

cancer lines

—in this edition—

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Lindsey James, PhD, and her lab's work are an integral part of the cancer research process at UNC Lineberger

Wife and daughter honor husband, father's legacy by creating a melanoma research fund in his name



4

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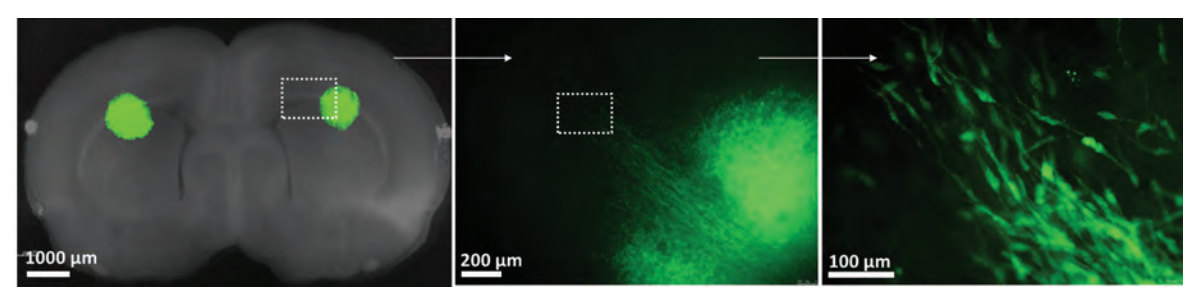


Patient, family are grateful for the care he's received during his treatments for head and neck cancer

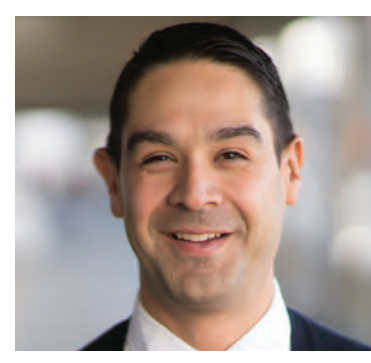
Cancer hospital renamed for late state Senator Marc Basnight 2



FIGHTING BARRIERS TO GLIOBLASTOMA CARE



Devising a smarter way to treat brain tumors



Top: Brain slices under a microscope. Above, left to right: Shawn Hingtgen, PhD, Andrew Satterlee, PhD, and Dominique Higgins, MD, PhD.

The lack of a diagnostic ability to decide how to best treat aggressive brain tumors, particularly glioblastomas, a very deadly cancer, has vexed researchers for decades. Getting drugs across the blood/brain barrier is a challenge, and many brain tumors are difficult to treat because they spread through the brain, often with tendrils that reach deep into its recesses. But UNC Lineberger's Shawn Hingtgen, PhD, and his lab team have developed a method they call a "slice platform"

that may help resolve many of the obstacles that clinicians face when choosing the best treatment for their brain tumor patients.

A key member of Hingtgen's research team is Andrew Satterlee, PhD, the brain slice program manager, and a brain cancer survivor who was diagnosed when he was 20, nearly 15 years ago. Part of his initial treatment involved surgical removal of a rare, heterogenous germ cell brain tumor the

SEE BRAIN, PAGE 7

director's message

H. Shelton Earp, MD

As we come to the end of the calendar year, it's the perfect time for us to acknowledge all the great work that's happened at UNC Lineberger during the past year, as well as looking ahead to all the exciting things we have coming up in 2023.

We are thrilled to have Ned Sharpless, MD, returning home to Chapel Hill. Ned, a double honors UNC graduate and son of parents who met during their time in

Chapel Hill, served as the director of the National Cancer Institute and interim director of the U.S. Food and Drug Administration after serving as director of UNC Lineberger. He is returning to UNC and the cancer center as a professor of medicine, cancer policy and innovation, and we're thrilled to have him back! We also recently honored the memory of the late state Senator Marc Basnight, as

SEE DIRECTOR, PAGE 4



— honors & awards —



Norman E. "Ned" Sharpless, MD, was elected to the National Academy of Medicine. Sharpless was recognized for his work with cellular aging, circular RNAs and the cell cycle.

Yuliya Pylayeva-Gupta, PhD, was awarded the Phillip and Ruth Hettleman Prize for Artistic and Scholarly Achievement, for faculty members who exemplify groundbreaking and innovative research.



The American Association for the Study of Liver Diseases awarded Andrew Moon, MD, MPH with a Clinical, Translational and Outcomes Research Award, a two-year \$200,000 grant, to support his work with treatment choices for liver cancer.

The Lustgarten Foundation awarded Jen Jen Yeh, MD, the Lustgarten Equity, Accessibility, and Diversity (LEAD) Project grant in support of her PROMoting CLinicAI Trial EngageMent for Pancreatic Cancer App Study (PROCLAIM Study).



The Pancreatic Cancer Action Network (PanCAN) awarded Channing Der, PhD, and Kirsten Bryant, PhD, the Therapeutic Accelerator Collaborative Award which provides \$340,000 in grant support over two years.



— upcoming events —

february

26

Head for the Cure 5K, Chapel Hill, N.C.

may

17

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

20

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



NORTH CAROLINA BASNIGHT CANCER HOSPITAL

Cancer hospital renamed in honor of late Senator Marc Basnight



Above left to right: University of North Carolina Chapel Hill Chancellor Kevin Guskiewicz, UNC Health CEO Wesley Burks, MD, North Carolina Governor Roy Cooper and UNC Lineberger Director Shelley Earp, MD, at the renaming event for the North Carolina Basnight Cancer Hospital, the clinical home of UNC Lineberger. Below: A portrait of the late state Senator Marc Basnight.

North Carolina's state cancer hospital will now bear the name of one of its most influential and dedicated supporters. As a tribute to the legacy of the late Marc Basnight, the former state senate president pro tempore who passed away in 2020, the building was officially renamed the North Carolina Basnight Cancer Hospital in a ceremony September 20 at UNC Hospitals in Chapel Hill.

"The mission of UNC Health is to promote the health and well-being of the people of North Carolina," said Wesley Burks, MD, CEO of UNC Health and Dean of the UNC School of Medicine. "Today was a great opportunity to come together to honor Senator Basnight, a man who embodied that mission throughout his career in public service."

"Naming the hospital for Senator Basnight is a perfect tribute for a man who gave so much to the people of North Carolina," said UNC Lineberger Director Shelley Earp, MD. "His focus on cancer care and treatment is still helping North Carolinians today through the University Cancer Research Fund, or UCRF, an important source of funding for the cancer center, which allows us to conduct forward-thinking research into cancers across the spectrum."

The state's longest-serving legislative leader, Basnight was instrumental in the opening of the hospital, drawing inspiration from doctors, researchers, patients and caregivers he met during his wife Sandy's battle with cancer. UNC's UCRF, its Biomedical Research Imaging Center and the



hospital itself are all a direct result of his unwavering focus on bettering the lives of the people of North Carolina.

It was during Sandy Basnight's treatment for leukemia that Marc Basnight saw the need for enhanced research capabilities, more advanced technologies and equipment, and better health care facilities to help fight the state's deadliest dis-

SEE BASNIGHT, PAGE 7

Lindsey James: Building a career, one molecule at a time

Lindsey James, PhD, is a born collaborator. As a UNC Lineberger member and assistant professor at the UNC Eshelman School of Pharmacy, James is well-suited to the collaborative relationship between the two scientific organizations, taking her interests in medicinal chemistry and epigenetics and working with cancer center physicians and researchers to make strides into cancer care and treatment.

James' interest in chemistry was first sparked by her high school AP Chemistry teacher. She pursued a chemistry major at Colgate University and became drawn to research while getting her bachelor's degree. "I really liked solving problems," James said.

Her arrival at UNC Chapel Hill was a happy accident, the result of a last-minute application to a school far from her home outside Philadelphia. While she had no ties to UNC or North Carolina before she started her graduate studies in Chapel Hill, the connections she made at Carolina helped her make the decision to stay. In addition to making academic and professional connections, she made some important personal ones, including meeting her future husband during her graduate work.

"I applied for a PhD at Carolina, decided to come, and I never left," she said. "I don't have a background in medicine, but I've always had an interest in the area. That led me to pursue chemical biology and medicinal chemistry, with the hope that I could participate in translational science."

James said working as a postdoc researcher with UNC Lineberger member **Stephen Frye, PhD**, spurred her interest in cancer.

"After my PhD, I wanted to pursue science that was more translational," she said. "I could envision how it would help people and have an impact. I didn't want to make molecules to just make them, I wanted them to have a purpose."

When considering her career options, James found the perfect professional home at the School of Pharmacy, which has a rich history of drug discovery and thinking about how to create new medicines.

In her lab, she creates molecules that target specific proteins that are believed to play roles in the development of cancers, such as triple negative breast cancer, prostate cancer and multiple myeloma. James also has a background in epigenetics, which was a good fit for her work with cancer.

"We are interested in proteins which are overexpressed or mutated in any type of cancer," James said. "We think about developing molecules that are able to bind these proteins and investigate if they can block protein function and lead to an outcome that might be beneficial to patients. In many cases, we are working on proteins that are not well studied, and we use our compounds to better understand their role in disease and validate new therapeutic targets."



UNC Lineberger's Lindsey James, PhD. Below left: James, center, with her lab team at Marsico Hall. Below right: James works with researchers in her lab.



With her expertise in molecule building, James' role in the cancer research process is invaluable. She and her lab team know that when they develop a new molecule for a protein implicated in a specific cancer, there is a UNC Lineberger expert who can take the lab's findings to the next level, building upon their research and ideally demonstrating efficacy in disease specific models.



And collaboration is part of what makes UNC Lineberger a great place for James to continue working toward that goal. She said being able to reach across the aisle from the School of Pharmacy to the cancer center is important, and she is grateful to cancer center leadership for recognizing the importance of that relationship.

"I try to surround myself with people with far more experience and expertise, who I can learn from and can help us accomplish our goals. Drug discovery research requires a large team, and we need to collaborate in order to be successful," she said.

And though she is busy running her lab, James also makes time for pursuits

outside her work. She is a mom to three children, ages 8, 5 and 1, and they can often be found watching Carolina football or basketball during their respective seasons.

"My girls already bleed Carolina blue so we spend time at football and basketball games, and we even drove to Philadelphia for the NCAA Tournament this year," she said. "Carolina sports has become a big family hobby for us."

The family is also planning to travel for some cold weather activities, too, and James said they'll be taking a ski trip to Colorado early next year to enjoy some family time out west. 8

"The best-case scenario is that [molecules developed in our lab] eventually end up in people and can help treat patients. If I can do that once in my career, I will be satisfied."

- Lindsey James, PhD

James' work has attracted industry interest, as well. With funding from Pinnacle Hill, the medical innovation investment partnership between UNC and Deerfield Management Company, a compound James and her lab developed is now being optimized with the end goal of identifying a possible new treatment against multiple myeloma.

"We get really excited when we are able to put our molecules in an in vivo cancer model and demonstrate efficacy," she said. "The best-case scenario is that they eventually end up in people and can help treat patients. If I can do that once in my career, I will be satisfied."

Fund helps keep husband, father's legacy alive

What began as a simple freckle ended up costing one man his life and his family a life without him. But despite the devastating outcome, Linda Murray, 67, and her daughter, Emily Murray, have found a way to honor the life and experience of Craig Murray, husband and father, by creating an ocular melanoma research fund at UNC Lineberger that bears his name.

Craig Murray was diagnosed with melanoma more than 20 years ago. His wife said he was religious about going to the dermatologist, due to his family's love of outdoor activities, so the cancer was caught fairly early.



bottom eyelid at least twice, and no one was calling it in situ anymore. It was pretty rare from what we've been told."

During the years he dealt with his cancer, Craig Murray never let his melanoma prevent him from getting the most out of life. He avidly watched Carolina football and basketball games, enjoyed traveling, and relished living near the

beach, all while making doctor's appointments for himself and hiding his pain well.

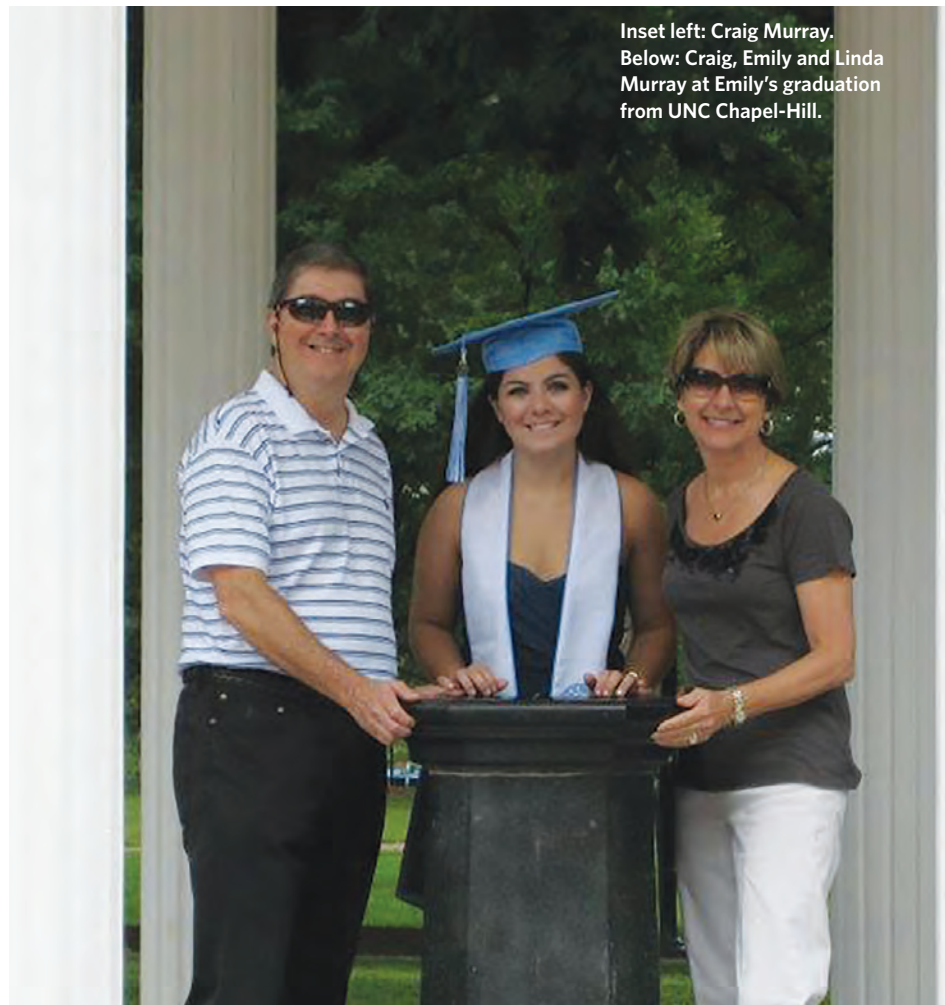
But in May, 2020, Craig Murray's melanoma had metastasized to his liver, spleen, stomach, femur, pelvis and spine. He passed away less than a month

later. Motivated to preserve his legacy of helping others, and to pave the way for other families to avoid the ordeal they went through, Linda and Emily Murray established a melanoma research fund at UNC Lineberger that bears Craig's name.

"Dad was a UNC grad, and me too; we were both big Tar Heels, and he would've been tickled to find out this research would have gone on at Carolina," Emily Murray said.

Emily and Linda Murray met with UNC Lineberger's David Ollila, MD, a surgical oncologist, to learn more about research and progress being made in melanoma. Both were impressed with the level of talent and dedication to the melanoma program at UNC Lineberger and felt confident in their donations funding the right projects and efforts.

"At UNC, they allocate your funds so



Inset left: Craig Murray. Below: Craig, Emily and Linda Murray at Emily's graduation from UNC Chapel-Hill.

"He was a freckled man and had a dark spot on his lower eyelid, so he went to his dermatologist and asked about the freckle. They told him 'We'll scrape it off,' and it came back in situ melanoma," Linda Murray said. "That got the ball rolling, but it just got worse, every time he went back, it got larger."

He battled the melanoma for years, seeing specialists at Wills Eye Hospital in Philadelphia on the recommendation of friends and his doctors, but nothing seemed to keep the cancer at bay.

"We thought we were ahead of it," Linda Murray said.

"What was just an in situ melanoma became a series of Mohs surgeries, cryotherapies, and reconstructions, each more and more invasive," Emily Murray said. "They removed and reconstructed his

that much more of your donation goes to research, and we felt really good that the percentage was going to research and what we wanted it to go to," Emily Murray said. "We felt like it was honoring him, and it helped us heal. We grieve constantly, but this is the way we can heal."

Keeping Craig Murray's legacy alive is another bonus for his wife and daughter. Linda Murray said her husband was a generous man, giving to children's cancer causes and veterans organizations, and she hopes the progress made in melanoma research serves a greater purpose for

other families going through the same thing.

"Craig's always with us, we just feel good every time we write a check," Linda Murray said.

Emily Murray said her father would be impressed by how far melanoma research has progressed, and it would have humbled him to have a fund at UNC in his name.

"It would be a thumbs up all the way. He'd say 'good girl.'" Linda Murray said.

Emily Murray summed it up best. "He'd say 'Go 'Heels!'"

director *Continued from page 1*

the cancer hospital was renamed in his honor as the North Carolina Basnight Cancer Hospital, the clinical home of UNC Lineberger. The ceremony was extraordinary with remarks and remembrances by Dean Burks, UNC President Hans, former UNC President Bowles, North Carolina Senate President Berger and Governor Cooper, all of whom knew Senator Basnight. The ceremony was capped off with remarks from radiation oncologist and cancer survivor, Shekinah Elmore and patient advocate Janine Jones who serves on the

hospital's Patient Advisory Council. It was an emotional reminder of the state's investment in its citizens with cancer and their families.

We have launched new approaches for prevention and treatment of women's cancers with the UNC Lineberger Center for Triple Negative Breast Cancer Center and our Endometrial Cancer Center of Excellence led by Lisa Carey and Vickie Bae-Jump, respectively. These two nation leading oncologists are determined to counteract the rising incidence and poor outcomes in these diseases. We are particularly focused on these two

diseases in North Carolina's minority and rural populations as their outcomes and experience lag behind substantially. You'll read about more of our efforts this year, including the work of researchers and physicians who are targeting brain cancers through innovation and perseverance, as well as molecular research that enables our scientists to design more creative and effective clinical trials for these difficult-to-treat cancers. You'll learn about those doctors, nurses and staff members who have made a difference in the lives of cancer patients and their families, bringing quality care and

compassion to their work. They have inspired philanthropy to support our labs and programs so we can continue our good work in the fight against cancer. As I look ahead to 2023, I can reflect on the stories we've told and know that we're consistently infusing innovation and insight into our research and care delivery. Patients and their families are reaping the benefits here in North Carolina and beyond. As the holiday season approaches I look forward to a new year filled with progress; I'm so grateful for your joining us on our quest to reduce the burden of cancer everywhere.

Patient finds support in family, friends, health care community

A cancer diagnosis can cause disruptions for patients and their families, as medical visits become a part of the everyday routine. For one patient, those routine visits, while not his favorite, allow him to connect with a team of physicians, nurses and staff that help take some of the sting out of having head and neck cancer.

John Erwin, 61, of Burlington, North Carolina, was diagnosed with salivary duct carcinoma in 2019 after finding a lump under his jawbone while shaving. He consulted with a friend and UNC alum, Chap McQueen, MD, a physician in Burlington who recommended Erwin see UNC Lineberger's Jeffrey Blumberg, MD, FACS, an ear, nose and throat surgical oncologist.

Blumberg performed a successful surgery in August, 2019, removing John Erwin's primary salivary gland and duct, and subsequent scans showed no signs of cancer. Both John Erwin and his wife, Mary, 60, were pleasantly surprised by the results.

"We were absolutely thrilled with Dr. Blumberg. He is somebody we have tremendous respect for," John Erwin said.

"We've seen him about three times while at UNC for infusions, and he always stops and catches up with us and asks how we're doing," Mary Erwin said.

After surgery, John Erwin started radiation and was pleased with the team taking care of him. "I saw the technicians five days a week, and you build a relationship with those guys. They were outstanding and made me feel as comfortable as possible. The team at UNC has been remarkable, to say the least."

In February, 2020, a CT scan showed his cancer had metastasized to the liver and spine. "This was our low point. When you hear that {your cancer} has moved, it's devastating," John Erwin said.

The couple said the hardest part was talking about the diagnosis with their two sons, Will, 29 and Jack, 27. "Typically, our family tends to be pretty positive. We've been very candid with them about John's diagnosis, but it took some time," Mary Erwin said. "They've held us up."

The UNC Lineberger team has also been supportive regarding insurance issues that caused profound strife for the couple. Blumberg and Shetal Patel, MD, John Erwin's primary oncologist, both went to bat for him, calling the insurance company and making sure the necessary immunotherapy drugs and procedures were approved and covered.



John and Mary Erwin. Below: John Erwin with his sons, Jack and Will.



"Dr. Patel gives you the impression that you are her only patient," John Erwin said. "She is extremely thorough and shows compassion for me and my family. Dr. Patel has had to deliver "bad news" regarding my cancer on several occasions. She did so with direct communication but also with empathy that made it a little less troubling to hear."

The Erwins also said they are grateful for the entire team at the North Carolina Basnight Cancer Hospital, the clinical home of UNC Lineberger, who show compassion and care when the couple are there for appointments.

"We have been so impressed with the nurses and the support staff," Mary Erwin said. "It's been amazing how they've become our friends. It makes a difference."

"Through the months of numerous infusions, I almost look forward to going because I see familiar faces. I'm not saying I'm jumping for joy, but there's a part of me that wants to interact and say 'hello,'" John Erwin said.

While the cancer diagnosis has created some stumbling blocks for the family, the couple said they think they are now stronger than they were before 2019. "Our family is as tight now as it's ever been," John Erwin said. "We are spending more and more time together as a family, and as a parent, it is gratifying. My cancer diagnosis has pushed that along a little bit.

"Our marriage has also gotten stronger. We tend to not take each other for granted as much, and we enjoy the small things more." And like any couple, they treasure the time they spend together and have found an even deeper appreciation for each other, while navigating the cancer journey.

"With Mary's guidance I'm eating a little better. I think there is a renewed sense of realizing that every day's a gift and to enjoy the small victories," John Erwin said.

"John's attitude has been incredible," Mary Erwin said. "People comment that he looks great, and he's taking it all in stride, appreciating his life, and working as hard as ever."

"We have learned that when you get a serious diagnosis, like mine, you have to focus on the things you can control," John Erwin said. "While easier said than done, we try to focus on our faith, our positive attitude and aligning ourselves with the best health care possible. This is our approach. That's what we choose to focus on, not the things you can't control." 🧘

— research briefs —

RESEARCHERS FIND FDA REAL COST ADS REDUCE TEEN OPENNESS TO VAPING

A randomized, controlled study with more than 1,500 teen participants from across the nation tested the effectiveness of digital vaping prevention ads. Researchers from UNC Hussman School of Journalism and Media, UNC Gillings School of Global Public Health and UNC Lineberger discovered that Real Cost ads lowered the extent to which teens were open to vaping and also lowered openness to cigarette smoking.

Researchers determined similar effectiveness for “health harms” versus “addiction” themed ads. The former focused on the harmful chemicals emitted by vaping devices and the potential for lung damage caused by vapes. The latter focused on the highly addictive nature of vapes and consequences of nicotine addiction, such as loss of autonomy.

“Vaping among youth is still worryingly high,” said UNC Lineberger’s **Seth M. Noar, PhD**. “The results of our study indicate that communicating about the health harms and addiction risks of vaping is an evidence-based strategy that discourages youth from vaping.”



Noar

BIOLOGICAL PATHWAYS MAY HELP WITH BARRIERS LIMITING IMMUNOTHERAPIES

Researchers at UNC Lineberger have found a possible way to overcome barriers that block effective anti-cancer immune responses, thereby opening the potential for more effective immunotherapies in people.

One protein, the STimulator of INterferon Genes (STING), has the promise of powerfully provoking multiple parts of the immune system and breaking established barriers.

“Although activating the immune system to control malignant tumors has revolutionized cancer treatment, a sizable portion of patients do not respond to immunotherapy treatments. However, new drugs that target STING have been



Ting

a high priority for pharmaceutical development yet clinical trials have revealed significant tumor resistance to STING-directed drugs,” said UNC Lineberger’s **Jenny PY Ting, PhD**, the William R. Kenan Professor of Genetics.

In their studies, the researchers made the surpris-

ing finding that activators of STING increased the number of regulatory B-cells, a type of a white blood cell. They further showed that these cells secrete interleukin-35 (IL-35), an immunosuppressive molecule that impairs anti-tumor immunity. STING-activated IL-35 production in regulatory B cells was also found in B lymphocytes from pancreatic cancer patients, underscoring the potential relevance of these findings to humans. In mouse models, by pairing drugs that activate STING along with antibodies that block IL-35, the researchers achieved a significant reduction of tumor growth compared to using just a STING activator or IL-35 antibody alone.



Pylayeva-Gupta

“IL-35 production can result in multi-prong immunosuppression which is a hallmark of treatment-resistant cancers, such as pancreatic cancer. Our study revealed that activation of STING can be one such trigger,” said UNC Lineberger’s **Yuliya Pylayeva-Gupta, PhD**, co-corresponding author.

DRUG SEQUENCE REDUCES COST OF TREATING METASTATIC BREAST CANCER

Giving standard chemotherapy drugs in a specific sequence for some types of metastatic breast cancer can help reduce overall costs and improve the value of care while preserving quality of life, according to a study led by UNC Lineberger and UNC Gillings School of Global Public Health researchers.

The researchers developed three different computer models to predict how a hypothetical set of 10,000 patients with endocrine resistant or triple negative breast cancer would respond to different sequences and types of chemotherapy.

The purpose of the study was to test whether putting the drugs in one sequence compared to another could keep the patient on treatment for similar times while decreasing their side effect and/or cost burden.



Wheeler

“The cost of cancer drugs in the U.S. has rapidly increased, even for generics. As a society, we urgently need more strategies to reduce cancer drug costs without compromising outcomes, and our analysis provides quantifiable evidence to help providers choose lower priced, but equally effective sequences of drugs,” said **Stephanie B. Wheeler, PhD, MPH**, associate director of Community

Outreach and Engagement at UNC Lineberger and corresponding author of the article. “More spending on cancer care does not necessarily confer greater health benefits.”

SCIENTISTS IDENTIFY ANTICANCER PROPERTIES OF COMMON LAB MOLECULE

Scientists at the UNC School of Medicine have made the surprising discovery that a molecule called EdU, which is commonly used in laboratory experiments to label DNA, is recognized by human cells as DNA damage, triggering a runaway process of DNA repair that is eventually fatal to affected cells, including cancer cells.



Sancar

The discovery, published in the Proceedings of the National Academy of Sciences, points to the possibility of using EdU as the basis for a cancer treatment, given its toxicity and its selectivity for cells that divide fast.

“The unexpected properties of EdU suggest it would be worthwhile to conduct further studies of its potential, particularly against brain cancers,” said study senior author **Aziz Sancar, MD, PhD**, a UNC Lineberger member.

EdU (5-ethynyl-2'-deoxyuridine) is essentially a popular scientific tool first synthesized in 2008 as an analog, or chemical mimic, of the DNA building block thymidine – which represents the letter “T” in the DNA code of adenine (A), cytosine (C), guanine (G) and thymine (T). Scientists add EdU to cells in lab experiments to replace the thymidine in DNA. Unlike other thymidine analogs, it has a convenient chemical “handle” to which fluorescent probe molecules will bond tightly. It thus can be used relatively easily and efficiently to label and track DNA, for example in studies of the DNA replication process during cell division.

Since 2008, scientists have used EdU as a tool in this way, as published in thousands of studies. Sancar, who won the 2015 Nobel Prize for Chemistry for his seminal work on DNA repair, is one such scientist. When his lab began using EdU, his team unexpectedly observed that EdU-labeled DNA triggered a DNA repair response even when it wasn't exposed to DNA-damaging agents, such as ultraviolet light.

“That was quite a shock,” Sancar said. “So we decided to explore it further.”

briefs

PANCREATIC CANCER SPORE AWARDED TO UNC LINEBERGER CENTER OF EXCELLENCE

The National Cancer Institute has awarded the UNC Lineberger Pancreatic Cancer Center of Excellence a five-year, \$10.9 million Pancreatic Cancer Specialized Program of Research Excellence (SPORE) grant intended to further enhance treatment solutions for pancreatic cancer by focusing on key challenges to identifying, producing and directing new therapies.

SPORE grants are highly competitive – and highly coveted – sources of funding that support basic and clinical/applied research focused on discovering and developing with new approaches to the prevention, early detection, diagnosis and treatment of human cancers.

The Selective Targeting of Pancreatic (SToP) Cancer SPORE seeks to establish a new paradigm for clinical trial design based on cutting-edge research that is not isolated to a single therapy or biomarker.

The SPORE will consist of three projects that will develop novel combination therapies to target a process, autophagy, that helps KRAS-mutant pancreatic cancer grow and resist treatment, produce a new generation adoptive T-cell therapy a novel way to harness the patients' own immune cells prepared in the UNC Lineberger's clean room facilities, and improve treatment selection by matching tumor and tumor microenvironment alterations with treatments that will be most beneficial.

brain *Continued from page 1*

size of a golf ball. His surgeon was University of California San Francisco's Mitchel Berger, MD, FACS, FAANS, whom Satterlee later deemed the 'godfather of brain surgeons.' "In a cool, full-circle moment, I met him as a peer at the Society for Neuro-Oncology's annual meeting in 2017," Satterlee said.

Patient and researcher

Satterlee's tumor was rare, so choosing a chemotherapy to prevent recurrence was fraught as there was wide disagreement among experts on what course of action was best. Satterlee ultimately followed the advice of a renowned pediatric neuro-oncologist who, by coincidence, was also a germ cell brain tumor survivor.

The oncologist urged the family to consider moving from what the standard of care had been to what the standard of care was becoming. Satterlee's brush with mortality eventually led him down his current career path, convinced that clinicians need a better way to choose the best treatment for each patient because, as in his case, it shouldn't have been up to him to make that choice.

Putting experience into practice

What Hingtgen and Satterlee have developed is a tool that should help physicians design better treatment plans and make better drug choices. They also think the tool can help drug development companies advance their therapeutic processes.

The diagnostic procedure that Hingtgen's team came up with involves placing cells from a patient's resected tumor onto a slice of rodent brain that is kept alive by the culture medium beneath it, allowing the cells to engraft in the rodent tissue and grow. Using a variety of different assays and techniques, the researchers can test different drugs on the engrafted tissue and determine which drug works best.

The research team recently filed a patent on their process and they are starting to partner with industry to advance their techniques. They are also almost finished develop-

ing a protocol for a feasibility clinical trial — a first step toward validating the tool in a clinical setting to guide the treatment.

Working toward similar goals, UNC Lineberger's Dominique Higgins, MD, PhD, a neurosurgical oncologist specializing in the treatment of brain tumors, is pursuing complementary research with his surgical patients and is invested in the potential outcomes Hingtgen's team is working on.

"My own lab works closely with Drs. Hingtgen and Satterlee's, and I'm excited about harnessing this technology and applying it to brain metastases from primary sites such as breast and lung cancer, in addition to studying the metabolism of primary brain tumors," Higgins said.

Philanthropy moves science forward

Hingtgen noted that their unique translational research activities between the lab bench and a patient's bedside sit in an odd space that is difficult to get funded. While the National Institutes of Health extensively supports basic research, philanthropic support for the nuts and bolts of their translational efforts could be key in moving from the lab to people, he said. And they're talking about relatively small funding compared to the millions of dollars it can take to support a large clinical trial.

"If everything worked perfectly, we would enroll every person diagnosed with a brain tumor in our studies. But we need to show we can do this experiment in the controlled environment of a feasibility study. If that study goes well, the next step would be a trial to see if guided treatment was beneficial and that would also help set the stage for regulatory approvals," Hingtgen said.

The researchers believe that their research would not have been possible at other institutions. "The collaborations between UNC Lineberger, the Eshelman School of Pharmacy and institutions across campus, including translational labs and clinics, have been amazing — the interdisciplinary team that we have is unbelievable," Hingtgen said. "And the best part of this collaboration is that it should ultimately benefit our patients." 🧪

basnight *Continued from page 2*



UNC Health CEO Wesley Burks, MD, displays the plaque honoring the late state Senator Marc Basnight.

ease. He pushed for state funding to build the cancer hospital, which tripled the space available for treatment. Today, residents from North Carolina and beyond make more than 270,000 outpatient visits each year to the cancer hospital, the clinical home of UNC Lineberger.

Speakers at the event featured a number of state dignitaries including Governor Roy Cooper, UNC System President Peter Hans and State Senate President Pro Tempore Phil Berger, as well as Bill Roper, MD, MPH, former interim president of the UNC System, CEO of UNC Health and UNC School of Medicine Dean and former UNC System President Erskine Bowles.

Guests also heard from UNC Lineberger's Shekinah Elmore, MD, MPH, assistant professor, UNC Radiation Oncology and Urology, and Janine Jones, a member of the hospital's Patient & Family Advisory Council and a cancer survivor.

"When people faced challenges, big or small, my friend Senator Basnight was ready to help," Cooper said. "He had a relentless drive to make North Carolina its best, and this cancer hospital is a part of his tremendous legacy in our state." 🧪

"We need to show we can do this experiment in the controlled environment of a feasibility study. If that study goes well, the next step would be a trial to see if guided treatment was beneficial and that would also help set the stage for regulatory approvals."

- Shawn Hingtgen, PhD

events



1

SWIM ACROSS AMERICA

1-2: Swim Across America held the Carolina Community Pool Swim in October. The Team Relay format raised funds to support cancer research at UNC Lineberger.

GOLFING FOR THE GALS

4-5: Golfing for the Gals held its annual golf tournament in September. The event raises money for uterine cancer research at UNC Lineberger. UNC Lineberger's Victoria Bae-Jump, MD, PhD, spoke at the event.

DERBY AND DANCING

5: The Derby and Dancing fundraiser was held in May. Proceeds went to support UNC Lineberger's Comprehensive Cancer Support Program, which helps patients, caregivers and families with cancer treatment, recovery and survivorship.



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