Hackman, MD, FACS, has been appointed chief of the division of Head and Neck Surgical Oncology within the Department of Otolaryngology.

— upcoming events —

july

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The Marshal Insley Golf Classic, Baltusrol Golf Club, Springfield, N.J.



Fast Break raises funds for cancer



Left to right: Former UNC Athletic Director John Swofford, UNC Lineberger Director Shelley Earp, MD, and former UNC Men's Basketball Coach Roy Williams at the recent Roy Williams' Fast Break Against Cancer event. Below: A 1982 team calendar featuring pictures and signatures of all members of the championship basketball team.

The Dean E. Smith Center again proved to be a home court advantage for former University of North Carolina-Chapel Hill Men's Basketball Coach Roy Williams, who helped raise more than \$220,000 – and counting – through the 16th annual Roy Williams' Fast Break Against Cancer, which supports UNC Lineberger Comprehensive Cancer Center. The event has raised more than \$3.2 million since its inception.

The annual event raises funds and awareness for UNC Lineberger's top-notch researchers, dedicated physicians and clinical care programs at a breakfast event featuring guest speakers, as well as a live auction. This year's auction offered items specially selected by Williams, including a 1982 team calendar featuring pictures and signatures of all members of the championship basketball team, including Michael Jordan, and an official North Carolina Department of Transportation Roy Williams Highway sign.

Jones Angell, the voice of the Tar Heels, kicked off the program, and welcomed the former coach to the stage in a spot he knows well, the Roy Williams Court. Williams said being back on the floor was special and admitted he still gets up early thinking about Carolina basketball.

"I still take the games home with me, keep the losses with me, more than I do the wins. I love where our team is. [Coach Hubert Davis] is doing a marvelous job. It's a good job, but it's a hard job."

During his years as head coach, Williams has lost friends to cancer and has also spent many of those years supporting a cause that's close to his heart.

"I lost my mother, lost my father, lost the best friend I had in town. My high school basketball coach has fought cancer and beaten it three times. Everybody here's going to be touched, if you haven't already been, you're going to be touched by this disease," Williams said.

Former UNC Athletic Director John Swofford, who retired in 2021 as commissioner of the Atlantic Coast Conference, was the featured speaker at the event.



"I'm fortunate to have been a part of this great place and this great populace for many years, but we're here because of cancer. Cancer is definitely the most formidable opponent ever," Swofford said. "I don't use the word 'hate' very often. I've always taught my grandchildren not to use that word. But I flat out hate cancer, and I bet that you do too. If it hasn't touched you through yourself, family or friends, you are one lucky individual."

Swofford's life was directly touched by cancer twice; first when his father lost his life to an inoperable tumor at 52, and again when his brother, Bill Swofford, also known as Oliver of "Good Morning, Starshine" fame, died of non-Hodgkin lymphoma at 54.

At just 13 when his father was diagnosed, Swofford wasn't able to do anything for him, but years later, he

SEE FAST BREAK, PAGE 7

Hematologist focuses on multiple myeloma, amyloidosis

Sascha Tuchman, MD, MHS, had high-flying career goals even when he was young. He grew up in the '80s in Long Island, New York, and knew without a doubt what he wanted to be when he grew up – a fighter pilot, just like Maverick in “Top Gun.” Luckily for the medical field, he kept his feet on the ground and went into medicine instead, specializing in hematology, and specifically multiple myeloma and amyloidosis at UNC Lineberger.

“Flying jets wasn’t the most practical career path,” he said of his childhood aspirations. “I eventually was more interested in science, but I didn’t really gravitate toward lab research. I wanted more contact with people.”

Tuchman went to medical school at Georgetown University and did his residency, chief residency and fellowship at Duke Medical Center, where he became interested in cancer as a specialty.

“I realized I wanted to do something in academic medicine, both in patient care and research,” he said. “I wanted to specialize, but I really enjoyed general medicine and taking care of the whole body, not just specific organs.”

That holistic mentality led Tuchman to infectious diseases and hematology/oncology, both of which require one to be a good, general internist and also have specialist expertise. He then embraced the idea of developing drugs to treat and cure cancer one day and turned to hematology/oncology.

Tuchman was on faculty at Duke in 2016 and already well aware of UNC Lineberger’s work in groundbreaking research such as chimeric antigen receptor T-cell (CAR-T) immunotherapy, when he was approached about a possible move to UNC by **Jon Serody, MD**, the Elizabeth Thomas Professor of Medicine, Microbiology and Immunology and division chief of hematology.

“I visited UNC and quickly fell in love with it,” he said. “The research programs were vibrant and unique. UNC Lineberger was an academic medical institution actually developing its own CAR-T, for example. Very few universities can say that. I thought I could help with advancing some huge developments in improving outcomes in multiple myeloma. What a chance to make an impact.”

In his five years since coming to UNC, Tuchman’s vision for the program has been to collaborate with other UNC Lineberger clinicians and scientists to grow the research, expand the myeloma team, and cultivate the next generation of



UNC Lineberger’s Sascha Tuchman, MD, MHS, directs the multiple myeloma and amyloidosis program.

myeloma experts. Regarding research, he has thoroughly enjoyed finding collaborators in unexpected fields. As an example, Tuchman is working with UNC Lineberger’s **Chad Pecot, MD**, a lung cancer specialist. Lung cancer and multiple myeloma are very different diseases, but Pecot is conducting innovative laboratory research focused on developing RNA-based therapeutics that can suppress protein synthesis in cancer cells. That’s something Tuchman thought could be used in multiple myeloma to suppress abnormal proteins, which are a key cause of the problems myeloma causes in patients.

“It’s been a really fruitful collaboration [with Pecot] where we have some

center for amyloidosis, but more recently, UNC has joined only a handful of other centers in the U.S. with an in-person, multi-specialty amyloidosis clinic. A team of physicians specializing in areas like hematology, cardiology, neurology and nephrology sees patients on the same day in the same place. Since patients often come from very far away, they appreciate being able to take care of all their appointments in one trip. The clinic has been so successful, they’ve been asked to give talks to other organizations about its logistics.

“Trips to UNC can be really difficult for patients, because they often don’t feel well, and they live far away. In our clinic, once a month, all the specialties are there

of these big ideas possible, and Tuchman said the flexibility private funding provides his team is extremely valuable. The myeloma CAR-T study, for example, is happening entirely with private funding, which Tuchman hopes will result in new treatment options and better outcomes overall. Funding has also launched a broad research initiative into a patient registry.

“Philanthropic dollars have also enabled us to create a one-of-a-kind registry for all patients being treated for myeloma, amyloidosis, or other related conditions here at UNC,” Tuchman said. “We track over time how they’re doing clinically, how their quality of life is, how they feel, energy patterns, sleep, functional impairments, and so forth. We freeze blood samples for analysis later, and we do geriatric assessments. This is the most comprehensive registry in multiple myeloma in the world; to my knowledge there’s no other registry in existence that has the breadth and depth of data we have with the patients we’re following.”

Tuchman said the registry is a vital resource scientifically, and it has also been instrumental in developing future myeloma physicians. Students and medical trainees, including fellows doing specialized training in myeloma and amyloidosis, have studied registry data to learn how to conduct that type of research and also publish high-impact science.

“They’re advancing the field while also gaining the skills to do this on their own someday,” Tuchman said. “That road to independence is critical. They’re the next generation.”

Outside the clinic, Tuchman is a husband and father of three boys, and he enjoys spending time with his family, traveling and learning new languages. He became a Peloton devotee during the pandemic when he wasn’t able to play ice hockey as often as he wanted. Now that traveling is an option again, Tuchman and his wife were able to journey to a new favorite spot, Whistler in Canada, to ski and enjoy time together.

While two of his sons don’t see medicine in their future, his youngest son said he wants to be a UNC hematologist when he grows up, just like his dad.

“He’s 11, and we joke about him coming to clinic now and helping me as a junior hematologist. The funny thing is that if he did go through with it, he’d be finishing training right around when I might retire. He could take over for me as the next Dr. Tuchman. Patients wouldn’t have to learn a new name.” 🐾

“I visited UNC and quickly fell in love with it. The research programs were vibrant and unique. UNC Lineberger was an academic medical institution actually developing its own CAR-T. Very few universities can say that.”

- Sascha Tuchman, MD, MHS

interesting medications that we will someday hopefully put into clinical trials to help patients,” he said.

Tuchman is also creating clinical collaboration in a team setting to treat patients. He is particularly proud of the monthly multidisciplinary clinic they established for amyloidosis, a rare, often fatal disorder that affects many different organs. UNC has long been a national specialty referral

to all evaluate the same patient in real time. It’s much easier on the patient and great for us physicians because we can discuss a patient right there and formulate a comprehensive, multi-specialty clinical plan for the patient,” he said. Tuchman notes that his colleague and mentee, **Sam Rubinstein, MD**, has taken the lead on this novel and important initiative.

Private philanthropy helps make some

Parents, supporters create new fund for CAR-T therapy

Tom and Nancy Chewning have experienced cancer on a personal level, helping their daughter through a bout with breast cancer, as well as other family members and friends that have had the disease. They relied on UNC Lineberger for their daughter's cancer care, and as donors, have given their trust and funding to the quality care and top-notch research going on at the cancer center.

"Lineberger saved our daughter's life, so we have a personal investment in their work," Nancy Chewning said.

When their daughter, Wilson, was diagnosed with breast cancer, the couple began to research the best treatment options for her. Their search led them to UNC Lineberger and **Lisa Carey, MD**, FASCO, the Richardson and Marilyn Jacobs Preyer Distinguished Professor in Breast Cancer Research. They were so impressed with their daughter's care and treatment, that they created the Dr. Lisa Carey Fund for Breast Cancer Innovations so that others could benefit from the cutting-edge breast cancer research and treatment. Now, the couple have set their sights on a new target for support – chimeric antigen receptor T-cell (CAR-T) immunotherapy.

The couple had attended a UNC Health Foundation GameChangers event that featured a talk with UNC Lineberger's **Jonathan Serody, MD**, the Elizabeth Thomas Professor of Medicine, Microbiology and Immunology and the director of the cellular therapy program. The talk struck a chord with

the Chewnings, and Nancy Chewning approached Serody to ask about a friend's case. She was impressed by his response and the kindness he showed her.

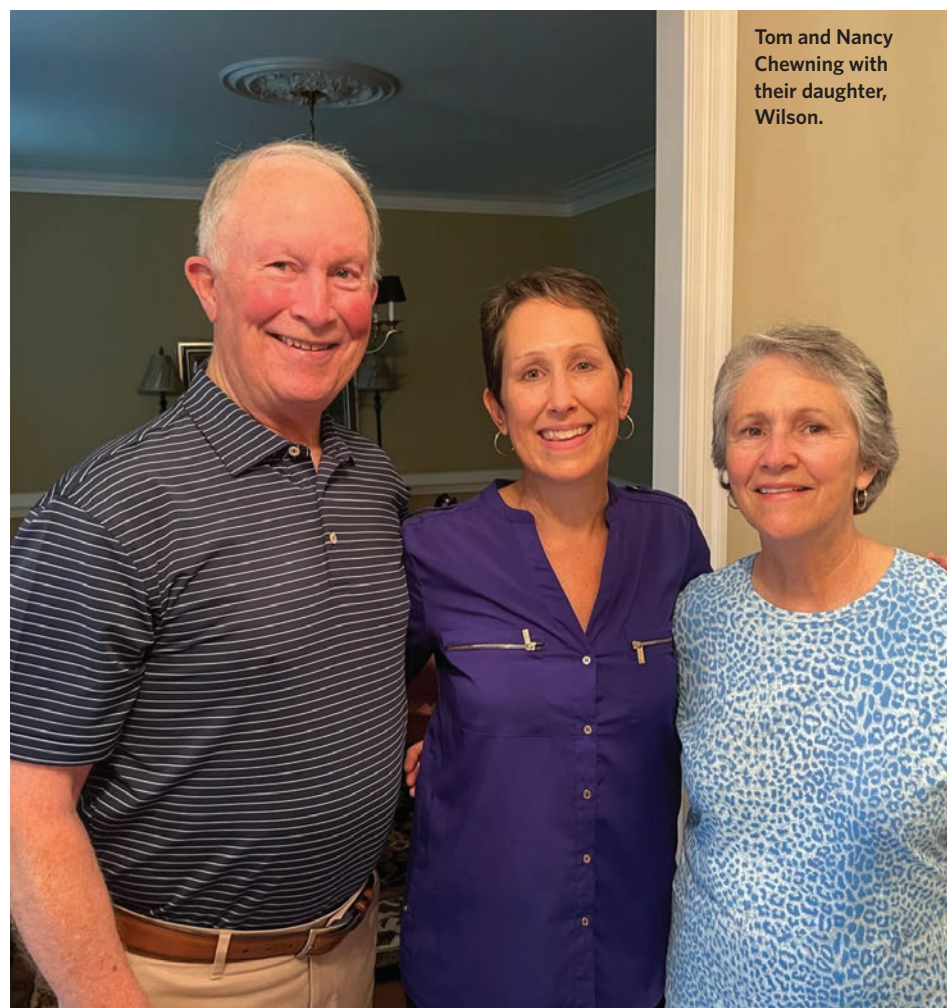
"I felt like he was gifted, and so impressive with what he was doing in immunotherapy," she said. "I asked him if he would review [a friend's] case, and he talked to her which was just so kind of him."

At the event, Serody discussed using immunotherapy to attack solid tumors. CAR-T immunotherapy has proven effective with a number of blood cancers, and now research is underway to see if this approach can be successful in combating solid tumors, including breast cancer. UNC Lineberger Director **Shelley Earp, MD**, Carey and Serody told the audience the time was right to pivot immunology research from blood to solid tumors.

This is the first step for Serody into solid tumor research with CAR-T, and large grant funding is difficult to come by at this stage. The Chewnings had previously funded the initial phase of a breast cancer research effort by Carey, and early findings were sufficiently positive to attract grant funding by the National Cancer Institute.

Tom Chewning calls such donations "venture philanthropy" and hopes Serody's research results with solid tumors will lead to significant grant funding for his work in the years ahead.

"Although early research funding has high risks, if successful, Dr. Serody's findings could positively impact countless



Tom and Nancy Chewning with their daughter, Wilson.

cancer patients around the world. How wonderful would it be that one day most cancers would be treated through use of our own immune system!" Tom Chewning said.

The positive impression and optimism about the science surrounding immunotherapy and its potential in solid tumor cancers helped the Chewnings decide to establish a fund to support Serody's work with CAR-T immunotherapy. The Jonathan Serody, MD, Immunology Innovations Fund will generate a one-to-one match from UNC Lineberger to accelerate the immunotherapy program.

Tom and Nancy Chewning also feel the prospect for success will be increased by the collaborative nature of the team of talented

physicians and scientists at UNC Lineberger. "We've heard many times that Carolina is a place with low walls, but Lineberger has no walls!" Tom Chewning said.

They hope others will share in their vision for improving cancer treatment by supporting the immunotherapy program and will join them by making a gift to the fund.

"If other people are interested in the potential of this, I'd encourage them to also contribute, because this is just the beginning," Tom Chewning said. "It will take time and resources, and I'd encourage them to join us in supporting this potentially impactful research that can benefit countless people throughout the world." 🙌

director *Continued from page 1*

hard cancer questions and treat difficult diseases, and we were able to create our triple negative breast cancer center (TNBC) dedicated to a type of breast cancer that is difficult to treat and disproportionately affects Black, Latina and young women. This TNBC Center was made possible by an anonymous \$25 million gift, and under Lisa Carey's leadership, has a defined objective — more effective, less toxic therapies. The donors want the knowledge gained to be applicable to many cancers. And we know that our Lineberger team is up to the task.

You have placed your trust in our physicians and researchers building a world leading chimeric antigen receptor T-cell (CAR-T) program. As a result, we are serving more patients here in North Carolina than ever before. Our program is so successful, we are in the process of expanding our Good Manufacturing Practices facility to accommodate the large number of patients turning to us for what may be their last chance at treating their cancer.

Your support of Carolina basketball and former men's basketball coach Roy Williams at the annual Roy Williams'

Fast Break Against Cancer has helped raise more than \$3 million for cancer research during the past 16 years, proving you can support two great teams at the same time!

You continue to help us make strides every day at the cancer center, and we make progress thanks to your continued investment in our hard-working team. You can experience a small taste of this forward motion in this edition of Cancer Lines. You'll read about how a patient's unique gift paved the way for new research into lung cancer and how our own Chad Pecot is working to keep that

momentum going; you'll learn about how Sascha Tuchman and his team are bringing the best in patient care to those with multiple myeloma and how a Carolina history professor faced cancer and made it part of his own personal history.

These stories bring to light just a small part of what our cancer center is capable of doing. We are working at a fast pace to bring the best in research, science and patient care to the people of North Carolina. Thank you for being a part of that progress and continuing to help us make our mark here in our home state and beyond. 🙌

Military historian fights personal war with cancer

As a college professor specializing in military history, Richard “Dick” Kohn is used to exploring the successes and failures of the past and looking at them through a current lens. But Kohn’s history with cancer is one area of his past that he is glad to see in the rear-view mirror.

Kohn, 81, a UNC professor emeritus of History and Peace, War, and Defense, fought his own battle with cancer in the early 2000s. He would occasionally feel a painful jolt in his neck. After mentioning this to some physician colleagues, he underwent a scan, which revealed a tumor in one of his submandibular glands. He discussed his case with a team at Johns Hopkins, and knowing he lived in North Carolina at the time, they praised the team at UNC as a choice for his surgery.

“I asked [the Hopkins surgeon] ‘where would you go if you had it?’” Kohn said. “He said he’d ask his fellow for a mirror. I replied that ‘since you can’t operate on yourself, what about UNC? He said he knew the people at UNC, and they are outstanding.’” Kohn said that was all he needed to know, and he underwent surgery at UNC in 2004.

“It was a fabulous, successful surgery,” Kohn said. “I’d probably have died if I didn’t take care of it.”

After the surgery, Kohn met with UNC Lineberger’s **Julian Rosenman, MD**, a thoracic oncologist, who outlined further treatment options that included radiation, a recommendation due to the limited side effects.

“They walked me so carefully through the decision, as to whether to do radiation, so I could come to my own conclusion,” he said. “If I didn’t do radiation, and the cancer returned, I’d have felt like a fool.”

In keeping with his career as a historian and author, Kohn’s analytical nature served him well as a patient, leading him to be a more active participant in his health care.

Kohn was born in 1940 during World War II, and he said that studying war and national security was a useful way for him to apply history to current issues. Those current issues came to a head in 1962, when Kohn was in graduate school at the University of Wisconsin, and the Cuban missile crisis turned his attention toward combining scholarship with public service.

“I was in a seminar in early American history, listening to a three-hour presentation on 18th century Massachusetts county government, when I realized I didn’t want to spend my life doing this stuff while the world’s about to blow up,” he said. Kohn continued his graduate work with a new focus, studying with both



military and 18th century historians on the faculty. His professional life brought him to Washington, D.C., where he served at the Pentagon as the chief of Air Force history for the United States Air Force.

Kohn had focused generally on American military history in his teaching and writing. After nearly a decade working for the government, he joined the faculty at Carolina, where he spent 20 years teaching before moving to emeritus status.

Kohn’s confidence in his UNC colleagues and health care team continues to this day; he still gets regular checkups with the oncologists at the North Carolina Cancer Hospital, the clinical home of UNC Lineberger. Kohn said he still appreciates the thorough approach to his cancer care he received at UNC, and he said it’s evident in other health care areas, as well.

“I’ve been a ‘frequent flier’ of medical care and had some surgeries, and I’ve noticed how analytical and



Top left: Richard “Dick” Kohn is a professor emeritus of History, Peace, War and Defense at UNC-Chapel Hill. Top right: Kohn is able to enjoy time with his family after surviving head and neck cancer. He is pictured here with his granddaughter.

on top of their field these people are and how detailed they can be in explaining the choices that we patients have,” Kohn said. “This is a community that has the best interests of its patients at heart.”

Kohn encourages other patients with cancer to take advantage of the knowledge and expertise of the health care community, ask questions and be an active participant in their own health.

“If you do that, and if you make every effort possible to follow the directions and advice, even if you are a patient with the most dangerous of diseases, you can put your mind at ease that you’re doing everything possible for your own health and your family,” he said. “It may cost a lot of time, effort and money, but it’s necessary given the age we live to and the kinds of medical problems that come with it. My philosophy is you can’t always control the cards you’re dealt in life, but you can play them to the best of your ability.”

“I’ve been a ‘frequent flier’ of medical care and had some surgeries, and I’ve noticed how analytical and on top of their field these people are and how detailed they can be in explaining the choices that we patients have. This is a community that has the best interests of its patients at heart.”

— Richard “Dick” Kohn

— research briefs —

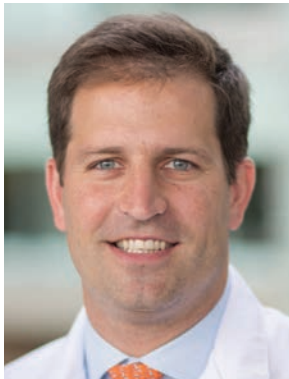
NANOTECHNOLOGY DIAGNOSES LEUKEMIAS IN LOW RESOURCE COUNTRIES

A newer, less expensive RNA-based nanotechnology may make it possible to more accurately diagnose children with acute leukemia in lower income and low resource countries, according to a finding published in JCO Precision Oncology.

More accurate diagnoses can help clinicians choose the best treatment.

The researchers used a type of nanotechnology called nanopore detection to look for changes in messenger RNA (mRNA) in 134 tissue samples from children with four different types of leukemia: acute myeloid leukemia (AML), B-lineage acute lymphoblastic leukemia, T-lineage acute lymphoblastic leukemia and acute undifferentiated leukemia. The researchers were able to diagnose what type of leukemia a child had with more than 90% accuracy.

“... it turns out that the nanopore capabilities look more promising in solid tumors than we initially thought. We’re now actively exploring the technology across all pediatric solid tumors and starting to look at adult lymphomas as well,” said **Thomas Alexander, MD, MPH**.



Alexander

STUDIES HIGHLIGHT PROGRESS IN THE INFLUENCE OF OBESITY ON CANCER

The link between nutrition, metabolism and obesity and cancer was the focus of a symposium presentation by **Stephen Hursting, PhD, MPH**.

“There is convincing evidence that obesity is linked to 13 or more types of cancer,” Hursting said. “The cancer research community now needs to pivot from the question of whether obesity is an important risk factor for many cancers – it is – to the question of how we can reduce the impact of chronic obesity on cancer.”

The fields of nutrition and metabolism, particularly as they relate to cancer, are burgeoning areas of research endeavor at UNC. Some of the experiments that Hursting is leading



Hursting

will benefit from a recent \$25 million gift that is dedicated to advancing research in a rare form of breast cancer, triple-negative breast cancer, which research has shown to have a connection to obesity.

Hursting discussed how intentional weight loss in

obese people may reduce the risk of some cancers. This finding is based primarily on surgical weight loss studies. To reverse factors related to obesity that promote cancer may require substantial metabolic reprogramming and may be more challenging than earlier research indicated. But he believes the challenge is worth pursuing as one study demonstrated that women who lost more than 10 percent of their body weight showed favorable changes in biomarkers associated with breast cancer risk.

AURORA STUDY IDENTIFIES MOLECULAR FEATURES TIED TO TUMOR SPREAD

Susana Garcia-Recio, PhD, a research associate in the lab of **Charles M. Perou, PhD**, presented findings that identified molecular features responsible for the development and progression of metastatic breast cancer at the 2022 American Association for Cancer Research annual meeting.

Focused on understanding the difference in the microenvironments that surround cancer cells in original, or primary tumors, versus sites where the tumor metastasizes, the investigators studied tumor tissue from 55 metastatic breast cancer patients, representing 51 primary cancers and 102 metastases.

They discovered genetic changes that led to lower levels of immune cells being able to infiltrate and attack tumor cells, which were more common at metastatic sites. The lower levels were notable in the two central components of any immune response, namely T-cells and B-cells, that largely direct the anti-tumor immune response.



Garcia-Recio

“We found that around 17% of metastatic tumors had reduced expression of a gene that affects cellular immunity, had specific changes to their DNA and reduced ability of immune cells to infiltrate their environment and fight off cancer cells,” Garcia-Recio said.

IMPLANT CHURNS OUT CAR-T CELLS TO COMBAT CANCER IN ANIMAL MODELS

Researchers from North Carolina State University and UNC-Chapel Hill have developed an implantable biotechnology that produces and releases chimeric antigen receptor T-cells (CAR-T) for attacking cancerous tumors. The researchers found that treatment with the implants was faster and more effective than conventional CAR-T cell cancer treatment.

“A major drawback to CAR-T cell treatment is that it is tremendously expensive – hundreds of thousands of dollars per dose,” said **Yevgeny Brudno, PhD**.

“Reducing the manufacturing time is even more critical for patients with rapidly progressing disease,” said **Pritha Agarwalla, PhD**, lead author of the study.

To tackle this challenge, the researchers created a biotechnology called Multifunctional Alginate Scaffolds for T-cell Engineering and Release (MASTER). “Our MASTER technology takes the cumbersome and time-consuming activation, reprogramming and expansion steps and performs them inside the patient,” Agarwalla said. “This transforms the multi-week process into a single-day procedure.”



Brudno



Agarwalla

SOUTHEASTERN CANCER CENTERS FIGHT RACIAL INEQUITIES IN LUNG CANCER

Virginia Commonwealth University Massey Cancer Center, Medical University of South Carolina Hollings Cancer Center and University of North Carolina Lineberger Comprehensive Cancer Center secured a four-year, \$3 million grant from Stand Up To Cancer® (SU2C) that will establish the SU2C Lung Cancer Health Equity Research Team to improve screening, diagnosis and treatment of lung cancer in the Black community.

The Stand Up To Cancer grant will establish the Southeastern Consortium for Lung Cancer Health Equity to address these deeply ingrained disparities that contribute to a higher incidence of lung cancer in Black communities across Virginia and the Carolinas.

“Lung cancer screening has the potential to reduce lung cancer mortality and close the disparities gap, yet initial reports indicate low uptake of screening,” said **Louise Henderson, PhD**. “Through this team science grant, we will incorporate the cells-to-society approach in our work with community partners and patient advocates to test multilevel interventions aimed at increasing lung cancer screening.”



Henderson

briefs

UNC LINEBERGER BOARD OF VISITORS MEMBERS RETIRE FROM SERVICE

We wish to extend our gratitude to the UNC Lineberger Board of Visitors Members who have completed their third three-year term as of July 1, 2022. We thank them for their service as advocates and champions for UNC Lineberger Comprehensive Cancer Center!

- Ned Barclay and Margaret Barclay
- Clay Brumbaugh and Helen Brumbaugh
- Sam Carlisle and Cathy Carlisle
- John Clark and Shelley Clark
- Jay Dalton
- Bill Graham and Nancy Graham
- James Leach and Katirie Leach

lung

Continued from page 1

professor of medicine. “It is extremely powerful when a patient decides to contribute to scientific and medical knowledge by making a very deliberate sacrifice. His decision will have a ripple effect that will be eternal.”

The patient, Richard Duley, had a special and close association with UNC Lineberger – and Pecot’s clinic and laboratory in particular.

LUNG CANCER RESEARCH AND A PATIENT’S WISH

Duley was 76 when he was diagnosed with a type of KRAS-mutated non-small cell lung cancer called G12C. He received chemotherapy and immunotherapy, but although his disease initially responded, the tumors eventually began to grow. He then received a new drug, sotorasib, that the U.S. Food and Drug Administration approved in May 2021 for his very specific type of lung cancer. The drug is the first of its kind, and it directly inhibits the mutated KRAS protein, which results in an “off switch” within the tumor.

Duley was quite ill when he started receiving sotorasib as part of an early-phase clinical trial. He could barely talk or swallow because tumors were growing in his neck. Three days after starting the sotorasib tablets, Duley reported that he felt “fantastic,” and even went shopping and ran errands. He continued to receive the drug for 17 weeks.

Back in the clinic, the first of several imaging scans showed that, on average, most of his tumors had shrunk by about a third. Duley reported that he continued to feel quite well. This allowed him to reunite with family members, have a good quality of life, and feel normal again.

Unfortunately, after about four months the drug quit working, and subsequent imaging scans showed the lung cancer had come roaring back.

“Mr. Duley believed in me as a doctor but also as a scientist. He donated funds to my research endeavors and that had tremendous value to me. I spent a little bit of it on high-risk ideas, and he loved hearing about things we discovered,” Pecot said. “Near the end of his life he told me he wanted to donate his body to scientific research ‘so the world could learn something in my death.’”

RAPID APPROACH YIELDS FINDINGS FOR RESEARCHERS

In line with Duley’s request, about two dozen tissue samples were collected within hours of his death.



Chad Pecot, MD

The ability to rapidly acquire the samples made them particularly valuable for research purposes. Pecot and his team used RNA and DNA sequencing to study thousands of genes from both pre- and post-treatment biospecimens to try to determine why his tumors were able to eventually become resistant to sotorasib.

The researchers found many mechanisms that were employed by cancer cells in the tumors that ultimately returned. Some were expected, such as those that reactivated tumor signaling pathways. In particular, transforming growth factor-beta, a prevalent and multifunctional protein that is critical in cell signaling, was among the most important factors in reactivating numerous cancer pathways, according to the researchers. The investigators also found that cancer cells were able to re-establish blood flow to the tumors to help feed the tumors’ growth. They also found the resistant tumors were able to “hide” from the immune system, and the tumors had very reduced levels of immune cells.

THE GIFT OF SUPPORTING RESEARCH

Fran Duley, Richard’s wife, said her late husband reacted to life and death with gusto, and he would be pleased to know he was able to contribute to Pecot’s research. “He did not like warm and fuzzy! His reaction to this amazing study and the results would be ‘Do More. Don’t stop.’ I am so grateful to everyone at every level of Richard’s care and the post-research, especially Dr. Pecot. I cannot totally explain the morphing of doctor, to healer, to friend. But [Dr. Pecot] was so special to Rich and is so reassuring to me.”

“We learned so much from one patient. But there is much work to do from here, including testing drug combinations, as we looked at just one drug in this study,” Pecot said. “... this research effort ... was due to a courageous and selfless gift, and I feel honored to have been a part of it.”

fast break

Continued from page 2



The annual Fast Break event has raised more than \$3 million for UNC Lineberger during the past 16 years.

was a bone marrow transplant match for Oliver and was able to give his brother a great gift, another year of life. Still, losing his family members was a devastating blow, and something he would never forget.

“I have very, very few regrets in life, but the two biggest ones are because of cancer. I wish I had had more years with my closest brother, and I truly regret I never had the opportunity to know my dad as an adult,” Swofford said. “Those that have truly shaped you, never leave you. Even though Dad and Bill were taken by cancer too soon, they’re still in my life and always will be. Cancer couldn’t take that away.”

UNC Lineberger Director **Shelley Earp, MD**, addressed the crowd, detailing many of the advances that have happened in cancer research at UNC. He shared that money raised during Fast Break directly impacts cancer care and research at UNC Lineberger by helping fund the projects and efforts that set UNC apart, including the Good Manufacturing Practices facility, which is key to offering more patients chimeric antigen receptor T-cell (CAR-T) immunotherapy, as well as a focus on tough-to-treat cancers like pancreatic and endometrial, leading UNC Lineberger to establish centers of excellence in these areas to target these diseases.

“We are working hard at each level, turning science into not only treatments, but early detection and prevention. That’s the key to fighting cancer; catching it early,” Earp said.

Each speaker touched on the importance of raising money for cancer research, and how grateful they were to see a room full of people with the same drive and desire to eradicate cancer.

“Fast Break not only creates funding, it creates an atmosphere where terrific people want to be here, be a team, and be on the same team against cancer,” Earp said.

“It’s been 17 years, and we’ve raised a lot of money and helped a lot of people and kept the money here in Chapel Hill at our hospital,” Williams said.

“There’s progress for better results today than there was all those years ago with Bill and my dad,” Swofford said. “The world is a bit polarized, and as much as I hate cancer, maybe cancer has one redeeming quality; maybe it can unite. Unite all of us to work together to obliterate it.”

events



1

BLUE RIBBON RUN

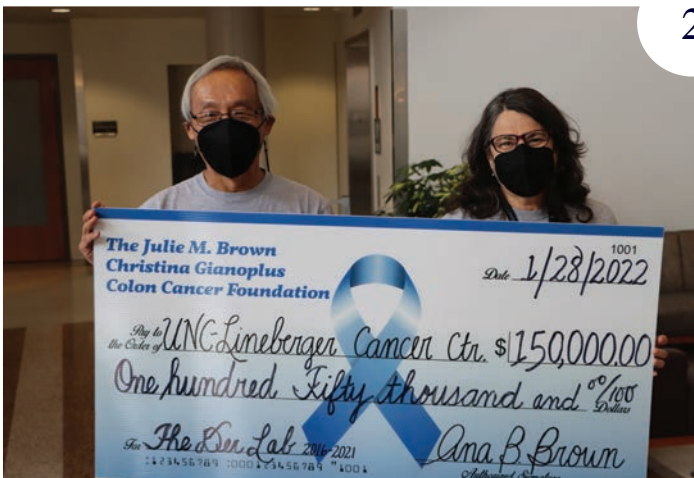
1-3: Blue Ribbon Run presented a check to UNC Lineberger recently and dedicated a plaque in honor of two Wilmington, N.C., moms, Julie M. Brown and Christina Gianoplus. The Blue Ribbon Run has established an endowment in their names at UNC Lineberger to help find a cure for colorectal cancer. The run is an annual event raising money and awareness, while helping North Carolina families affected by this disease.

SHEROCKS

4-5: She ROCKS presented a check to UNC Lineberger to support ovarian cancer research. She ROCKS, an organization aimed at raising awareness and attention for ovarian cancer, raised the funds during their Wilmington and Triad luncheon events. They also partnered with Kendra Scott to donate a portion of sales proceeds to UNC Lineberger.



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