



LINEBERGER COMPREHENSIVE
CANCER CENTER

ONE GREAT TEAM:

A PHILANTHROPIC IMPACT REPORT



A MESSAGE FROM THE DIRECTOR OF UNC LINEBERGER

"Your support has made research breakthroughs possible in the fields of cancer prevention, with new screening tests being developed and cancer vaccine research continuing to expand."

Shelley Earp, MD
Director, UNC Lineberger Comprehensive Cancer Center

There is no question that the past year has been one filled with challenges, but I'm pleased to see our faculty and staff across a great university and health system rise to the occasion. They have used your cancer center's resources to answer the call to action. Cancer didn't stop with the onset of COVID-19, and UNC Lineberger members had the technical and intellectual capability to multi-task cancer care, cancer research and contribute to UNC's world leading SARS CoV2 research accomplishments. We continued our research, looking at racial disparities in health care throughout the state, innovating in cancer therapy, creating better means of early detection and devising a forward-looking strategic plan to guide us for the next five years. Our team is consistently making progress, and we have donors like you to thank for helping to make that happen.

Your support of UNC Lineberger allows us to recruit and retain the best and brightest minds in cancer care and research so we can continue to lead the way and serve the people of North Carolina. We treat patients from every county in the state, and patients from 85 out of 100 counties have participated in clinical trials at UNC Lineberger. Our Community Outreach and Engagement team is working to address racial inequality in cancer care and prevention, and our Comprehensive Cancer Support Program helps patients at every stage of their cancer journey, from diagnosis to survivorship.

Our strategic plan was finalized this year, and it helps us focus; we treat every type of cancer and need to be good at it. But to lead the nation in several areas of cancer research, we need strategy and focus. For example, we invest both cancer funds and private donations to integrate clinical care and research approaches, explore new avenues for immunotherapy, and look at the specialized care needs for our geriatric and teen and young adult patients.

We are only able to do this with support from you and the University Cancer Research Fund. This gift from the state that funds research and technology breakthroughs also provides a great return on investment to the state of North Carolina. Our Board of Visitors and donors provide the true margin of success; you are funding what's unique and new. You believe in us, and that support has helped us make a difference in the lives of cancer patients in North Carolina and beyond. Patients like Rachel Lezcano, whose breast cancer was caught early due to diligent doctors and cancer screenings. And Duane and Maddilyn McKay, a father and daughter who underwent cancer treatment at the same time with the support of the pediatric hematology oncology team and the bone marrow transplant team.

You've also made it possible for doctors like Thomas Shea, MD, to successfully treat hundreds of patients and create a bone marrow transplant program from scratch over his lengthy career.

Your support has made research breakthroughs possible in the fields of cancer prevention, with new screening tests being developed and cancer vaccine research continuing to expand. UNC leads the way in research on electronic cigarettes and vaping, something that wouldn't be possible without your contributions.

Most importantly, we are thankful for our donors and community partners that provide the support we need to continue our good work. From local real estate agents who put portions of their commissions toward supporting UNC Lineberger to donors giving \$1 million, we are so grateful to have you behind us every step of the way as we provide today's best care and tomorrow's best hope.



Shelley Earp, MD

Director, UNC Lineberger Comprehensive Cancer Center | Lineberger Professor of Cancer Research

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*Left to right: UNC Lineberger Director
Shelley Earp, MD, Benjamin Calvo, MD,
tennis player John Isner and Karen Isner.*



GIVING SPIRIT:
PHILANTHROPY MAKES A DIFFERENCE

Jim and Barbara Harrell
speak at a UNC Lineberger
Board of Visitors meeting.



DONORS GIVE WITH NORTH CAROLINA RESIDENTS IN MIND

UNC Lineberger is known for its leaders in cancer care and research, but its supporters are also great examples of leadership within our community. Not only do they lead by example, but they, in turn, have been inspired by others' generosity. Whether it's a family history of philanthropy or a desire to see every resident of North Carolina get the quality cancer care they need, year after year, these donors support cancer care and research every step of the way.

As the chairs of UNC Lineberger's Board of Visitors, Jim and Barbara Harrell lead by example, recently announcing their intention to give \$1 million to UNC Lineberger where the need is greatest. The Elkin, North Carolina, couple thought their gift could do the most good if they gave "some now and some later," structuring part of it as a gift through their estate.

"The thing that appealed to us was doing something now would give immediate help, and then long term, knowing that we could do something that would be ongoing. We tend to be benevolent. We always try to contribute and give back where we can in the community. As far as a large gift, both of us see the value. It's the best thing for people in general – for mankind – to do something for a disease like cancer that truly affects everybody," Jim Harrell said.

That was a sentiment that Hickory, North Carolina, residents John and Shelley Clark shared. As members of the Board of Visitors, John Clark said he's long been impressed with UNC Lineberger, and they didn't hesitate to make a gift totaling \$1 million to the cancer center, knowing it would have a positive impact on cancer care and research.

"Primarily we decided to give a gift that would impact everybody in North Carolina, and directed it to Lineberger. We're aware of the excellence at Lineberger and are inspired by the leadership there, also," John Clark said. "Our other motivation in making the gift was we've observed the generosity of others, and their kindness and generosity, and that helped motivate us."

A portion of the Clarks' gift was directed toward a matching gift challenge that raised more than \$225,000, something the couple is proud of. "We'd like to make a difference if we can and encourage others to give back," Shelley Clark said. "We wanted to see others follow in those footsteps."



"It's the best thing for people in general – for mankind – to do something for a disease like cancer that truly affects everybody."

JIM HARRELL
Co-Chair of UNC Lineberger's
Board of Visitors

Gifts like the Clarks' provide discretionary support for cancer center leadership to take advantage of emerging opportunities in the fast-changing world of cancer research.

Both couples have strong ties to the University of North Carolina at Chapel Hill, but their primary focus when giving is supporting the people of North Carolina. Shelley Clark said hearing about patient experiences at the North Carolina Cancer Hospital, the clinical home of UNC Lineberger, helps inspire their generosity.

"We do have close ties to the university. Our family is similar to others who have close ties; we do have a great appreciation and love for UNC," John Clark said.

"We feel like we have such a close relationship to the university, and it's served us in so many ways. It continues to serve us and serves the entire state and beyond," Shelley said.

The Harrells are similarly dedicated to the Carolina community. They have been involved for years with the UNC Adams School of Dentistry and Rams' Club and are lifetime members of the alumni association, with Jim Harrell serving as vice president.

The couple said their dedication to UNC Lineberger stems from the fact that it's the only public NCI-designated, comprehensive cancer center in North Carolina – "the people's cancer center" – and the health and well-being of all North Carolinians are important to them. They also want to reach people beyond those affiliated with UNC-Chapel Hill and inform a broader swath of potential donors and patients about the strides made at UNC Lineberger.

"There are many needs in our society today, but I think the thing that affects the lives of the most people, most profoundly, is cancer," Jim Harrell said. "Cancer is the enemy, and I believe that Lineberger is our best hope for a cure. We need to find ways to raise awareness of our cancer center and increase support for it. UNC Lineberger truly represents today's best care and tomorrow's best hope." ▲



"The university has served us in so many ways. It continues to serve us and serves the entire state and beyond."

SHELLEY CLARK
Member of UNC Lineberger's
Board of Visitors



Tom and Nancy Chewning

PRIVATE FUNDS, FEDERAL SUPPORT DRIVE BREAST CANCER SOLUTIONS

When a loved one is diagnosed with cancer, family members and friends seek the best help they can find, whether it's a doctor, a hospital or an institution. Tom and Nancy Chewning did just that when their daughter, Wilson Steele, was diagnosed with breast cancer in 2013.

The family sought out UNC Lineberger's Lisa Carey, MD, FASCO, the Richardson and Marilyn Jacobs Preyer Distinguished Professor in Breast Cancer Research and deputy director of UNC Lineberger. When the Chewnings were looking for the best, they found it in Carey.

Discussing their daughter's care, the couple knew they had found something special, as they talked through the options available to Steele and went over treatment possibilities with Carey. The Chewnings heard more than just a doctor talking about a patient, they heard a physician-scientist looking for answers.

"It planted a notion in our mind, that [Carey] was not just a clinician but was interested in anything that could help her patients, and research was something

that had to go on," Tom Chewning said. "I realized she wasn't a researcher for research's sake, she was a researcher who was trying to use whatever was found as a better solution for her patients."

"She has risen to the top in the world, and she is so well respected," Nancy Chewning said. "She's approachable and caring about patients and families."

Carey's work with breast cancer has impacted a huge number of patients both in North Carolina and across the world, and she recently was awarded a National Cancer Institute RO1 grant, a financial award that recognizes the best in clinical research. Leading up to the RO1 grant award, Carey had to break new ground in genetic breast cancer research, something the Chewnings decided to support financially. With a very personal stake in Carey's research outcomes, the couple opted to make a \$1 million gift to UNC Lineberger in 2015 to support the Dr. Lisa Carey Fund for Breast Cancer Innovations. These funds allowed Carey to expand her breast cancer research, help more patients and attract new investments like the RO1.

"The RO1 is a great achievement and hallmark of dedication and research success, something that wouldn't have been possible without early support by donors like Tom and Nancy Chewning," Carey said. "All the work we've been able to do with their gift has helped us move ahead, proved that we were on the right track, and has brought us to a place where this may be translated to significant differences in the lives of patients and their families."

The Chewnings had those patients and their families in mind even while they helped their daughter through her cancer journey and wanted to make sure others saw the benefits of their gift. They placed their full confidence in Carey and have been pleased with the work being done.

"Many people are research oriented, but they don't get to the translational point," Tom Chewning said. "We weren't after a breakthrough unless it could be translated into a difference in the way patients were treated and improvement in the results."

"We believe in her product," Nancy Chewning said. "It's personal for us. We can't say enough: If she can find the cutting edge, new research project to benefit patients, how great is that!"

Having experienced the cancer journey from a parent's perspective, the Chewnings know how important it is for patients and their families to have a clear understanding of what's happening and more importantly, the resources available to them.

"Every patient that comes through our doors is treated with respect and care for their well-being, but we want to make sure

their care doesn't end once they leave our clinics," Carey said. "One way they receive support outside of our clinics is through patient navigation programs that help them through their cancer journeys. By supporting these types of programs, our patients get the best care, both in the clinics and at home with their families."

Tom Chewning remembered long days spent at the hospital and observing what other patients were going through. He recalled seeing patients that had traveled long distances to get to the North Carolina Cancer Hospital and others who had left jobs and responsibilities to receive care. He said he was impressed by Carey's awareness of those issues and was glad to see funds from their gift going to help pay for conveniences like parking and gas cards.

The Chewnings have continued to support Carey's work and UNC Lineberger during the past five years, and they have full confidence in the researchers, physicians and staff providing patient care and seeking answers to cancer questions.

The Chewnings' outlook remains optimistic, and they see their gifts as investments in a better future for their daughter and other patients just like her.

"If you invest in UNC Lineberger, you've got a culture, a network, credibility and assets that can make good returns on these investments," Tom Chewning said. "When Lineberger has a breakthrough, it will benefit so many more people. For those who want to benefit their fellow human beings, this is a place where that investment can be a good one." ▲



"The RO1 is a great achievement and hallmark of dedication and research success, something that wouldn't have been possible without early support by donors like Tom and Nancy Chewning."

LISA CAREY, MD, FASCO

Deputy director and the Richardson and Marilyn Jacobs Preyer Distinguished Professor in Breast Cancer Research | UNC Lineberger

Annabel, Lucy, Niklaus and Elsa Steiner started the Be Loud! Sophie Foundation in honor of sister and daughter, Sophie Steiner.



AYA CANCER PROGRAM THRIVING AT FIVE

The story of UNC Lineberger's Adolescent and Young Adult (AYA) Cancer Program started with a single spark. A spark in the form of Sophie Steiner, a teen cancer patient who saw what others hadn't – that cancer care for teens and young adults could be different, had to be different, had to be better.

Sophie passed away in 2013 following 18 months of treatment for germ-cell cancer, but the movement she sparked has continued to grow into a transformational force for AYA patients. Her parents, Lucy and Niklaus, established the Be Loud! Sophie Foundation to serve the unique needs of this community.

"We focused initially on Sophie's experience at UNC and the extraordinary doctors and nurses and people who supported her," said Lucy Steiner, while taking a break from sending postcards for an upcoming Be Loud! virtual fundraiser. "But the hospital system itself didn't have as much to offer a teenager as it did to offer younger kids, so we were really focused then on how to make things better for teenagers who are diagnosed with cancer."

The initial funds Be Loud! Sophie raised ultimately led to the hiring of clinical social worker Lauren Lux, MSW, and the creation of the AYA Program, which she oversees. Now, as they look back on the past five years, the program is celebrating its progress while keeping an eye on the future.

"I think it's just magic, really"

"We've had a lot of big dreams since we started, and many have come true and continue to come true," Lux said. "I'm surprised by how quickly things have grown. We've had a lot of success in a fairly short amount of time for a culture change."

**"I'm surprised by how quickly things have grown.
We've had a lot of success in a fairly short amount
of time for a culture change."**

LAUREN LUX, MSW
Director of the AYA Program

That growth included expanding to a four-person staff after Lux spent the first 18 months of the program as a one-woman band. In 2017, Lux was joined by Andrew Smitherman, MD, MSc, known by colleagues and patients alike as Smitty. Smitherman, a former high school teacher, was completing a combined residency in adult and pediatric medicine at UNC and was looking for a way to apply his unique educational background.

"Finding a way to use that training was important to me," Smitherman said. "I had always had an interest in this age group. I was doing my pediatric oncology fellowship at UNC thinking that it would provide a nice foundation for me to work with this population."

In addition to Smitherman, Catherine Swift, LCWSA, and Melissa Matson, MSN, RN, have joined the program in recent years.

"We are so incredibly lucky and have so much gratitude for the people involved in this," Lux said. "I think it's just magic, really. Our core team is amazing. I would be on the floor, under a table without Smitty. Catherine is incredible, so good with patients and kind, thoughtful and dedicated. Melissa brings experience and perspective as a nurse practitioner. From skill sets to personalities, everybody provides something different but not so different that we don't get along with each. We really enjoy working together."

Lux is the driving force behind the day-to-day work that is so impactful to its patients and their families.

"She is such an extraordinary director," Steiner said. "And the program's growth is really a tribute to her leadership and her vision for what Sophie did for teenagers and young adults, and how to better care for this population not only at UNC but across the state and even the nation."

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LUCY STEINER

Leadership support from the beginning

Talk to anyone associated with the AYA program, and they will tell you that it wouldn’t be where it is today without buy-in from the leadership team at UNC Lineberger. The program would not have continued its growth trajectory without the support of leaders such as UNC Lineberger Director Shelley Earp, MD, former Director Ned Sharpless, MD, Stuart Gold, MD, and Don Rosenstein, MD.

“So much credit goes to UNC Lineberger,” Steiner said. “When we first approached Dr. Gold and Dr. Rosenstein, they really embraced the idea from the beginning – that there was a lot that could be done to better support this population of patients. They were just excited to be able to figure this out with us and really open and committed to making things better.”

“Shelley, Don and Stuart have been huge advocates and great thought partners and planners with us,” Lux said. “We’re really lucky to have them in the leadership roles that they’re in.”

“That culture of support has been critical,” Smitherman said. “That got Lauren off to such a solid start that has continued to grow over the past five years.”

“Ned and I recognized the need and potential for this unique program, but it was Lucy and Niklaus and their children that provided the inspiration and energy to build something special in Sophie’s memory,” Earp said.

An eye toward the future, staying true to Sophie

As the AYA program approaches its five-year anniversary, new services are being added, such as the development of an AYA advisory council, which allows patients to speak directly about their needs, as well as a survivorship clinic that provides support after treatments have ended.

“I think we’d really like to refine what we do and make it more efficient and effective,” Lux said. “Close to 500 new 13- to 39-year-olds are diagnosed and treated at UNC every year, so that’s a lot of people to try and meet. Trying to figure out how best to do that is something we’re really interested in.”

Expanding the program beyond Chapel Hill is also a priority and has become even more critical due to restrictions caused by the COVID-19 pandemic. That means offering support not only to patients across the state, but also helping educate providers who will be caring for them.

"It all goes back to what the patients are telling us they need through this process to maintain as much of their lives as possible," Smitherman said.

"Niklaus and Lucy are one in a million, one in 10 million," Lux said. "They are so smart and thoughtful, and the community that they've built is because of who they are, and who Sophie was, and who their daughters Elsa and Annabel are. They want us to serve but also do research on how to better treat the AYA population.

"They have taken what is arguably the hardest thing anyone could ever deal with and turned it into something incredible. They put so much trust and faith in us, and that's a huge gift, and it's really special. We try to honor that." ▲

"They have taken what is arguably the hardest thing anyone could ever deal with and turned it into something incredible. They put so much trust and faith in us, and that's a huge gift, and it's really special."

LAUREN LUX, MSW
Director of the AYA Program



Left to right: Andrew Smitherman, MD, MSc, Lauren Lux, MSW, and Catherine Swift, LCWSA, are part of UNC Lineberger's AYA Program. Alongside Melissa Matson, MSN, RN, they work to address the needs of cancer patients ages 13-39.



Charles and Christina Menear are members of Lineberger Leadership Partners, where donors give \$1,000 in a calendar year, and helped kick off the 2020 GiveUNC campaign with a challenge gift.

CANCER EXPERIENCE LEADS REAL ESTATE AGENTS TO SUPPORT UNC LINEBERGER

Charles and Christina Menear make a great team. They have been married for 32 years, have two daughters and are successful real estate agents. The Durham couple also knows how to make their partnership work to benefit the community, by giving back when they can.

For Charles Menear, being treated for non-Hodgkin lymphoma the second time led him to become a UNC Lineberger donor. Initially diagnosed in 2009 while living in Pinehurst, North Carolina, he went through treatment and thought he was in the clear. The couple moved to Durham in 2012, then in 2016, got the news that Charles' lymphoma was back. They sought care from UNC Lineberger's Chris Dittus, DO, MPH, at the North Carolina Cancer Hospital, the clinical home of UNC Lineberger.

At first, Charles' care team monitored his condition, but the cancer was spreading in his lymph nodes, so he started treatment with chemotherapy and immunotherapy in 2019, a decision he hasn't regretted.

"After the first treatment, things looked like we had hit a home run, everything was non-visible," he said of his scans. "It was awesome. From the scan prior to the scan after, with just two treatments, things were like night and day."

Charles Menear said he felt compelled to give back to the hospital and the team there because of the great care he received. "I just felt like that's what I needed to do. Whether it was down in blood draw or registration, everyone was so wonderful."

As the parents of a Tar Heel alumna, the Menears were confident that Charles was

"It's important to us to give back while we've been given so much,"

CHRISTINA MENEAR

Donor and wife of Charles Menear, cancer patient

in good hands at UNC, and his progress and their experiences there solidified that belief. Christina Menear said many of their real estate clients have been treated at UNC Health, and they love being able to refer people for treatment, based on their experience at the N.C. Cancer Hospital.

In addition to referrals and even selling homes to some of the health system's physicians, the Menears also feel they have the opportunity to give back some of the good fortune that's been bestowed upon them.

"I'm still getting good news, and nothing has changed with my current health," Charles Menear said. "Along the way, we decided to start thinking about what we could do to give back and benefit the local community. We decided that a portion of the commission we earn from each real estate transaction, let's give it back; let's donate to a cause."

The Menears are members of Lineberger Leadership Partners, where donors give \$1,000 in a calendar year, and helped kick off a COVID-19 delayed GiveUNC campaign with a challenge gift. The day raised more than \$30,000 for UNC Lineberger and more than \$7 million across both the university and health system.

"It's important to us to give back while we've been given so much," Christina Menear said.

She said she follows the example her grandmother and mother set for her many years ago.

"I grew up in a family where giving was just a way of expressing gratitude," she said.

"When I was young, my grandmother would give to something, and then when I was in high school, my mom was always the leader in the town doing coat drives, toy drives, food drives and helping out. She was the patron saint of the underdog." ▲



A message to our supporters:


We are so grateful for your dedication and commitment to our cause of bringing patients today's best care and tomorrow's best hope. We thank you for your continued support and look forward to making strides in cancer research, treatment and care with you by our side. Please visit unclineberger.org/honorroll2020 to view the comprehensive list of annual donors.

UNC Lineberger's Sascha Tuchman, MD, MHS, and Gilbert Casterlow Jr., PhD



IN CAPABLE HANDS:

CARE TEAMS SUPPORT PATIENTS, FAMILIES



Tom Shea, MD, has spent the past 27 years caring for patients at UNC's health facilities, including the North Carolina Cancer Hospital.

TOM SHEA: 27 YEARS OF CARING AND COMPASSION

For Thomas C. Shea, MD, the motivation behind nearly three decades of service to the North Carolina Cancer Hospital was a deep commitment to serving others.

Shea, a double Tar Heel alumnus, dedicated 27 years of service to the University of North Carolina School of Medicine and UNC Lineberger as a hematologist-oncologist, researcher, teacher, and as founder and director of the bone marrow transplant program.

Shea retired as the John Pope Distinguished Professor in Cancer Research in September, 2019. As he reflected on his career, he shared the motivations that started it all.

"I had a realization that I had an obligation – whether it was through my career, or working with organizations like SECU Family House or the local rotary club to find money to put together bikes for kids for Christmas – that I wanted to do my part to help others," Shea said.

"I had a realization that I had an obligation – whether it was through my career, or working with organizations like SECU Family House or the local rotary club to find money to put together bikes for kids for Christmas – that I wanted to do my part to help others."

TOM SHEA, MD

Founder and Director Bone Marrow Transplant Program | UNC Lineberger

From N.Y. to N.C.

Shea was born in Philadelphia and grew up in Manhasset, New York. He went to a Catholic high school that emphasized community service. That ethic stayed with him.

His family moved to North Carolina because of the work opportunities for his father, Thomas M. Shea, who was chief of engineering for the pharmaceutical company Burroughs Wellcome & Co, now known as GlaxoSmithKline. When Shea's parents moved to Greenville in 1970, he started college at UNC-Chapel Hill.

'Eye-opening' experiences

Travel was a big part of Shea's education.

After he graduated early from Carolina in December 1973, he planned to travel in Asia for three months before starting medical school. He went to India, Afghanistan, Nepal and Pakistan to get an understanding of the world. He graduated from medical school in 1978. He spent a year at a mission hospital in Nicaragua and returned to Chapel Hill in the spring of 1979 as civil unrest erupted.

During his internship training, Shea met his future wife, Kathy, who had started her residency training in pediatrics at UNC Medical Center.

When it was time to consider additional specialty medical training, Shea saw hematology-oncology as a challenging, evolving field that would allow him to establish personal relationships with patients, as well as to be involved in research.

"You really become a primary care physician instead of a consultant, but with a specific and major diagnosis that you are trying to grapple with," he said. "You become an integral part of someone's life; they really are putting their life in your hands."

He was recruited to UNC in 1992 to launch the bone marrow and stem cell transplant program after launching a bone marrow transplant program at the University of California San Diego four years prior in 1988.

"We were so fortunate to recruit Tom back home," said UNC Lineberger Director Shelley Earp, MD. "After the arduous task of starting a new program in California, he was game to do it again; this time in his adopted home state. Not many in American medicine have had the ambition or stamina to start two transplant programs from scratch, but he has done it, and what a success it has been. This was at a time when the science of transplant was expanding, and Tom did both the legwork of program building, traveling the state and incorporating the latest advances into UNC's effort."

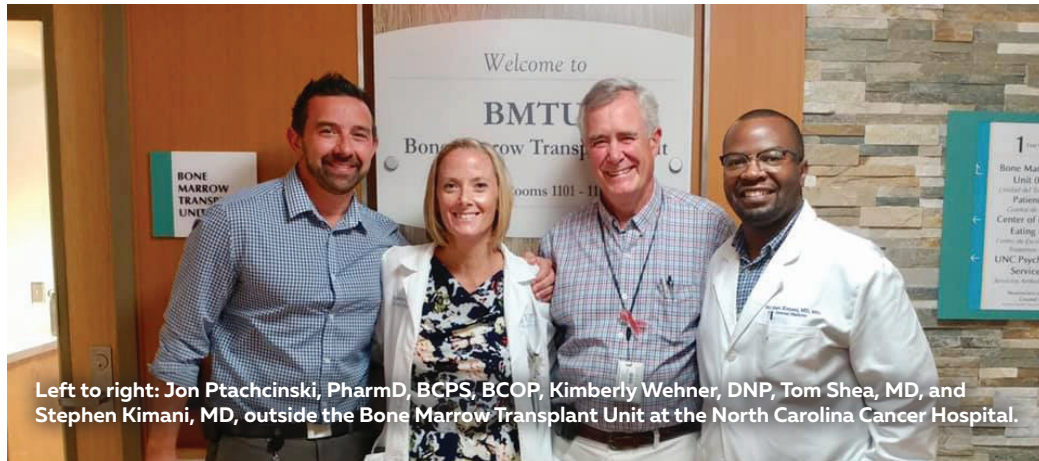
Homecoming

At UNC, Shea launched the program to do both autologous transplants, in which a patient receives a transplant of their own stem cells, and allogeneic transplants, which uses stem cells from a donor.

"A transplant program was part of the higher end of the oncology treatment world, and was something major centers were looking to develop," Shea said.

His role involved managing the research and clinical aspects of the program, Earp said, but also training staff and generating procedures. Shea traveled across North Carolina to educate oncologists.

"It was really through this that Tom became, and I believe still is to this day, one of the most visible oncologists at our institution," Earp said.



Left to right: Jon Ptachcinski, PharmD, BCPS, BCOP, Kimberly Wehner, DNP, Tom Shea, MD, and Stephen Kimani, MD, outside the Bone Marrow Transplant Unit at the North Carolina Cancer Hospital.

Leading a team

Shea was the kind of leader who wouldn't ask his team to do anything he wouldn't do himself, said Jonathan Serody, MD, the Elizabeth Thomas Professor of Medicine, Microbiology and Immunology and chief of the hematology division.

Serody recalled that when he was still a physician-in-training, Shea took him to lunch on Franklin Street to talk about the program. Shea is "probably one of the more gracious individuals that you'll meet."

Later on, when Serody was starting up a lab, Shea gave him his own funding when his dried up due to a financial crisis.

"And he didn't ask anything substantial in return ... except to use (the money) wisely," Serody said.

Recognition and a friendship

In 2010, Shea was elected chair for a three-year term of the Center for International Bone Marrow Transplant Research Scientific Advisory Committee. He was the recipient of a distinguished professorship in cancer research as a result of a \$1.3 million gift from the Raleigh-based John William Pope Foundation. The foundation made the gift in honor of Shea, who was John W. Pope's physician.

"The professorship was a wonderful recognition by the Pope family of the excellent care we provided to John when he was sick," Shea said. "It also allowed me, and will allow future recipients, to continue to develop our research portfolio of clinical trials and translational research that is essential to move the next generation of cancer treatments from the bench to the bedside."

Shea received several other honors during his career, including N.C. Gov. Roy Cooper awarding him the Order of the Longleaf Pine.

His sponsor for the honor was W.G. Champion "Champ" Mitchell, who credited Shea with saving his life. Mitchell was treated for stage 4 non-Hodgkin lymphoma at the N.C. Cancer Hospital. Shea led the team that put the lymphoma into remission.

"I credit Tom with my being alive today," Mitchell said.

The care he received inspired Champ and his wife, Etteinne “ET” Mitchell, to make a \$10 million gift to create the Champ and ET Mitchell Fund for Blood Cancer Research. Mitchell said he wanted to support next-generation therapies for blood cancers.

Continued commitment to service

In retirement, Shea plans to work with satellite clinics that are part of the UNC Health cancer programs across the state. He also is looking forward to playing more golf, as well as traveling and camping with his wife, Kathy. He joined the East Chapel Hill Rotary Club in order to participate in their long list of community projects and will be serving dinner at the SECU Family House.

The Sheas have two children. Their son, Joe, works in Atlanta for a company that specializes in sustainable carpet manufacturing. Their daughter, Meg, is a researcher physicist who lives in Washington D.C. Recently, she was married at the Sheas’ home in Chapel Hill in late March during the COVID-19 pandemic. ▲



Shea and his wife, Kathy, and son, Joe, pose with Shea's daughter Meg, and new son-in-law Russ Schmitz.



Mike Sinks and daughter, Ellie, cross the finish line at a recent race.

PATIENT'S EXPERIENCE WITH MELANOMA HELPS HIM RETHINK LIFESTYLE

For a soldier, staying in fighting shape is just as much a part of training as marksmanship and military strategy. Being healthy and ready for action allows them to fight and defend, often in severe conditions and under grueling circumstances. But if your body fails you, the next step can be difficult, even for someone in the military.

For Mike Sinks, 40, of Sanford, North Carolina, his journey through cancer and to a healthy lifestyle go part and parcel. After five years of active military service and two years as an Army civilian employee, Sinks, then 27 and "invincible," found himself heading into surgery instead of a scheduled deployment to Iraq in January, 2008.

Sinks had accompanied his then-wife to a dermatologist appointment in December, 2007, when the doctor inquired about a mole on Sinks' right ear. Sinks agreed to have the mole removed and checked out. A few days later, he got a call that saved his life.

"[The doctor] said 'you need to go to hospital, you're having surgery on January 8 at UNC,' " Sinks said. "I said 'I'm set to deploy in four days,' and he said 'you don't understand, you have malignant melanoma. It looks aggressive, and if you don't get it taken care of, you might not make it. This needs to be addressed immediately.' "

The surgery was successful, removing Sinks' cancer and repairing his ear during the same session. His lymph nodes were tested and showed no sign of disease, and he was even able to deploy to Iraq and join his unit overseas.

The North Carolina Cancer Hospital, the clinical home of UNC Lineberger, had not yet opened when Sinks had his surgery, but he was thrilled to see a dedicated space for cancer care open in 2009. "I'm a big supporter of that," Sinks said. "I donate every year around Christmas time. It's a cause that's near and dear to me."

Sinks had been a regular annual donor to UNC Lineberger, but a lifestyle change

prompted him to think on a larger scale. After years of Army training and being on active duty, Sinks found himself in a position familiar to many people reaching middle age — in need of a diet, exercise and stress level overhaul.

Having completed his melanoma treatment and approaching 40, Sinks took charge of his health, taking a cue from his sister who had run a marathon.

Sinks began to run, completing 5Ks, 10Ks, 4-milers and marathons, too. His kids, 13-year-old daughter, Ellie, and 10-year-old son, Henry, also got involved, running with Dad, and even setting running goals to train for big events, like Disney's Castle to Chateau Challenge that requires two Disney half marathons in a calendar year and ends in Paris.

In fact, Disney World helped Sinks set a new goal, as he took in the sights, sounds and energy of the theme park last year as he ran the Dopey, four races ranging from a 5K to a marathon in four days. After his February birthday, he made a decision to run 12 marathons in 12 months with a goal of raising \$12,000 for UNC Lineberger. And despite COVID-19's continued uncertainty on the horizon, Sinks is ready to run. "I'm doing the 'Mike: This is 40' tour. I'm absolutely committed," he said. "I was given a second chance at life, so I'll see it through."

Sinks' goal is actually two-fold. While the donations are important to support UNC Lineberger's forward-thinking research and superior cancer care, he also is focused on the issue of better health, something that can also help cancer patients and their families.

The sense of community among runners is something Sinks feels can be extended to everyone in the spirit of better health. "I want to raise awareness so people don't take life for granted, and while I'm particularly focused on melanoma, this goes beyond cancer into raising general health awareness," he said.

Sinks' focus on races of all lengths speaks to his commitment, and he's even planning to donate money in honor of spectators who show up and show their support.

"One of the reasons I had this idea was because I know that not everyone's going to go out there and run," he said. He urged others to donate to causes they believe in, just like he did. "Find something that you're passionate about. Because when you have that personal connection, I believe that it does make a difference. You're more engaged," he said.

The novel coronavirus has put a wrinkle in Sinks' plan, causing several of his scheduled races to be postponed, but he doesn't care if it takes him more than a year to achieve his goal. He's already signed up for marathons in Los Angeles and Philadelphia and is not afraid of a setback. "The 'This is 40' tour will be extended to 'This is 41,'" he joked.


He is still looking to the future, both for himself and for others, as he has his sights set on qualifying for the Boston Marathon.

"Running for me is a mental challenge as well as a physical one," he said. "It's a place where I go in my mind where it all makes sense. It's the closest I'll ever be to flying without a plane." ▲



"Find something that you're passionate about. Because when you have that personal connection, I believe that it does make a difference."

MIKE SINKS
Cancer survivor



Maddi and Duane McKay underwent bone marrow transplants to fight their cancer.

THE MCKAYS: MAKING IT THROUGH CANCER AS A FAMILY

As a first responder, Christina McKay, 31, has seen her share of dire situations but usually from a distance. Christina is a dispatcher at the Johnston County Sheriff's Office and knows full well that things can go south quickly. But it was her own family that was the one turned upside down when both her husband, Duane, and daughter, Maddilyn, were diagnosed with cancer within months of each other.

It began with then-two-year-old Maddi running a fever that she couldn't quite get over. Christina took her to see her family pediatrician, who did some tests and sent the family to UNC REX for an ultrasound and a chest X-ray.

"The doctor came in and told us there was a mass the size of a baseball on her adrenal gland, consistent with neuroblastoma," Christina said. That bombshell hit in October, 2018, and the family sought treatment at the North Carolina Cancer Hospital, the clinical home of UNC Lineberger.

"When Maddilyn's tumor was found by the radiologist, she said, 'UNC or Duke, pick one, go to the ER,' " said Duane, 36, a lieutenant in the fire department in Archer Lodge, North Carolina, their hometown. "Maddilyn's pediatrician said UNC, so that's where we went."

Instead of spending time with the rest of her preschool class, Maddi, now four, began treatment under the watchful eye of Stuart Gold, MD, the chief of pediatric hematology oncology at the N.C. Cancer Hospital. Over the next few months, Duane and Christina dealt with the fears all parents face when their child is diagnosed with cancer, switching off caring for their daughter and going to work. That stress took a toll on their lives and careers, and in May, 2019, Duane's energy levels were low, he was pale and drawn, and he had some blood work done. The results were a surprise to everyone — acute myeloid leukemia.

"We were shocked," Christina said. "I was scared, to be honest, and I didn't have a plan of what was going to happen. I immediately went over to [Maddi's] team and had a conversation, and they said they would help with anything I needed."

When Christina got the news, Maddi was on the fifth floor of UNC Children's Hospital undergoing her own stem cell transplant. Gold told Christina that he would come up with a plan and coordinate with Duane's doctors, Joshua Zeidner, MD, and Marcie Riches, MD.

"We love our whole team," Christina said. "They're all very good."

Like his daughter, Duane would require a bone marrow transplant. He had an induction round of chemotherapy to put his cancer into remission, followed by several rounds of consolidation chemo, and finally he received the transplant.

"The world has COVID-19, and living like that is a small glimpse into the life of a cancer patient, especially an immunocompromised one," Duane said.

"The world has COVID-19, and living like that is a small glimpse into the life of a cancer patient, especially an immunocompromised one."

DUANE MCKAY
Cancer patient

Dealing with two cancer diagnoses and the novel coronavirus placed a strain on their family, but the McKays' tight-knit community pitched in and did what they could to help. As an emergency dispatcher, Christina said the sheriff was supportive of her situation, and deputies paid visits to the hospital. The fire department was involved, too, asking Duane to tell them what his family needed. Fundraisers at their church, a bike ride, a raffle, T-shirt sales and more were dedicated to the family's needs.

"We're from a small town, everyone rallied behind us. It's an extended family," Christina said. "I've always been one to help others whenever they needed it, and for everyone to help, I'm humbled and grateful; we couldn't have gotten through it without everyone that supported us."

Duane has now been in remission for more than a year and is nearly a year post-transplant. Maddi completed her treatment in March and rang the bell with Duane by her side, and now the family is looking forward to getting back to some of their favorite activities.

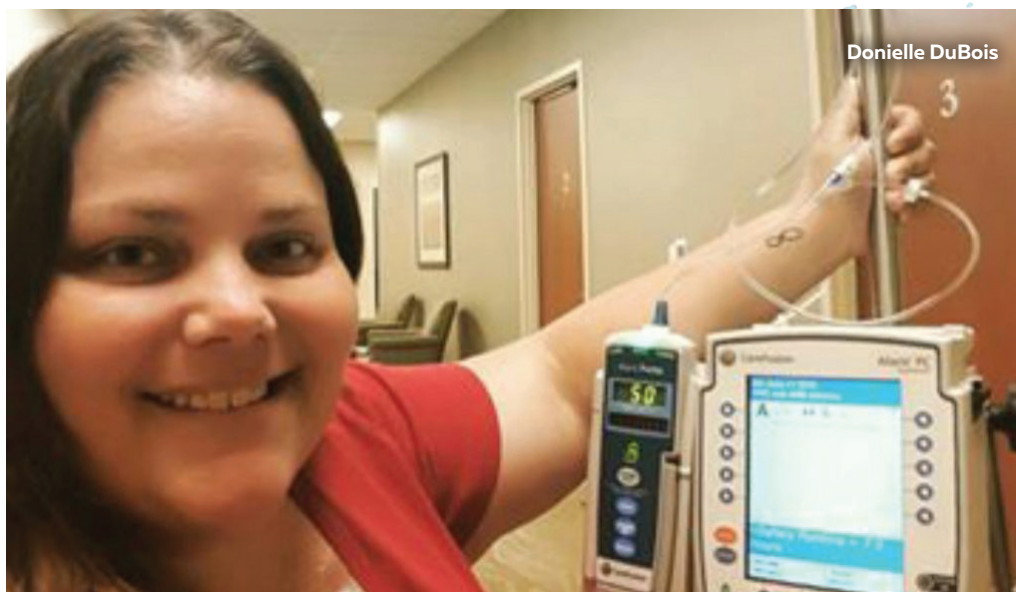
"We love to go to the beach; we haven't been able to go in two and a half years," Christina said. "We're getting back to normal life."

For Maddi, that means returning to her preschool class and attending church again when it's safe to go. These days, she's enjoying painting, doing puzzles, cooking and playing with Barbies, some of her favorite activities. Christina has returned to work, and Duane is hoping to do the same soon. For now, the family is just looking forward to the future.

"You can't fix anything by going backward. Time doesn't work like that. You'll most likely never know what caused [your cancer], so don't waste time worrying about it," Duane said. "Always move forward." 🌈



Maddi, 4, completed her treatment in March and loves painting, doing puzzles, cooking and playing with Barbies.



ROAD TRIP FOR CAR-T OFFERS HOPE FOR PATIENT AFTER CANCER RELAPSE

When she got out of the car at a gas station in North Carolina during a summer road trip in 2017, Donielle DuBois said the heat hit her like a wave.

She and her mom had been driving for more than two days from Sioux Falls, South Dakota, to get to Chapel Hill. It was a bucket list item for her mom, Rozanne DuBois, to take a road trip, so they had stopped in Missouri to visit family; in Nashville, Tennessee, to visit museums for two country music legends; and in Asheville, North Carolina, to get a glimpse of the Biltmore Estate.

"It was a different kind of hot," Donielle DuBois said. "I also never care to spend an extended period of time in North Carolina again in July," she joked.

The trip wasn't just for sightseeing.

DuBois had traveled to the North Carolina Cancer Hospital in Chapel Hill to receive chimeric antigen receptor T-cell

(CAR-T) immunotherapy for her Hodgkin lymphoma, which had recurred after being in remission for almost four years.

The treatment was part of a phase 1b/2 clinical trial led by UNC Lineberger's Natalie Grover, MD, clinical director of the Cellular Therapy Program, and Anne Beaven, MD, director of the Lymphoma Program, to study the safety of the CAR-T therapy for patients with relapsed or refractory Hodgkin lymphoma and for non-Hodgkin lymphoma positive for the CD30 cellular marker.

CAR-T therapy involves extracting specific immune cells from patients, engineering the cells in the lab to hunt tumor cells displaying a specific molecular target, and then re-infusing them back into the patient to fight their cancer.

UNC Lineberger is one of a select few academic centers in the United States – and the only center in the Southeast – with the scientific, technical and clinical

capabilities to identify new tumor targets and then develop and infuse novel CAR-T immunotherapy.

CAR-T therapy at UNC Lineberger

DuBois was patient No. 8 in the clinical trial. She said the treatment experience was “much easier” than the treatment she’d been through previously. The initial diagnosis had come “out of left field” 10 years ago when DuBois was 25. She received chemotherapy, radiation and a stem cell transplant before her cancer went into remission in 2012.

After she relapsed in 2016, she received immunotherapy treatments known as checkpoint inhibitors that weren’t available when she was first diagnosed. She was excited to learn about the clinical trial at UNC-Chapel Hill when she relapsed again.

“I feel like I sailed through it,” she said of CAR-T treatment, explaining that she was able to work part-time while she was in Chapel Hill, go to movies and walk around Costco.

It has been more than two years since she got the CAR-T therapy, and the cancer is still in remission.

“I am super excited that they continue to have advances in cancer treatment, and it seems like I’ve been lucky enough throughout my two journeys; they have just been timed right that different treatments have been available to try,” DuBois said.

Life after treatment

The experience has made DuBois realize the meaning of the phrase you “only live once.”

After she entered remission following the CAR-T therapy, she underwent weight loss surgery, which revealed a slow-growing neuroendocrine tumor in her stomach. She said she was fortunate they found it before it was too late.

She now works two jobs. She loves going to see her favorite artists in concert and recently saw Post Malone in Omaha, Nebraska. As a “huge” sports fan, she also drives to watch the Minnesota Twins play in Minneapolis and has also seen her favorite Dallas Cowboys play in Dallas; Tampa Bay, Florida; Chicago; Minneapolis and Green Bay, Wisconsin.

She also enjoys traveling and is looking forward to taking a trip with her friends to the Florida Keys.

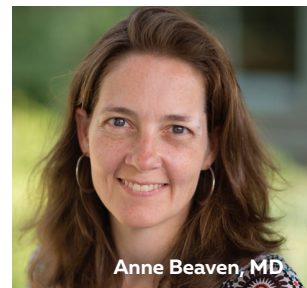
She is grateful to her oncologist in Sioux Falls, whom she thinks of as her “hero,” and her mom, who has supported her through it all. She continues to be positive and upbeat because she’s a glass half full person, and “what’s the alternative?” she asked.

“People can always say, ‘you only live once, don’t take any day for granted,’ ” DuBois said. “People say that, but I don’t think they truly understand what that means unless they’re faced with a life or death situation. That’s one thing I’m definitely wide awake to.” ▲



Natalie Grover, MD

Donielle was part of a clinical trial led by UNC Lineberger’s Natalie Grover, MD, clinical director of the Cellular Therapy Program, and Anne Beaven, MD, director of the Lymphoma Program, to study the safety of the CAR-T therapy.



Anne Beaven, MD



Rachel Lezcano had the support of her husband, David, throughout her cancer journey.

PATIENT THRIVES AFTER CANCER WITH EXTENSIVE SUPPORT SYSTEM

Early detection is key to cancer survivorship, and Rachel Lezcano and her care team know this first-hand. A Greensboro, North Carolina, resident, Lezcano credits a diligent group of doctors and the support of family and a survivor community that helped make a difference in her battle with breast cancer.

Dealing with a pre-existing gastrointestinal condition that comes with an increased risk for breast, colon and cervical cancer, Lezcano's physician at UNC Health urged her to begin regular mammograms at age 25.

"I don't have the BRCA gene, but it's like that," she said. "I'm high risk for other things."

That risk proved all too real when Lezcano, 27, received the results of her first mammogram in April, 2019, which detected invasive ductal carcinoma. Lezcano already had a good relationship with her doctor at UNC, and soon after diagnosis, met with UNC Lineberger's Stephanie Downs-Canner, MD, to discuss the risks and benefits of having a double mastectomy.

"That's the moment that [cancer] felt real," Lezcano said. "I knew how serious it was, and everything changed."

That was when Lezcano's relationship with Downs-Canner began in earnest. She said the doctor was a comforting presence in her life and throughout her cancer journey as she faced a mastectomy, reconstruction and an infection that delayed her implants until earlier this year.

"There are doctors who are doctors because they are passionate about what they're doing, and she is one of those doctors," Lezcano said. "It was such a scary thing, but there was so much comfort there."

She also found comfort in her faith, which helped get her through some rough times. "When I was diagnosed with breast cancer, my faith and relationship with the Lord helped me through and gave me the strength to get through. When times were hard, he got me through."

Lezcano also had support from those closest to her, including David, her then-boyfriend of three years and now husband. They became engaged during a trip to England and Italy in 2019 and planned their wedding for March of this year, but had to rethink their plans due to COVID-19. Though they married in March, they waited until October to celebrate

their wedding with friends and family, including Downs-Canner and plastic surgeon Jennifer Carr, MD.

"Relationships with friends and family are more important to me now," she said. "I appreciate the people that were there for me, and the whole year we've been through we can come out on the other side."

Lezcano also said that talking about her cancer was beneficial, and she was surprised to find a like-minded community of patients and survivors online, something she's become passionate about and actively engages with still. She was thrilled to find more people going through the same thing as she was, chatting about topics like what to wear and how to work out after surgery.

"As much as people wanted to be there for me, they didn't understand what I was going through," she said. "Finding other [patients] was life changing. I don't know how I would have made it through without those connections."

Downs-Canner agrees, and thinks others can benefit from patient voices like Lezcano did. She is coordinating with Carr and Patty Spears, research manager for Patient Advocates for Research Council, to create a support group for patients under 30.

"We are working on starting the program, and Rachel is part of the inspiration for that," Downs-Canner said. "I feel strongly that young women have a lot of unique

needs, and it feels a little lonely when you're the only person who looks like you in the waiting room."

Some of the issues the group may address include the isolation some younger breast cancer patients feel when most of their fellow patients are older, as well as fertility, sexual health and lifestyle needs that younger patients can face after diagnosis, including maintaining a job, and caring for young children or aging parents.

"We recognize the social and emotional needs they have, and that they need each other," Downs-Canner said.

Downs-Canner said she hopes to see the group launch within a year and already has a few patients interested in providing input, including Lezcano.

"No one wants to go through cancer, but I'm trying to make a positive out of a negative and look at the silver lining," Lezcano said. "Having incredible doctors made it easier. I never felt alone. I truly believe all of the people I've met through this process have made a huge impact in my life."

"Because her cancer was caught early, Rachel was treated in a way that minimized the impact on her quality of life," Downs-Canner said. "For example, she didn't require chemotherapy, in part due to being screened early. Because it was found at such an early stage, her prognosis is excellent." ▲



"Because her cancer was caught early, Rachel was treated in a way that minimized the impact on her quality of life."

STEPHANIE DOWNS-CANNER, MD

The Power of Pink, UNC Lineberger's virtual campaign for Breast Cancer Awareness Month, is going on now through the end of October. All funds raised through this campaign help patients like Rachel experiencing breast cancer and support our clinical needs to serve them. Visit unclineberger.org/powerofpink to help us continue providing excellent care to women throughout the state of North Carolina.



Kevin Pearlstein, MD, hikes with his daughter.

WITH THE PATIENT AT EVERY STEP

Kevin Pearlstein, MD, is a life-long hiker so it's not surprising that his road to a radiation oncology clinic in Hillsborough, North Carolina, begins in Durham, passes through Medford and Cambridge in Massachusetts, and ends up 10 miles from the North Carolina Cancer Hospital, the clinical home of UNC Lineberger.

Pearlstein's patients know him well. They bring their pets to appointments ... sometimes. They talk, and he listens. He talks, and they listen. Together, they blaze a forward path, building relationships. A long hike, sometimes.

As a teen, he wanted to be an engineer. He focused on making things — like rockets. He graduated magna cum laude in engineering from Tufts University in Massachusetts. He worked in bioengineering — drugs and medical devices. So, medicine began to intrigue him. He went to night school — at Harvard University, no less — catching some prerequisites for medical school. "I think the bar was fairly low. Not like getting into real Harvard," he laughs.

He chose UNC School of Medicine, not far from Durham, his hometown. So, yes, he bleeds two colors of blue. He can't help it; his dad still works at Duke University.

A year out of residency and an assistant professor in radiation oncology, Pearlstein is clear about his path and why he sits in Hillsborough several times a week. It's about the patients.

"My interest is focused on quality of life and survivorship. Our patients are living longer. But there may be complications created by our treatments," he said, meaning things done to target tumors with precision. "Sometimes, we don't pay enough attention. We need to be asking 'how does this affect you?'"

The N.C. Cancer Hospital clinic in Hillsborough meets a real need. When considering cancer treatment, it's easy to forget that, during prolonged therapies, transport costs and parking fees are issues for many. You could say the Hillsborough clinic is close to his heart. "I'm passionate about it," he said. "It's a

lot to go through to access treatment. And we're meant to serve all people in North Carolina. Having a place like this makes it possible."

His approach to medicine is holistic and focuses on individualized treatment. He sees people every day for months at a time. "Patients are going through a tough time. You form close bonds. You know them and the family."

His patients run the gamut of cancers: breast cancer; prostate cancer; gastrointestinal cancer; head and neck; and brain cancer. "We in radiation oncology usually have a role. If not curative, radiation can provide palliative care to relieve symptoms." A close relationship with patients "helps us tailor our treatments and better describe expectations for them," Pearlstein said. "For roughly half the patients, we are treating them to get rid of the cancer. Half of them you know will lose the battle, but I can improve their quality of life with radiation."

And that is why he also is focused on the patient's downstream experience. In fact, during his residency training, he had a neck injury that sidelined him for months. He's had to walk this uncertain footing. "Often, they have the same medical problems that other people have, but maybe more because of the cancer treatment that they got. You can't lose sight of how it impacts them down the road."

Of course, he cannot do it alone. He works with physicists and dosimetrists all the time. "Their roles are to help us figure out how to treat a patient. Should we use radiation? How much? These guys put my decision into a plan," Pearlstein said. "The physicists tell me if our machines can execute that plan. The dosimetrists tell me the right dosage at the right spot, how to bring in the beams without affecting other areas."

"It's difficult not to always focus on medicine," he admits. "But you can't live medicine your entire day. At end of the day, I can look back and know I helped these people."

And what helps him cope with helping patients and their families deal with cancer? "I have support from all of oncology at UNC Lineberger," he said. "We talk constantly, and I have social support outside."

Extended family are close. His father is a neuroscience researcher at Duke, his mother a city planner, one sister is a nurse, and the other an architect.

"My wife, Michelle, is my rock." Michelle also is a doctor — a dermatologist. Daughter Sophia, 16 months, and Banjo, a sort-of golden retriever rescue but with a curly tail and pointy ears, round out the home life picture.

And how does this family put medicine aside to relax and re-center?

You have to ask? They go on a hike. ▲



"A close relationship with patients helps us tailor our treatments and better describe expectations for them."


KEVIN PEARLSTEIN, MD
Assistant Professor in Radiation Oncology

UNC Lineberger's Advanced Cellular
Therapeutics Facility.



LEADING THE WAY:

COLLABORATIVE ENVIRONMENT DRIVES RESEARCH INNOVATIONS



Physician researchers Benjamin Vincent, MD, left, and Gaorav Gupta, MD, PhD, right, are making their marks in the field of cancer prevention through innovative research into cancer vaccines and testing methods for cancer.

BEFORE, DURING AND AFTER A CANCER DIAGNOSIS:

RESEARCH EFFORTS GIVE PROMISE TO BETTER PREVENTION, DETECTION AND TREATMENT OPTIONS

UNC Lineberger's research efforts span a continuum of scientific exploration, from finding ways to prevent and detect cancer, to treating cancer more effectively if it arises, to reducing the chance that a cancer returns after treatment ends. Perhaps nowhere else does this scientific exploration have more promise than in the closely related fields of virus-linked cancers and immunotherapies. Up to a fifth of all cancers are associated with immune system-triggering viruses: the human papillomavirus (HPV) is linked to cervical, head and neck, and several other types of cancer, while hepatitis C, a blood-borne viral infection, has been linked to liver cancer and non-Hodgkin lymphoma.

Before: Prevention and Detection

The Holy Grail of cancer research is prevention. Successful lung cancer prevention plans all include tobacco cessation work, and regular screening mammography can identify pre-cancerous lesions that may progress to cancer.

Several years ago, a urine-based detection method for HPV-linked cervical cancers was added to the cancer screening arsenal. Researchers hope this test could boost screening rates, particularly among people who cannot travel to major medical centers, such as the North Carolina Cancer Hospital, the clinical home of UNC Lineberger, for physician consultations or in-person exams.

To better understand the test's potential, UNC Lineberger's Jennifer S. Smith, PhD, Lisa Rahangdale, MD, MPH, and colleagues designed a study comparing urine testing to other screening methods in women at risk for cervical cancer. "Urine sampling is a promising approach that has the potential to greatly increase screening coverage as it may be a much easier and more acceptable test for many women," Smith said.

The researchers compared specimens processed with Onclarity, an FDA-approved HPV test for collection by a physician, to a self-collected cervical cell sample and to a urine sample. Urine testing for HPV was able to identify 80% of women whose cases were classified as having high-grade cervical disease. In contrast, researchers found testing self- or physician-collected cervical samples led to accurate results 94% of the time.

"The preservative that we use for the urine samples has been a game changer as it provides the needed stability for us to test for the HPV virus after collection of a sample," Smith said. "Now, we need to improve collection techniques and optimize laboratory processes to boost our accuracy rates so women can be assured that their urine test results are as good as those obtained by collecting cervical cell samples."

Smith and UNC colleagues recently received a grant from the National Institutes of Health, which she notes will be crucial in boosting efforts to explore the effectiveness of urine testing in places such as Malawi where rates of cervical cancer are extremely high.

"Our work is vital because currently 20% of women in the U.S. are not screened for cervical cancer, and rates are even higher in Africa and elsewhere. There is no reason any woman should die of this highly preventable disease," she said.

"Our work is vital because currently 20% of women in the U.S. are not screened for cervical cancer, and rates are even higher in Africa and elsewhere. There is no reason any woman should die of this highly preventable disease."

JENNIFER S. SMITH, PHD

During: Developing Better Treatments

For many cancers, no early detection methods exist, so lethal cancers can continue to grow, often without exhibiting early warning signs. But if a cancer does develop, there are exciting new therapies, such as tumor vaccines, which work by harnessing the immune system to fight cancer.

"While the field of therapeutic tumor vaccines is rapidly advancing, a major challenge is identifying which targets on a tumor provide the best anti-cancer effects," said UNC Lineberger's Benjamin Vincent, MD. "Our study provides a new method to tackle this challenge by predicting the efficacy of a tumor vaccine target prior to treating the patient."

"Our study provides a new method to tackle this challenge by predicting the efficacy of a tumor vaccine target prior to treating the patient."

BENJAMIN VINCENT, MD

The researchers scanned the genome of a cancer cell to find clues to the presence of irregularities produced by the cancer. Then, based on those findings, they looked for abnormal proteins, called neo-antigens, that trigger an immune response to cancer cells but not against normal healthy cells.

"Current methods for ranking the efficacy of neo-antigens rely on the prediction of how well that neo-antigen will be presented in the body," Vincent said. "The problem with this method is that it does not account for how well the neo-antigen can actually activate the immune system."

The UNC Lineberger researchers used laboratory mouse models to analyze the immune response to hundreds of different predicted neo-antigens. Then they developed a machine learning algorithm to determine which antigens might produce a strong immune response. Based on the successful outcome of this study, they are now developing software with a local company to commercialize the algorithm for wider use.

The next step is to open a clinical trial for people with advanced lung cancer and head and neck cancer. The trial, using the vaccine they believe to be most effective, could start as early as next year.

"We believe it's not too bold to hope that the vaccine we will be testing in this trial could be a cure as our work in mice and in the lab has helped us hone the best possible therapy for these cancers," Vincent said. "We also believe this trial will be very relevant to the people of North Carolina as lung and head and neck cancers are very much related to tobacco use, which historically has been a major health issue in the state."

After: Preventing Cancer's Return

The chance that some microscopic tumors can evade surgery or treatment and blossom into new, threatening tumors after a treatment is deemed successful is a real possibility, so cancer survivors and their health care providers need to be vigilant.

One such example of proactive vigilance is an experimental blood test developed at UNC Lineberger. The test has been shown to accurately detect HPV-linked head and neck cancer recurrence as well as confirming when patients remained cancer-free.

"We developed a technology that enabled us to distinguish HPV DNA that came from a tumor versus HPV that's simply related to infection," said UNC Lineberger's Gaorav Gupta, MD, PhD.

Based on a recent study, the researchers reported that their blood test was found to be 99% accurate in confirming if a patient was cancer-free after treatment ended. In patients who had two subsequent HPV-positive blood tests months after treatment ended, the test was 94% accurate at detecting recurrent cancer. The researchers are now trying to determine the optimal timing interval between these tests so they can boost accuracy.

"Recurrent cancer is hard to treat, but achieving remission was possible because our test caught signs of disease recurrence early," said UNC Lineberger's Bhisham Chera, MD. "Because this test has performed so well in this small group of people, we're now pursuing a large clinical trial with other cancer institutions to determine how the test might perform for all HPV-linked cancers."

The researchers are also investigating whether the HPV blood test can potentially be used as a screening tool before there are signs of cancer in individuals with oral HPV infection. HPV is a key risk factor for developing certain types of throat cancer.

Gupta and Chera both noted that what made this research advance possible was the unique cross-collaborative nature of UNC Lineberger's bench-to-bedside approach to cancer. "Our research at Lineberger has been especially rewarding and fruitful because of this collaborative, chat-by-the-water-cooler approach," Gupta said. "And if our test works in a larger population in a clinical trial, I think we may have hit a home run for our patients." ▲

"If our test works in a larger population in a clinical trial, I think we may have hit a home run for our patients."

GAORAV GUPTA, MD, PHD



Left to right: Gaorav Gupta, MD, PhD, Bhisham S. Chera, MD, Jennifer S. Smith, PhD, and Benjamin Vincent, MD.



Left to right: Cindy Rogers, William Wood, MD, MPH, Adam Goldstein, MD, MPH, Dirk Dittmer, PhD, Loretta Muss.

DESPITE PANDEMIC, MISSION TO SERVE PREVAELS FOR UNC LINEBERGER

The impact of COVID-19 on North Carolinians and beyond cannot be overstated. As UNC Lineberger Comprehensive Cancer Director Shelley Earp, MD said, "It was never a question of if we would see another pandemic, it was when."

Adaptations for patient and employee safety have fundamentally altered UNC Health's care delivery. Many divisions across the system were forced to decrease care given on-site by 70%.

However, UNC Lineberger physicians and care teams worked tirelessly to ensure in-clinic care maintained the highest possible level of safe operation for patients, especially those in need of surgery and procedures. As a result, with precautions such as masks and physical distancing, on-site cancer care never fell below 60% capacity and is now back up to 90%.

While the pandemic has also proven challenging for research operations, measures in place as of June 1 allow 50% capacity in labs for researchers to allow for physical distancing while incorporating masks and personal protective equipment.

Above all, UNC Lineberger's physicians and researchers remain dedicated to providing the highest quality cancer care and pursuing innovative discoveries while also evolving their work to help fight the COVID-19 pandemic.

Research

With support from donors to UNC Health Foundation's COVID-19 Response Fund, UNC Lineberger's Dirk Dittmer, PhD, director of UNC Viral Genomics Core, upgraded his lab to biosafety level 2 plus, allowing his team to perform next-generation genetic

sequencing on COVID-19 samples with state-of-the-art infrastructure and technology designed for working safely with airborne viruses.

"There's a concern about infections among cancer patients," Dittmer said. "It's important that we're prepared. That's why the UNC Lineberger building was the right place to do it. We not only study viruses that cause cancer directly but also viruses that affect overall cancer treatment mortality."

Though focused on what the team can do to help COVID-19 patients now, Dittmer is looking to the future, using the sequencing data to help prepare for the second wave of coronavirus and for any new viruses on the horizon. Dittmer said UNC Lineberger is an ideal place to conduct this research and credits a steady stream of resources to the team's continued success.

"The reason we can do all this is because for the past five years we've been doing basic virus and cancer research," he said. "The reason we can go so quickly is that the people who work on this have been doing this for a long time and are highly trained. Even five years ago, we didn't know we would need those skills."

UNC Lineberger is also one of 21 National Cancer Institute-designated comprehensive cancer centers that will assess the impact of smoking on COVID-19 symptoms, treatment and outcomes.

UNC Lineberger's Adam Goldstein, MD, MPH, director of the UNC Tobacco Treatment Programs, is working alongside Kimberly Shoenbill, MD, PhD, to review the cases of nearly 60,000 people from all age groups and across the country who have had confirmed COVID-19 infections or are presumed to have been infected based on provider reports.

The data will be used to create a national database that will include information on patients' smoking status, secondhand tobacco smoke exposure and treatment outcomes.

"Since early studies show smoking negatively impacts COVID-19 outcomes, this research may ultimately help lower risks and help people quit smoking," Goldstein said.

The researchers also will account for social determinants of health such as insurance status and pre-existing diagnoses such as cardiovascular disease, respiratory disease, obesity and cancer.

Patient Care

William Wood, MD, MPH, is helping to establish an international database to collect and share information that could help improve care for patients with blood cancer who have tested positive for COVID-19.

As chair of the ASH Research Collaborative Data Hub Oversight Group, Wood has worked with researchers across the country to launch the COVID-19 Registry for Hematologic Malignancy, an initiative designed to capture data on COVID-19 patients who have been or are being treated for blood cancer.

"The idea was to try to get information to providers as quickly as possible about these patients," Wood said. "We want to collect data from multiple sites around the world and make it available through publicly available visualizations in order to inform care."

The registry enables health care providers to enter information using an online data collection tool, as well as view summary reports. The ASH Research Collaborative plans to expand the registry to accept data on patients with malignant and non-malignant hematologic conditions and any complications associated with COVID-19.

Beyond clinical care, UNC Lineberger is working to ease financial burdens for cancer patients during the uncertainty of the pandemic through the Cancer Patient Assistance Program.

Cindy Rogers, patient assistance coordinator for UNC Lineberger's Comprehensive Cancer Support Program, has seen an uptick in requests from cancer patients for help with utility, rent and hotel bills.

"We're seeing many patients and families impacted economically by COVID-19," Rogers said. "The individual requests are larger, such help with an energy bill that has not been paid for several months due to job loss or reduced hours."

The program made rapid structural changes to ensure patients still receive the support they need while implementing necessary safety measures. Rather than working on-site at the N.C. Cancer Hospital and delivering needs such as gas cards and utility support directly to patients and families, Rogers and her team redesigned the program to use the mail to fulfill requests, enabling employees to safely work remotely.

"It was tough to try to figure out how to do it, while we're doing it," Rogers said. "But we've built a great new system and are happy to still be able to get families the help they need. I am so lucky to continue helping those that are suffering during an unprecedented time."

"We've built a great new system and are happy to still be able to get families the help they need. I am so lucky to continue helping those that are suffering during an unprecedented time."

CINDY ROGERS

Patient Assistance Coordinator | UNC Lineberger Comprehensive Cancer Support Program

Employee Support

Loretta Muss, the N.C. Cancer Hospital Patient & Family Advisory Council coordinator, saw the toll fighting the coronavirus takes on the hospital's doctors, nurses and staff.

In a fortunate coincidence, a consortium of restaurants in Carrboro, North Carolina, reached out to Muss' husband, Hy, the Mary Jones Hudson Distinguished Professor of Geriatric Oncology and director of geriatric oncology at the hospital, and said they were interested in helping provide meals to those on the front lines.

Muss received funds from the Patient & Family Advisory Council and UNC-Chapel Hill's Interfraternity Council and Panhellenic Association, as well as many local churches and neighbors, and was able to begin serving more than 200 lunches to health care workers in the N.C. Cancer Hospital once a week.

She said it is the best way to help the coworkers she is missing on a daily basis and to help support the local economy.

"I know so many of the staff; I work with them, establish relationships with them and my husband works with them," Muss said. "These are very scary times, and we're going to continue to do this until [COVID-19] is in our rearview mirrors." ▲



NO WALLS, JUST BRIDGES

Cancer is not just the purview of doctors and medicine, as any cancer patient could tell you. It involves the patient's family — many times, extended family. It frequently involves a person's religious community, classmates and friends. In the best of situations, these people are a community of support for the patient and for one another.

In that spirit — knowing an involved and knowledgeable community can reduce the burden of cancer and speak up for equitable and compassionate support — the UNC Lineberger Office of Outreach and Community Engagement was born in 2019. Its mission is to involve communities statewide in UNC Lineberger's research, treatment and policy efforts to improve understanding and assist in meeting the cancer needs of North Carolinians.

Communities make a difference

That's easy to say and harder to do. Health issues are systemic and pervasive. Meeting the challenge requires organization, a structure and people. Director Stephanie Wheeler, PhD, MPH, calls the idea "no walls.

"The expertise of researchers, clinicians, social workers and the community helps us understand what affects cancer outcomes," she said. "Appreciating these community interactions might lead us to ask how can a cancer center start to dismantle poverty?"

Poverty affects outcomes not only because of treatment costs but more generally because poverty is associated with poor health, lack of medical care throughout life, and sometimes harmful practices, such as smoking. Wheeler likes to begin with whatever is "modifiable."

"That's where partnership in research is critical," she said. "Being connected to state agencies, churches, youth groups. They have a voice and an important role in the community's health."

Assistant Director Marjory Charlot, MD, MPH, MSc, echoes the thought from a slightly different angle. She focuses on responsiveness. "We believe in this relationship. It's not one and done, like drop off the cancer information and

leave,” she said. “We want long-term partnerships, bi-directional, listening and learning.”

She is convinced that communities “do change the science. They do change the care. It’s not me coming up with ideas on how to fix a problem. We co-create solutions to improve cancer care and lessen the cancer burden.”

Addressing community disparities

The office is grounded in science and compassionate care at the North Carolina Cancer Hospital. It maintains a thorough database of the cancer burden across North Carolina, getting down to granular statistics on each type of cancer, who it affects and more.

Documenting cancer disparities is just the beginning, and involving communities and stakeholders to help change disparities is an important step. Some of the questions are simple.

“If there’s a cluster of cancer, what’s going on?” Charlot wonders. “Is it environmental or familial? Do people have access to screening before they are symptomatic? Do people have primary care? Are there parks and gyms nearby so they can be physically active? Access to fresh fruits and vegetables?”

Wheeler is deep into the state’s disparity data. “We monitor the cancer burden to understand how to move the needle. We use a lot of data to do that,” she said. The office partners with the state cancer registry and links those data to health insurance claims. The data show how cancer is treated and the statewide distribution of cancer providers, primary care and pharmacists. “We triangulate these data to understand what drives outcomes.”

How does their work translate to action? Wheeler offers two examples. One program provides a financial navigation intervention to address the increasing costs of care.

Patients are matched with a trained financial navigator to inventory their resources (such as employment, savings, and insurance) and match them with programs that can help with co-pays and non-medical support, such as transport or accessing insurance, Wheeler said. “It’s wrap-around case management with monitoring and follow-up, engaging with supportive organizations.”

After a pilot program with 50 cancer patients at the N.C. Cancer Hospital, the program rolls out this fall in 10 North Carolina cancer clinics in five rural counties and five non-rural counties.



“The expertise of researchers, clinicians, social workers and the community helps us understand what affects cancer outcomes. Appreciating these community interactions might lead us to ask how can a cancer center start to dismantle poverty?”

STEPHANIE WHEELER, PHD, MPH

Director of UNC Lineberger Office of Outreach and Community Engagement

The second project is in collaboration with the Carolina Cancer Screening Initiative (CCSI) on a grant for colorectal cancer screening at two North Carolina clinic systems. "These are two parts of the state that have low screening rates, and we want to help improve that," Wheeler said. "We mail stool screening kits to those clients who are overdue for screening — which often includes Spanish-speaking patients, uninsured populations, Medicare patients, and where transportation is a concern." Positive tests — typically a rate of between 5% to 10% — are referred for a colonoscopy, with additional navigation assistance provided by the team. Tracking identifies trends and outcomes, and adjustments are made, including new offerings like screenings for early detection of lung cancer.

Creating equity in care

Charlot's newest research will examine state systems, hospitals and clinical trials to understand barriers to optimal care, especially for minorities. "I'm looking at providers, research coordinators, and where the hospitals are — because most academic centers are where demographics are less diverse, and most people get their care where they live," she said.

She hopes her research, made all the more personal for her as a Black woman, will shed light on how to build an equitable health infrastructure so underrepresented minority patients have the option to participate in clinical trials where they get their care.

"My sense is that history also is a barrier," she said. "There's the issue of not having diverse populations on clinical trials, especially Black people, perhaps because there's still a lot of distrust in research." Community engagement will help, she believes. "I find it compelling that people are more willing to participate if they feel like respected partners in the research."

Wheeler also sees the forward path through the community. "I'm an optimist. I'm hopeful about the receptiveness of North Carolina communities on what this office wants to do," she said. "And that means not just improving research and making it more community-focused but also improving the patient care experience. The exceptional care we offer at UNC should be accessible to everyone. We are the people's cancer hospital, after all." ▲



"Communities do change the science. They do change the care. It's not me coming up with ideas on how to fix a problem. We co-create solutions to improve cancer care and lessen the cancer burden."

MARJORY CHARLOT, MD, MPH, MSC

Assistant Director of UNC Lineberger Office of Outreach and Community Engagement

UNC Lineberger's Satish Gopal, MD, MPH, was named director of Global Public Health at the National Cancer Institute.



UNC LINEBERGER PHYSICIAN NAMED DIRECTOR AT THE CENTER FOR GLOBAL HEALTH BY NATIONAL CANCER INSTITUTE

In February, the National Cancer Institute named Satish Gopal, MD, MPH, director of the Center for Global Health.

Gopal is a physician-scientist who led the cancer program for UNC Project-Malawi, a research and care collaboration between the University of North Carolina at Chapel Hill and the Malawi Ministry of Health, since 2012. Prior to joining the NCI, Gopal held faculty appointments in the UNC School of Medicine and UNC Gillings School of Global Public Health, and was a member of the UNC Lineberger Comprehensive Cancer Center and the UNC Institute for Global Health and Infectious Diseases.

"The global cancer burden is enormous. About two-thirds of cancer deaths occur each year in low- and middle-income countries, and that's increasing," Gopal said. "NCI can hopefully play a key role in addressing cancer as a truly global public health problem," he added. "Studying cancer everywhere should benefit cancer patients everywhere."

"NCI can hopefully play a key role in addressing cancer as a truly global public health problem. Studying cancer everywhere should benefit cancer patients everywhere."

SATISH GOPAL, MD, MPH

Director of the NCI Center for Global Health

"Satish's training and faculty time in sub-Saharan Africa allowed him to truly understand the cancer burden, leading to both thoughtful and important publications and a national reputation in the emerging field of global oncology," said Shelley Earp, MD, director of UNC Lineberger. "He understands firsthand the challenges a cancer diagnosis poses in communities and countries in which the care resources might not readily available. He not only cared for cancer patients in Malawi, he helped build a care system for UNC Project-Malawi that in turn allowed him, his colleagues and trainees to perform the research that will continue to make a difference. He is one of those rare individuals whose inspirational work is helping to build an academic field and attract students and other trainees."

New role as director

At the NCI, Gopal provides oversight and the strategic vision for global research into the prevention and treatment of cancer, promotes cancer control efforts in collaboration with non-governmental partners and works with U.S. federal agencies within and outside the National Institutes of Health to brief them on the NCI activities with respect to global cancer.

According to Myron S. Cohen, MD, director of the UNC Institute for Global Health and Infectious Diseases and associate vice chancellor for global health and medical affairs at UNC-Chapel Hill: "Dr. Gopal completed his combined fellowship training at UNC in infectious diseases and oncology with the express goal of building a world-class cancer program at UNC-Project Malawi, which he has done with remarkable success over the past decade. Satish's commitment, knowledge and 'on the ground' expertise make him a truly unique candidate to lead the NCI Center for Global Health. In this position, we can safely anticipate improvement in cancer detection, treatment and care, worldwide."

"It's not lost on us that UNC has sent two graduates, who then grew their careers on our faculty, to lead the nation's cancer efforts - National Cancer Institute Director Ned Sharpless '88 and '93 and now NCI Global Oncology Director Satish Gopal, '97 and '00," Earp said. ▲



UNC LINEBERGER SCIENTISTS AT THE FOREFRONT OF VAPING RESEARCH

As news about the dangers of vaping swept the nation, UNC-Chapel Hill scientists were well positioned to weigh in on the problem. An independent study found that UNC was the third most prolific producer of scientific publications about electronic cigarettes, and UNC Lineberger's Kurt Ribisl, PhD, one of the most prolific e-cigarette scientists.

With research focused on topics such as the effects of vaping on fertility, and how marketing and flavoring of electronic cigarettes impacts young people, UNC Lineberger researchers helped make inroads into the problem affecting so many teens and young adults today.

In an industry watch update published in the journal Tobacco Control last year, Rebecca S. Williams, PhD, MHS, found that cheap, disposable e-cigarettes are

easily found online and the price points are low, making the products more attractive to younger users.

Many of the products are modeled after Juul, the widely popular e-cigarette that uses pod style e-liquid containers, Williams said. Some have a nicotine concentration of up to 7 percent, which is higher than nicotine concentrations provided by Juul. The products are priced under \$5, which is about the same or less expensive than a single refill of a Juul pod, which are sold in packs of two or four.

"These are going to draw users in – in particular youth users that might not have otherwise tried these products," said Williams, who analyzed online marketing of disposable e-cigarette vendors. "These products are so cheap; there's a very low cost to entry."



"The use of e-cigarettes among adolescents is alarmingly high, prompting the FDA to call it an epidemic."

SETH NOAR, PHD

Vape flavors modeled after popular candies and desserts are also appealing to young users, as UNC Lineberger's Adam Goldstein, MD, MPH, found. Goldstein discovered that non-menthol flavors attract youth and adults to use e-cigarettes and that the use of flavored e-cigarettes is linked to higher e-cigarette use among youth.

Most e-cigarettes include at least one of about 7,000 e-cigarette flavors available for purchase, such as blueberry cheesecake, mango, cinnamon, sweet milk and lemon crumble cake. Studies over the past five years have shown a steady rise in vaping among youth, and a 2019 study showed that about 28 percent of U.S. youth are current e-cigarette users.

"Consistent evidence shows that flavors attract both youth and adults to use e-cigarettes," Goldstein said. "Given the fact that nicotine is highly addictive and can affect brain development – as well as these clear findings that the impact of flavors on youth is strong and consistent – we believe that banning non-menthol

flavors in e-cigarettes will help reduce the epidemic of youth e-cigarette use."

According to UNC Lineberger's Hannah Baker, MPH, studies she reviewed showed that flavors were a major factor in attracting young users and cited as a primary reason for use among this age group.

"The use of e-cigarettes among youth may be a gateway to future cigarette use, and nicotine is especially harmful to developing adolescent brains. These facts, along with biomedical research linking vaping to multiple adverse health effects, make the recent precipitous increase in e-cigarette use among youth particularly alarming," Baker said.

While cigarette smoking has declined among middle and high school students in the U.S., the use of e-cigarettes and vaping among this age group has more than doubled during the past three years, an increase UNC Lineberger's Seth Noar, PhD, would like to prevent.

Noar recently received a five-year, \$3.35 million grant from the National Institute



"Low prices are going to draw users in – in particular youth users that might not have otherwise tried these products."

REBECCA WILLIAMS, PHD, MHS



"We believe that banning non-menthol flavors in e-cigarettes will help reduce the epidemic of youth e-cigarette use."

ADAM GOLDSTEIN, MD, MPH

on Drug Abuse to lead a national study to develop and test messages that discourage adolescents from using e-cigarettes.

"The use of e-cigarettes among adolescents is alarmingly high, prompting the FDA to call it an epidemic. It is critically important that we develop evidence-based health communication approaches to strengthen young people's commitment to avoid vaping and prevent subsequent nicotine addiction," Noar said. "To date, there have been a dearth of efforts to systematically develop and study communication approaches to effective e-cigarette and vaping prevention. Our study aims to address this gap."

Noar, a member of UNC Lineberger's cancer prevention and control program, said this new study has three aims: Identify promising ways to communicate with adolescents to prevent e-cigarette use; develop a set of e-cigarette prevention messages that reduce adolescents' desire to try or use e-cigarettes; and use a randomized controlled trial to evaluate

whether evidence-based e-cigarette prevention messages sent daily via text message will reduce at-risk adolescents' willingness to use e-cigarettes.

Deterring young women from vaping may also help protect their fertility as UNC Lineberger's Kathleen Caron, PhD, found. In a study published in the Journal of the Endocrine Society, Caron reported that many young and pregnant women are using e-cigarettes as a safer alternative to smoking but little is known about the effects on fertility and pregnancy outcomes.

"We found that e-cigarette usage prior to conception significantly delayed implantation of a fertilized embryo to the uterus, thus delaying and reducing fertility," said Caron, whose research was conducted in mice. "We also discovered that e-cigarette usage throughout pregnancy changed the long-term health and metabolism of female offspring — imparting lifelong, second-generation effects on the growing fetus." ▲



"E-cigarette usage prior to conception significantly delayed implantation of a fertilized embryo to the uterus, thus delaying and reducing fertility."

KATHLEEN CARON, PHD

UNC-Chapel Hill's No. 14 Morgan Goff and Mary Harper run on to the soccer field during the annual Carolina Soccer Kicks Childhood Cancer fundraiser.



COMMUNITY IMPACT:

GOOD NEIGHBORS SHOW COMMITMENT TO FIGHTING CANCER

HOLBROOK CALLS FOR SUPPORT TO GIVE KIDS LIKE HIS SON A 'FIGHTING CHANCE'

University of North Carolina at Chapel Hill Men's Basketball Coach Roy Williams wants to hear more success stories, and he doesn't mean just about basketball wins. At the 15th annual Fast Break Against Cancer event, Williams aimed to raise money for UNC Lineberger Comprehensive Cancer Center so he can hear about more cancer treatment successes.

"I understand we love (treatment) success stories, and we have the chance to get more success stories with the more money we raise," Williams said.

Over the past 15 years, Roy Williams' Fast Break Against Cancer has raised more than \$3 million to support UNC Lineberger.

The breakfast was held last fall on the Roy Williams floor of the Dean Smith Center in Chapel Hill and featured both a silent and a live auction with unique UNC sporting experiences and memorabilia.

The guest speaker was Chad Holbrook, the head baseball coach at College of Charleston. When Holbrook was an assistant baseball coach at UNC, his son Reece was successfully treated at UNC for acute lymphoblastic leukemia. In his keynote, Holbrook called for support to give kids like his son a "fighting chance." Reece, who was initially diagnosed in 2004 and treated by UNC Lineberger's Stuart Gold, MD, is now a senior in high school.

"The pediatrician said those words that no parent wants to hear: 'We're afraid your son has leukemia; he needs to be admitted to the hospital right away,' " Holbrook said.

"The pediatrician said those words that no parent wants to hear: 'We're afraid your son has leukemia; he needs to be admitted to the hospital right away.' "

Chad Holbrook

Head Baseball Coach College of Charleston | Former UNC Baseball Assistant Coach

UNC Lineberger Director Shelley Earp, MD, spoke about a clinical research effort by UNC Lineberger physician-scientists to develop new cellular immunotherapies to fight the cancer Reece had after other treatments have failed, and for other cancers.

They are working on clinical trials for chimeric antigen receptor T-cell, or CAR-T, therapies that harness the power of a patient's own immune system to fight the patient's disease. Earp said that part of the promise of these immunotherapies is fewer side effects.

"These new types of therapy that we hope to be moving further and further up front so we don't have to wait until so much toxicity occurs," Earp said. "It's all clinical research; it's high risk, high reward; it's funded by the things that we do today; it's funded by federal grants and the wonderful gifts we have from both donors and the state's University Cancer Research Fund." ▲



Left to right: Cooper Holbrook, Reece Holbrook, UNC Lineberger's Stuart Gold, MD, Chad Holbrook and Jennifer Holbrook.



Left to right: Kristi Geib, CPNP, Shelley Earp, MD, UNC Lineberger director, Rameses, Tyler Butler-Figueroa, Kisua Butler-Figueroa, Adam Butler-Figueroa and Stuart Gold, MD.

LINEBERGER CLUB EVENT FEATURES TALENTED VIOLINIST

For Tyler Butler-Figueroa, his cancer opened up doors for him he never thought would be possible. Tyler, now 13, competed and was a finalist on “America’s Got Talent,” something he and his family never expected when he was first diagnosed.

Tyler was four years old when he was diagnosed with acute lymphocytic leukemia. Under the care of Stuart Gold, MD, chief of pediatric hematology oncology at the North Carolina Cancer Hospital, the clinical home of UNC Lineberger, Tyler started chemotherapy. His treatment lasted nearly five years, but today, Tyler shows no sign of disease and is thriving as a young, talented violinist. Music wasn’t even something Tyler had thought of pursuing until his leukemia prevented him from being active and playing football.

“Due to cancer, I had a port surgically implanted for easier access,” Tyler said. “No rough contact that might damage it. I could not play any sports. I was really bored, and one day I saw a flier at my school for afterschool violin lessons. My mom signed me up, and I’ve been playing ever since.”

Starting with after-school lessons, Tyler soon advanced out of the program and sought out the guidance of a professional tutor, something he saved up for by doing street performances. Inspired by other professional violinists, Tyler knew he could succeed as a musician and wanted to compete at a high level.

“While street performing, I saved up money for ‘America’s Got Talent.’ I went to Charlotte, auditioned, made the cut, flew to L.A., got the golden buzzer from Simon Cowell to go straight to the live shows. I

was a top 10 finalist," he said. "Since then, I've performed in Las Vegas, New York and at local events. I would not have been able to do all I have without Dr. Gold."

Gold's clinic is designed with pediatric and adolescent patients in mind, and he is mindful of the needs of his young patients, as well as their families. What started as four physicians has grown to a group of 17, all caring for young patients. The growth has also allowed for the creation of the Adolescent and Young Adult (AYA) Cancer Program, created in partnership with the Be Loud Sophie! Foundation. The program is designed to work with patients ages 13-39 to provide support, event programming, financial and emotional resources, and connections to peer support.

Tyler's family lived in Robeson county during his treatment, and he said the family often drove in the dark to make it to Chapel Hill by 7 a.m. for his chemotherapy. But Tyler said the clinic was always ready for them with snacks,

toys for his younger brother to play with and even gas cards to help ease the financial burden on his mom.

"UNC has been there for my family every step of the way," Tyler said. To help lift spirits, Tyler would often perform in the clinic for other young patients who were going through the same ups and downs he experienced during treatment.

"I remember when Tyler started playing at our clinic. He was OK, he wasn't great," Gold joked. "He has grown and matured his skills as a violinist. A lot of people saw him on America's Got Talent. He wasn't in first place, but trust me, he won."

Tyler credits Gold with his life today and said he knows that donor support is crucial to helping other young people just like him survive and live a good life after their cancer diagnosis.

"I am a perfect example of what your generosity does," Tyler said. "Dr. Gold and his team are part of the reason I'm still standing." ▲

"I've performed in Las Vegas, New York and at local events. I would not have been able to do all I have without Dr. Gold."

Tyler Butler-Figueroa

America's Got Talent Top 10 Finalist



Tyler Butler-Figueroa performs for UNC Lineberger's Stuart Gold, MD, and the crowd at the Lineberger Club event.

COMMUNITY PARTNERSHIPS

UNC Lineberger benefits from the support and generosity of our community partnerships. These fundraising efforts and events benefit cancer care and research and help doctors and researchers make important strides in fighting cancer.

CAROLINA SOCCER KICKS CHILDHOOD CANCER

Anna Caroline Jordan is escorted onto the field by Meghan Fox, CCLS, LRT/CTRS and Carolina Soccer's Bridgette Andrzejewski during this annual fundraising campaign to support UNC Lineberger's pediatric hematology/oncology clinic.

GET REAL AND THROW PINK

Disc golfers hit the links for Get Real and Throw Pink to benefit UNC Lineberger. Real Men Wear Pink and Throw Pink participants included women undergoing treatment, cancer survivors and women new to the sport.



SHE ROCKS

UNC Lineberger's Shawn Hingtgen, PhD, Director Shelley Earp, MD, and Victoria Bae-Jump, MD, with She ROCKS' Mary Barto and Marie Wood. The group supports ovarian cancer research and has raised more than \$500,000 for UNC Lineberger's research programs.

POLAR CHALLENGE TO CONQUER CANCER

The annual Polar Challenge to Conquer Cancer event raised \$16,000 to benefit Dina's Dynasty Ovarian Cancer Fund, which supports ovarian cancer research at UNC Lineberger.



PIG OUT FOR THE CURE

Coldwell Banker Howard Perry and Walston real estate agency offices in the Triangle held Pig Out For The Cure, an annual barbecue fundraising event. The event raised \$42,000 this year, and has raised \$125,000 over the past seven years. All proceeds support UNC Lineberger's Comprehensive Cancer Support Program.

CARRIEON

The fourth annual CarrieOn Golf Tournament was held in July at the River Ridge Golf Club in Raleigh to benefit the pediatric hematology/oncology clinic at the North Carolina Cancer Hospital, the clinical home of UNC Lineberger.



CORONA CARES

Each year, Constellation Brands and all Corona wholesalers across North Carolina support UNC Lineberger's Comprehensive Cancer Support Program (CCSP). The program has raised more than \$1.5 million. Programs like this provide services to cancer patients and their families and even treat them to a Thanksgiving lunch.

BLUE RIBBON PARTNERS



We thank the following Blue Ribbon Partners – who hosted events benefitting the cancer center, raising at least \$20,000 during a three-year period.

Bailey Swertfeger Memorial Golf Tournament

Blue Ribbon Run

Bobby F. Garrett Benefit Concert

CarrieOn Golf Tournament

Corona Cares

Glasshalfull

The Holly Project

Howard Perry Walston "Pig Out for the Cure"

Pedal for Peds

Polar Challenge Golf Tournament

She ROCKS – Wilmington and Triad

The Farm Party

UNC Women's Rowing Team Ergathon

Vs. Cancer Foundation/Pediatric
Brain Tumor Foundation

Zeta Tau Alpha Franklin Street 5K

We would also like to thank the following volunteers and organizations who hosted an event or fundraising effort last year that raised at least \$20,000.

Beth Silverstein

Blue Ribbon Run

Corona Cares

Howard Perry Walston
"Pig Out for the Cure"

Polar Challenge Golf Tournament

She ROCKS – Wilmington and Triad

V Foundation's Victory Ride to Cure Cancer

Vs. Cancer Foundation/Pediatric
Brain Tumor Foundation

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| Ian Falk and Lucy Falk | David McNelis and Gladys McNelis | Thomas Watkins and Ethel Watkins |
| Edward Finley and Virginia Finley | Harold Milholen and Julia Brent Milholen | David Weaver and Tracey Weaver |
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| Edith Lee Garrett | William Mitchell and Etteinne Mitchell | Edith Wiggins and Sheldon Wiggins |
| Joan Gillings | Daniel Moore and Frances Moore | Teresa Williams |
| William Graham and Nancy Graham | Bryan Morris and Rebecca Morris | J. Cross Williams and Anne Williams |
| Joseph Grier and Margaret Ann Brookshire | Martin Murphy and Ann Murphy | Kenneth Williams and Cheryl Williams |
| R. Gordon Grubb and Sallie Grubb | Patrick Nash and Carolyn Nash | J. Bradley Wilson and Carole Wilson |
| Thomas Hall | Thomas Odom and Carmen Odom | John Wilson and Anne Wilson |
| Alice Harney | Wilds Ogie and Casey Ogie | T. Douglas Wilson and Betsey Bent |
| | Walton O'Neal and Helene O'Neal | Robert Winston and Tracy Winston |
| | Dean Painter and Lisa Painter | Russell Winthrop and Vicki Winthrop |
| | William Pappas and Debra Pappas | John Woerner and Tammy Woerner |
| | Sarah Parker | |
| | Macon Patton and Lori Patton | |
| | Josephine Patton | |

* deceased

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Director

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Director Emeritus

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David Darr, MS, MBA
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Andrew Olshan, PhD
Associate Director, Population Sciences

Wendy Sarratt, DrPH
Associate Director, HR and Employee Relations

Jonathan Serody, MD
Associate Director, Translational Research

Bernard Weissman, PhD
Associate Co-Director, Education

Stephanie Wheeler, PhD, MPH
Associate Director, Community Outreach and Engagement

Jen Jen Yeh, MD
Associate Co-Director, Education

Marjory Charlot, MD, MPH, MSc
Assistant Director, Community Outreach and Engagement for Patient-Centered Research

Barbara Alvarez Martin, MPH
Assistant Director, Community Outreach and Engagement and Population Science

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Cancer Cell Biology

Lisa Carey, MD, FASCO
Breast Cancer

Blossom Damania, PhD
Virology

Ian Davis, MD
Cancer Genetics

Claire Dees, MD, ScM
Clinical Research

Dirk Dittmer, PhD
Virology

Stephen V. Frye, PhD
Molecular Therapeutics

Louise Henderson, PhD
Cancer Epidemiology

Gary Johnson, PhD
Molecular Therapeutics

William Y. Kim, MD
Cancer Genetics

Terry Magnuson, PhD
Cancer Genetics

Matthew Milowsky, MD
Clinical Research

Charles M. Perou, PhD
Breast Cancer

Kurt Ribisl, PhD
Cancer Prevention & Control

Jon Serody, MD
Immunology

Jenny Ting, PhD
Immunology

Melissa Troester, PhD
Cancer Epidemiology

Jen Jen Yeh, MD
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Jonathan Serody, MD
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Meghan McCann, MSN, RN, NE-BC
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Taylor Lisenby
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Director of Annual Giving

Danita Morgan
Director of Development, Major Gifts

Elizabeth Rubio
Director of Special Events and Community Partnerships

Bill Schaller
Director of Communications and Marketing

Taylor Zimmerman
Development and Communications Associate

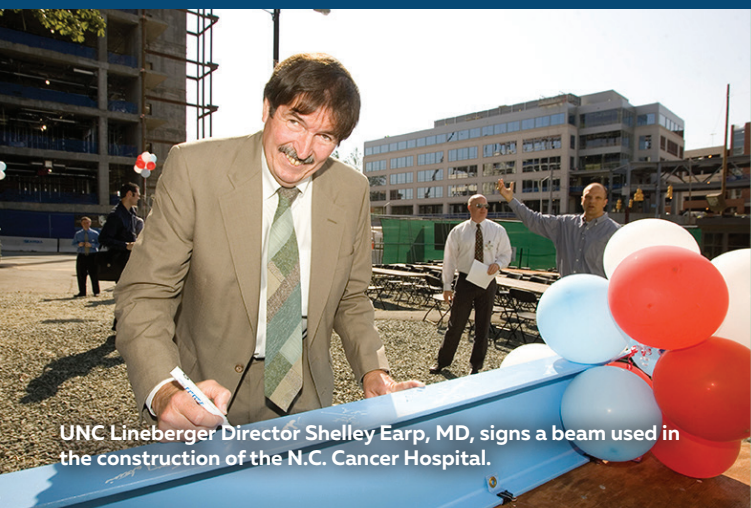


The Gravelly Building.



The North Carolina Cancer Hospital today.

NORTH CAROLINA CANCER HOSPITAL: A DECADE OF HOPE & HEALING



UNC Lineberger Director Shelley Earp, MD, signs a beam used in the construction of the N.C. Cancer Hospital.



The hospital provided a focus for all aspects of a comprehensive cancer program, including cancer support and education. In the photo, cancer center leaders celebrate the dedication of the Mary Anne Long Patient & Family Resource Center.



The Tony Williams Lobby welcomes patients and visitors to the N.C. Cancer Hospital.



N.C. Cancer Hospital doctors, nurses and staff break ground for the new hospital with an assist from a young helper, Reece Holbrook, who was treated for leukemia at the N.C. Cancer Hospital.



LINEBERGER COMPREHENSIVE
CANCER CENTER

UNC Health Foundation
123 W. Franklin St. Ste. 510 | Chapel Hill, NC 27516

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Costumed princesses spread cheer among pediatric cancer patients at the North Carolina Cancer Hospital, the clinical home of UNC Lineberger.