

# cancer lines



the inside line up



**3** UNC grad's passion launches national program



**4** Meet Kim Rathmell, MD, PhD



**5** UNC's Millikan partners on breast cancer study



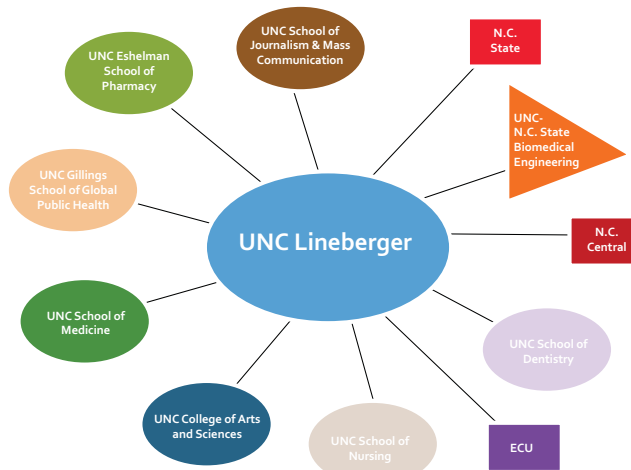
**7** A Toast to Woody



## The networked cancer center: UNC Lineberger at the hub of innovation

UNC Lineberger Comprehensive Cancer Center is associated with the brick building on West Drive, in the heart of UNC's health sciences campus, but most of the 300-plus faculty whose research, service and collaboration make UNC Lineberger an exceptional cancer center have their home base in other places. The center's members hail from more than 40 different departments and schools and three universities—faculty at East Carolina University, N.C. Central University and North Carolina State University are also members.

As expected, many cancer center members are part of the UNC School of Medicine and the UNC Gillings School of Global Public Health but innovative, collaborative groups of UNC Lineberger faculty are found in the Eshelman School of Pharmacy, the UNC-NC State University joint Biomedical Engineering Program, the School of Nursing and across the College of Arts and Sciences. The cancer center's diversity—combined with Carolina's legendary collaborative culture—means that new collaborations arise in unexpected places and between disciplines that don't normally work together.



UNC Lineberger collaborates across seven colleges and schools at UNC-Chapel Hill, the UNC-N.C. State joint biomedical engineering program and with faculty at N.C. State, N.C. Central and East Carolina Universities.

Deborah Mayer, PhD, RN, AOCN, FAAN, associate professor of nursing—profiled in the last issue of *Cancer Lines*, is a great example. She focuses on cancer survivorship, particularly how survivorship treatment plans can be a tool for fostering collaboration between oncology teams and primary care professionals for the long term care of cancer survivors. Working with both the UNC Lineberger Survivorship Clinic and Dr. Lisa Carey in the UNC Breast Program, she sees breast cancer patients a half day a week. Recently, she led a research group including other nursing faculty, public health and medicine faculty to complete a study published in the *Journal of Clinical Oncology*, to examine reasons why cancer patients make visits to hospital emergency departments—an important first step in examining how health care providers can work more closely with patients to better manage symptoms and side-effects of treatment in order to avoid costly and unpleasant emergency room visits and hospital admissions.

Kristen Swanson, RN, PhD, FAAN, Dean of Nursing and Alumni Distinguished Professor stated, "UNC Lineberger has had a major impact on the School of Nursing's capacity to recruit and retain a cadre of nurse investigators. Doctoral students, postdoctoral fellows, and faculty have benefited from the mentoring, collaboration, and research support received through the Center.

In some cases, the University Cancer Research Fund (UCRF) has been a further catalyst for unusual collaborations. Earlier this year, a team led by Keith Burridge, PhD, Kenan distinguished professor of cell and developmental biology and a UNC Lineberger member, and Richard Superfine, PhD, Taylor-Williams distinguished professor of physics and astronomy, demonstrated a previously observed but poorly understood link between the physical properties of cells and the signals that influence cell behavior. Their result showing that exerting mechanical force on cells

*continued on page 2*

## Partners in prevention: UNC and NC community colleges



Jennifer Leeman, DrPH, MDIV; Carolyn Naseer, MA; Laura Linnan, ScD, CHES (principal investigator); Bryan Weiner, PhD; Deborah Tate, PhD; Lori Stravers, MPH. Not pictured: Adam Goldstein, MD, MPH; Cathy Melvin, PhD; Kim Chantala, MS.

Up to 50 percent of cancer deaths can be prevented by not smoking, reducing exposure to smoke, maintaining a healthy weight, and being physically active; and researchers have identified specific programs that really work to help people change these health behaviors, also known as evidence-based interventions (EBIs).

A team of researchers from UNC Lineberger and the Gillings School of Global Public Health researchers are working with all 58 North Carolina community colleges to identify EBIs in the area of cancer prevention for their employees, students, and community residents. North Carolina has the third largest community college system in the United States, serving

*continued on page 3*

# director's message



Even though our work as researchers and clinicians doesn't stop during the summer, the beginning of the academic year is always a time

for renewal. With the energy of students and a hint of fall in the air, we also are excited about recent developments. You can see in this issue of *Cancer Lines* the wide scope of our activities. We're partnering with North Carolina's community college system to encourage the healthy lifestyles that we know help prevent cancer — thinking statewide but reaching out locally to each campus to understand what types of health interventions fit local circumstances.

Adding to the extraordinary breadth of UNC Lineberger, we are proud to celebrate absolutely groundbreaking discoveries like Yi Zhang's identification of the seventh and eighth bases of DNA, recently published in *Science*, one of the world's top journals. In some ways this turns what we thought we knew about the genetic code and its interpretation on its head. Understanding this phenomenon will provide clues as to how humans develop and how that goes awry in cancer. This field,

called epigenetics, is gaining increasing importance, not only in understanding cancer causation but potential therapy. Dr. Zhang's previous discoveries have already led to new drugs that have just entered clinical trials. You will be hearing more about this!

In another big change for the academic year, UNC Lineberger said goodbye to our Associate Director and physician-in-chief, Richard Goldberg, MD, as he departs to take on a major new challenge. He will direct the operations of the 300-bed James Cancer Hospital at The Ohio State University. We sent Rich off in style with celebrations of his contributions to UNC, including his major role in opening the N.C. Cancer Hospital, and the division of hematology/oncology.

We are very pleased that Marshall Runge, MD, chair of the department of medicine, has appointed Tom Shea, MD— who many of you know well — as interim division chief of hematology/oncology. Tom's history as both a student and faculty member at UNC as well as his development of the bone marrow transplant program makes him the perfect choice to lead the division while we have a national search.

As Dr. Shea takes on this additional responsibility, he has made a few key appointments in our thriving clinical trials outreach network. Joy Ostroff, RN, OCN, formerly director of UNC Lineberger's Clinical Protocol Office will be putting her tremendous knowledge base and experience to great purpose

as the administrative director for the UNC Cancer Network's clinical trials network. Pete Voorhees, MD, associate professor of hematology/oncology will join the network as medical director— lending his expertise in designing clinical trials in malignant hematology to the network.

In addition, I am very pleased to be able to tell you about two other key appointments. Lisa Carey, MD, has agreed to serve as UNC Lineberger's Associate Director for Clinical Research. Her leadership in this arena is being recognized at the national and international levels and the position is a superb next step both for her and for the cancer center. I am equally pleased that Bert O'Neil, MD, has agreed to serve as medical director of our Clinical Protocol Office; he will be leading one of the fastest-growing areas of the cancer center and helping us fulfill our commitment to making the most promising treatments available to all patients who need them and continually improving the standard of care for cancers of all types.

As we gear up for a busy fall, you'll notice an 'extra' issue of *Cancer Lines* coming to your mailbox. We have so much good news to share that we just couldn't fit it into only three issues a year. We hope you enjoy reading more about what we are working on and how we are making a difference for patients and families who have been touched by cancer. ☺

## The Networked Cancer Center

continued from page 1

activates Rho GEF proteins through distinct signaling pathways, was published in *Nature Cell Biology*. The Rho GEFs activate Rho proteins that are part of the RAS superfamily—a class of proteins associated with cancer activity.

"We know that cells in solid tumors are subject to this kind of force and suspected it was important. The experiment that demonstrated why was only possible because we were able to bring together a team of physicists and cell biologists," said Burridge—a collaboration made possible with UCRF funding.

UCRF has also helped hire faculty members in unexpected places. Seth M. Noar, PhD, joined the School of Journalism and Mass Communication and UNC Lineberger this fall from the University of Kentucky. He focuses on the field of health communication—how can we effectively use communication to encourage people to adopt healthy behaviors. A leader in the new field of eHealth communication, Noar has done research on how communications can help increase the adoption of behaviors such as a healthy diet, exercise, and smoking cessation, which contribute to reduced cancer incidence. He published a large scale analysis looking at computerized tailoring of printed communication materials on cancer prevention a few years ago, and he and his colleagues are now finishing up a similar analysis applied to Internet-based programs.

Yang Yang, PhD, is a member of UNC Lineberger and the Carolina Population Center and holds an appointment in the department of sociology. She came to UNC from the University of Chicago

with the support of UCRF. A biodemographer and medical sociologist, Yang works to model factors that limit the human life span—including cancer—and examines the social factors that underlie aging, disease and illness. In addition to the ongoing collaborations with UNC Lineberger's cancer epidemiologists, she is working with UNC's prostate cancer experts, including Matthew Nielsen, MD, to analyze data from the North Carolina-Louisiana Prostate Cancer Study in order to further understand factors that may contribute



Vladimir Jojic, PhD, is an assistant professor of computer science

to racial differences in cancer outcomes (progression over time). Overall, she says, "I'm interested in the relationship between the environment, behavior and cancer at the population level. I'm using a demographic modeling approach to identify groups with different risks of cancer and help the search for risk factors and development of prevention strategies to be more selective and specific."

Computer scientist Vladimir Jojic, PhD, is also working on tools to better understand data to provide more complete insights into cancer. "I came to UNC because of UCRF, the cancer center, and the breadth of research," he said. An expert in

machine learning—a form of artificial intelligence that helps make sense of large data sets—Jojic is already collaborating with systems biologists looking at immune response, cell abnormalities and DNA changes that may lead to cancer.

"Most of what I am doing is focusing on being able to put together diverse types of data and explain diverse types of outcomes," he says. "Our goal is to construct a model that explains as much as possible about the data in a holistic sense—looking at all of the processes that may affect cancer. It's a system—not a simple cause and effect model."

"What this does is give us the ability to compile diverse sources of data in a way that is very powerful so we don't have to wait to obtain more tissue samples or find the right type of population to accelerate the process of research and discovery," he says.

In some ways, Jojic's research is a metaphor for UNC Lineberger as a networked cancer center—more experts from more diverse fields means that sometimes strange bedfellows make for extraordinary results. Research on communications campaigns informs public health interventions. Lifespan modeling techniques help get more out of a data set gathered for studying epidemiology. Computer science helps put immunology and systems biology approaches to cancer research on the fast track. A physicist helps explain why the force on cells found in solid tumors may be one reason why tumors keep growing. In traditional cancer research, these collaborators wouldn't ever have the opportunity to talk to each other. Today, thanks to UNC Lineberger's networked structure, their discoveries are putting innovation at Carolina front and center. ☺

## UNC grad's passion launches national program

Chase Jones, a 2011 graduate of UNC's Kenan-Flagler Business School, could have had a very different college career. Diagnosed with a brain tumor as a freshman, he completed therapy, returned to school and joined the baseball team as bullpen catcher. With classes, sports and college life, that could have been enough to keep most UNC students busy.

Chase's cancer survivor status inspired him to give back. So he organized two highly successful fundraising events for the pediatric oncology program at UNC Lineberger and UNC Cancer Care. His "BaseBald for the Cure" events raised close to \$25,000 in two years.

He convinced his teammates and the coaching staff to agree to shave their heads — one for each \$100 raised, but far surpassed the number of heads on his team, recruiting family and friends to take part, and baseball game attendees could have their heads shaved for a donation to the event. Proceeds from Chase's events are used to enhance the support services provided to pediatric patients and families undergoing treatment at UNC. BaseBald also helped support the start of the new pediatric art therapy program. Digital art therapy is an effective and established form of counseling that uses the iPad to help critically ill children and teens create art. The iPad is small, light and portable, easily cleaned between uses and can be used in situations where sterile conditions are critical.

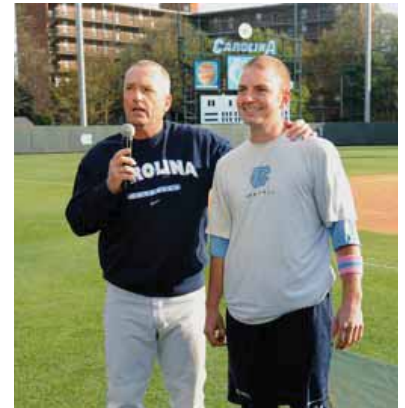
Stuart Gold, MD, professor of pediatrics and leader of the division of pediatric hematology/oncology, says, "I remember the day I met Chase in the Neurosurgical Intensive Care Unit. I knew immediately what a great guy he was, with incredible poise and a great sense of humor. He barreled through chemotherapy and radiation therapy like it was nothing. And as soon as he finished up therapy, he wanted to give back to others. How incredible. The support of BaseBald for the Cure has helped allow us to give the best care possible to our kids. Thanks, Chase."

In a speech given at a UNC Lineberger volunteer appreciation event, Chase

explained that for him, "the toughest part of my battle with cancer was knowing there were young children fighting the same fight as me in the next room over."

Chase is continuing his leadership and philanthropy in pediatric cancer. This summer he completed an internship with the Lance Armstrong Foundation, working with volunteers to organize local events. This fall he will begin a new job with the St. Baldrick's Foundation to develop the BaseBald program into a national series of fundraising and awareness events. St. Baldrick's raises money through head shaving events across the US to fund research for childhood cancers. A recent example is the \$300,000 grant awarded to UNC's Timothy Gershon, MD, PhD, to study the brain tumor medulloblastoma.

Chase says, "UNC, NC Children's Hospital and UNC Lineberger gave me two things: a healthy life with the opportunity to beat cancer and a firsthand look at what it meant to give back. I can't sing enough praises about the environment that not only gave me my life back but also springboarded me into a career of helping others, specifically the children that are continuously fighting cancer every day."



Chase Jones with UNC head baseball coach Mike Fox.

## UNC Board of Trustees approves endowed chairs



Charles M. Perou, PhD, has been appointed the May Goldman Shaw Distinguished Professor of Molecular Oncology Research. The professorship, established by a gift from Wally (class of '66) and Lil Loewenbaum of Austin, Texas is named in honor of Mrs. Loewenbaum's mother, May Goldman Shaw.



Lisa A. Carey, MD, has been appointed The Richardson and Marilyn Jacobs Preyer Distinguished Professor in Breast Cancer Research, established by a gift from Marilyn Jacobs Preyer (class of '82) and L. Richardson Preyer, Jr. of Hillsborough, NC.



Larry B. Marks, MD, has been appointed the Dr. Sidney K. Simon Distinguished Professor of Oncology Research. The professorship, established by a gift from Wally (class of '66) and Lil Loewenbaum of Austin, Texas is named in honor of Mr. Loewenbaum's grandfather, Dr. Sidney K. Simon.

## Partners in Prevention

continued from page 1

residents of all 100 counties. Because of their broad reach to populations with the greatest cancer-related disparities, NC community colleges have high potential as a setting for cancer prevention interventions.

As part of the University Cancer Research Fund's Health-e-NC program, researchers are working with community colleges to assess needs and preferences for adopting and implementing EBIs for cancer prevention that are suitable for their students, employees and community residents. Phase I of the study included a survey that was distributed to all campuses.

Health-e-NC is a statewide effort to improve cancer outcomes for the diseases that hit North Carolina's citizens the hardest. Sponsored by UNC Lineberger and UCRF, Health-e-NC is aimed at finding out what really works in the areas of cancer prevention, detection, diagnosis, treatment and survivorship, and then helping to spread the latest and best evidence-based interventions to health care providers and community groups as well as cancer patients, their families and survivors.

"We received overwhelming participation in our initial health survey — 100 percent of the state's community colleges responded," says Laura Linnan, ScD, CHES, the project's principal investigator. "And from our previous research, we know that community colleges are wonderful collaborators, so this study will allow us to

extend the work we have begun, assess their needs and preferences, and figure out the best ways to tailor EBIs to their campus communities."

"The results of this partnership with UNC will provide our colleges with the tools they need to help students, employees and citizens make life changes that will ultimately reduce their risk of cancer," said Dr. Scott Ralls, President of the NC Community College System. "Since our colleges provide the education and training for the majority of North Carolina's nurses and allied health professionals, it is fitting that they would also be involved in working with UNC to promote healthy lifestyles across our state."

Survey results are being shared with Ralls and other key leaders among the community colleges. As part of Phase II, the UNC researchers will also identify a handful of community colleges where additional information will be collected via interviews with key stakeholders, scans of the physical environment on campus, and discussions to identify key strengths and resources based on an asset mapping process. Additional funds will be pursued from the National Institutes of Health and/or local foundations to then deliver EBIs of greatest benefit to community colleges based on the results of this assessment process.



Kim Rathmell, MD, PhD,  
thrives on discovery.

She is a translational scientist and a medical oncologist who cares for kidney cancer patients. “I wanted a career that made a difference,” she explains, “combining my passion for science and medicine.”

Rathmell earned her undergraduate degree in biology and chemistry from the University of Northern Iowa. There she met her future husband, Jeff, in a freshman biology study group. They then went to Stanford University where Kim earned a doctoral degree in biophysics and a medical degree.

After an internship at the University of Chicago, and a residency, a fellowship and postdoctoral training at the University of Pennsylvania, they moved to Chapel Hill in 2003 where Jeff accepted a position at Duke University in the department of pharmacology and cancer biology, where he is now an associate professor.

Having two scientists in the household means “we

talk about science at dinner-- too much, our kids would say,” Kim explains.

Rathmell completed a postdoctoral training position with UNC Lineberger faculty member Terry Van Dyke, PhD. “My two postdoctoral experiences really segued well,” she says. “In my first, at the University of Pennsylvania, I was working with Celeste Simon, one of the leaders in the field understanding how the same signals that enable cells to survive a low oxygen event can be used to affect cancer growth. Then at UNC I used the same tools I had been developing to study deregulated oxygen sensing to explore relevant animal models with Terry Van Dyke, who has pioneered the use of mouse models to understand cancer biology.”

She decided on kidney cancer because her mentor worked with kidney cancer patients. “I saw it as a place I could have an impact since there was so little to offer at that time,” she says.

She is dedicated to her patients and to scientific discovery. “Our clinical observations inform our science. If we know which molecular subtype of kidney cancer a patient has, we can treat them more effectively.”

In the clinic, Rathmell works closely with other Urologic Oncology Program members, including the surgeons. Last year she and other program members published a significant study showing that patients given a drug prior to surgery had their tumors shrink up to 40 percent, making the subsequent surgery potentially less extensive, a practice-changing finding.

She enjoys all aspects of her career at UNC: mentoring and teaching students, engaging with patients and families and getting to know them, and writing collaborative grants and papers. She appreciates her many UNC mentors. She’s giving back through leadership in the MD-PhD and Translational Medicine graduate programs.

“Each helps me in an important way: advice about grant writing, how to run a lab, how to translate my laboratory science into clinical application, things that you don’t know when you’re just starting out. UNC has a wonderful environment for mentoring and collaboration.”

Rathmell has received national recognition for her work: a V Foundation Scholar Award, an American Association for Cancer Research Landon INNOVATOR Award for Personalized Medicine, an American Society of Clinical Oncology Leadership Development Award, and a Doris Duke Clinical Scientist Development Award, to name a few.

When she’s not seeing patients or working in her lab, she enjoys cooking. “I like to cook extemporaneously, finding one key ingredient that’s local, new or fresh, and making something with it.” Their children, Dori, 11, and Peter, 16, are active in sports, “so we go to a lot of sporting events.”

Rathmell urges kidney cancer patients to have hope. “We are working very hard at UNC and around the world to learn what it is that drives kidney cancer and how we can target it effectively.”

## UNC Lineberger welcomes new faculty & staff



### Elisa Klein, MSW, MPH

The UNC Comprehensive Cancer Support Program is pleased to welcome Elisa Klein, MSW, MPH, to the patient and family support team. As Patient Assistance Program Coordinator, she

will be responsible for needs assessments and developing program guidelines for non-medical financial assistance for cancer patients. In these difficult financial times, private donors are generously providing as both endowments and expendable funds to assist patients with some of the financial challenges of cancer treatment. While the program does not pay medical bills, providing gas cards for patients, assistance with locating affordable lodging while in treatment and other needs will be addressed.

Ms. Klein comes to UNC from the University of Kentucky where she was most recently social work supervisor and program coordinator for UK’s Bluegrass Care Clinic for people living with HIV/AIDS. There she managed patient assistance resources including transportation and medication assistance. Her career includes extensive experience in health program management, social services policy making and administration and as a clinical social worker. She earned her BA in psychology and women’s

studies at the University of Rhode Island and completed her Master of Social Work and Master of Public Health at Boston University.

### Carrie Lee, MD, MPH

Dr. Carrie Lee has joined the division of hematology/oncology as an assistant professor. Dr. Lee earned her BS from the University of Akron in Akron, OH and her MD from Northeastern Ohio Universities College of Medicine in Rootstown, OH. She completed her



residency in internal and preventive medicine at the University of North Carolina at Chapel Hill where she then completed a fellowship in hematology/oncology. She also earned her Master of Public Health from UNC’s Gillings School of Global Public

Health. Dr. Lee treats patients with thoracic cancers and melanomas. Her research involves clinical trials for new cancer treatments across a wide variety of different cancer types. She is returning to UNC after several years at Quintiles, where she provided medical oversight of clinical trials for non-small cell lung cancer and numerous other solid tumors. She is board certified in preventive medicine, internal medicine and medical oncology.

### Seth Noar, PhD

Dr. Seth M. Noar is an Associate Professor in the School of Journalism and Mass Communication at the University of North Carolina at Chapel Hill, and a member of UNC Lineberger. His work addresses health behavior theories, message design and mass media campaigns, interactive health communication (eHealth), and methodological topics including meta-analysis and evaluation. Dr. Noar has published over 60 articles and chapters in a wide range of outlets in the social, behavioral, health, and communication sciences, and he serves on the editorial boards of several leading journals including *Health Communication*, *Journal of Applied Communication Research*, and *Journal of Communication*. Dr. Noar has been a Principal or Co-investigator on several NIH-funded studies testing health communication strategies for health promotion and disease prevention. He is the editor (with co-editor Dr. Nancy Harrington) of “*eHealth Applications: Promising Strategies for Behavior Change*,” to be published by Routledge in 2012.



## UNC partners in \$19.3 million NCI study to form largest US database examining breast cancer in younger African-American women

UNC scientist Robert Millikan will partner with Christine Ambrosone, of Roswell Park Cancer Institute, and Julie R. Palmer, of Boston University, in the most ambitious study to date of breast cancer among younger African-American women. African-American women under age 45 have a 76 percent 5-year relative survival rate compared to young white women who have an 88 percent survival rate (for the years 2001–2007, the most recent years for which data are available).



Robert Millikan, PhD, DVM

Data from UNC Lineberger Comprehensive Cancer Center's Carolina Breast Cancer Study demonstrated that African-American women under the age of 45 are more likely to be diagnosed with aggressive types of breast cancer than are women of European ancestry. The current research project has been awarded \$19.3 million in funding from the National Cancer Institute to try to understand this important health disparity.

Millikan, PhD, DVM, Barbara Sorenson Hulka Distinguished Professor of Epidemiology in the UNC Gillings School of Global Public Health and a member of UNC Lineberger, has directed the Carolina Breast Cancer Study for over a decade. He explains, "This project will collect data on more than 5000 African-American women and as such will be the largest study of its type. Our aim is to explore the potential biologic, environmental and epidemiologic causes of this difference in cancer incidence. Our previous studies and those of our colleagues have suggested hypotheses that we will be investigating with this larger group of patients."

## NCI-funded center to study proteins for better cancer diagnosis, treatment

UNC-Chapel Hill, Washington University School of Medicine in St. Louis, and Boise State University have been named partners in one of five US centers that will use genetic data to search for proteins that are abnormally made by cancer cells with the goal of using the information for better cancer diagnosis, screening and treatment. The partnerships form the new Clinical Proteomic Tumor Analysis Consortium (CPTAC) supported by the National Cancer Institute (NCI).

UNC-Chapel Hill's portion of the joint Cancer Proteomic Center will be led by Xian Chen, PhD, associate professor in the department of biochemistry and biophysics and a member of UNC Lineberger. The center as a whole is led by Washington University breast cancer expert Matthew J. Ellis, MD, PhD and includes Reid Townsend, MD, PhD, also of Washington University, and Morgan Giddings, PhD, of Boise State University.

Following the NCI's investment in sequencing whole genomes of cancer patients to identify the mutations causing cancer, including The Cancer Genome Atlas Grant (TCGA), efforts are shifting toward extracting the medical value of this massive catalogue of genetic information.

This relatively new field, called cancer proteomics, examines the proteins that result from DNA errors in tumor cells. It has benefited from a technical revolution similar to that seen in DNA sequencing, with a rapid increase in sensitivity and accuracy over the last five years. The advantage of proteomic testing is that it is applicable to blood samples, making it practical for cancer screening, early diagnosis and the testing of novel therapies," said Shelley Earp, MD, director of UNC Lineberger.

"Xian Chen is a national leader in developing mass spectroscopy for use in proteomics. The technology he has assembled at UNC will allow him to make breakthrough findings in this arena," noted Leslie Parise, PhD, chair of UNC's department of biochemistry and biophysics.

Other centers have been awarded at Pacific Northwest National Laboratory, the Broad Institute, Fred Hutchinson Cancer Research Center, Johns Hopkins University and Vanderbilt University.

## UNC researchers identify seventh and eighth bases of DNA

For decades, scientists have known that DNA consists of four basic units — adenine, guanine, thymine and cytosine. Those four bases have been taught in science textbooks and have formed the basis of the growing knowledge regarding how genes code for life. Yet in recent history, scientists have expanded that list from four to six. Now, with a finding published online in the July 21, 2011, issue of the journal *Science*, researchers from the UNC School of Medicine have discovered the seventh and eighth bases of DNA.



Yi Zhang, PhD

These last two bases — called 5-formylcytosine and 5-carboxylcytosine — are actually versions of cytosine that have been modified by Tet proteins, molecular entities thought to play a role in DNA demethylation and stem cell reprogramming. Thus, the discovery could advance stem cell research by giving a glimpse into the DNA changes — such as the removal of chemical groups through demethylation — that could reprogram adult cells to make them act like stem cells.

"Before we can grasp the magnitude of this discovery, we have to figure out the function of these new bases," said senior study author Yi Zhang, PhD, Kenan Distinguished Professor of biochemistry and biophysics at UNC and an Investigator of the Howard



Xian Chen, PhD

Hughes Medical Institute. "Because these bases represent an intermediate state in the demethylation process, they could be important for cell fate reprogramming and cancer, both of which involve DNA demethylation." Zhang is also a member of UNC Lineberger.

Holden Thorp, UNC chancellor and Kenan Professor of Chemistry in the College of Arts and Sciences, said Zhang's discovery was a significant development that holds promise for a variety of areas.

"Research such as this, at the intersection of chemistry, biology, physics and medicine, shows the value of scientists like Yi Zhang who tackles both practical problems and fundamental scientific mysteries," said Thorp. "Having devoted a large part of my research career to understanding the fundamental processes in nucleobase and nucleotide oxidation, I'm particularly excited to see this signature result at Carolina. The concept of sequential nucleobase oxidation as an epigenetic signal is tantalizing."

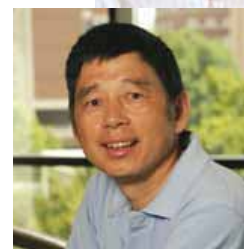
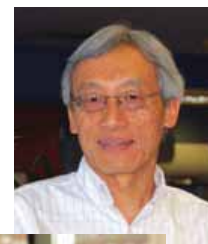
Study co-authors from UNC include Shinsuke Ito, PhD; Li Shen, PhD; Susan C. Wu, PhD; Leonard B. Collins and James A. Swenberg, PhD.

## Battle Awards:

Channing Der, PhD, Kenan Professor of Pharmacology, and Yue Xiong, PhD, Kenan Professor of Biochemistry and Biophysics, have been awarded the fourth annual Hyman L. Battle Distinguished Cancer Research Award in recognition of their accomplishments in cancer research. Both are members of UNC Lineberger.

The Battle Distinguished Cancer Research Award, established in 2007 by the Battle Foundation of Rocky Mount, recognizes exceptional cancer research at the UNC School of Medicine and comes with a \$25,000 prize for each awardee. The Battle award fund is a permanent endowment held by The Medical Foundation of North Carolina, Inc.

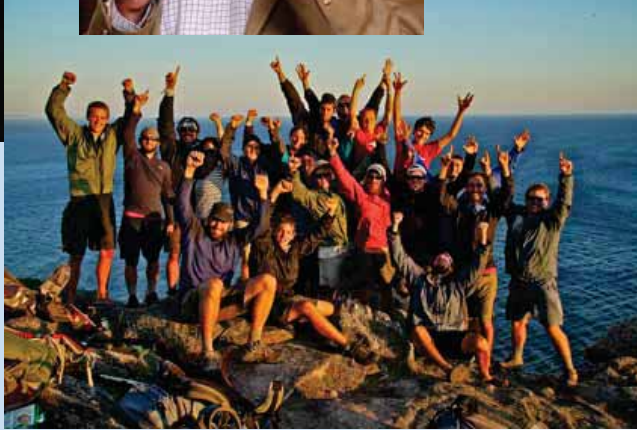
William Roper, MD, MPH, Dean of the UNC School of Medicine and CEO, UNC Health Care, said, "Yue Xiong and Channing Der are internationally recognized for their scientific achievements. They have been career long contributors to UNC Lineberger's basic approach to understanding and treating cancer. They have devoted their laboratories and talents to training and mentoring students, post-doctoral fellows and junior faculty."





### Cocktails for Cancer

Despite Hurricane Irene raging east of Chapel Hill, event organizers Courtney Scott Fox, Leah Waldrop and other intrepid supporters made their way out to support the 2011 Cocktails for Cancer event, which raised over \$15,000 to cure female cancers. Former Tar Heel Center Eric Montross served as the event's auctioneer.



### El Camino Hikers

A dedicated team of 21 scouts, Eagle Scout alums and hiking enthusiasts walked over 500 miles, completing the El Camino de Santiago trail in five weeks to raise more than \$6500 in research funds for UNC Lineberger. The trail begins in France, crosses Spain on the historic pilgrimage trail and ends in Santiago. Many of the hikers were bicyclists last summer who participated in the Cycle 2010 summer trip across the US. The group is shown at the end of El Camino, in Cabo Finisterre.

The 2011 group included: Joe Brown, Kit Brown, Matson Conrad, Josh DiMauro, Kyle Ferriter, Mark Flournoy, Alex Johnson, Aidan Kelley, Hugh Kelley, Beau Long, Daniel Pearce, Will Powell, Caleb Roenig, Miles Rosen, Mike Ruston, and James Stonecypher. Leaders were Brian Burnham, Ben Biddix, and Ty Fenton.

### Corona Cares

North Carolina distributors and retailers raised over \$100,000 for patient and family support programs at the N.C. Cancer Hospital during August. "I knew on my first visit, the Cancer Hospital was very special. Not because I was a patient seeking care, but because of the deep sense of passion, commitment and caring that was demonstrated by every member of the Cancer Hospital organization. Crown Imports and all of its North Carolina Corona wholesalers are proud and honored to be part of the N.C. Cancer Hospital team!" said Jim Ryan, Executive VP of Corporate Affairs at Crown Imports. Particular thanks to Long Beverage, Inc. of Raleigh, which launched the N.C. Program. (Long Beverage team is pictured at right with UNC Lineberger major gifts officer Nicole Pratapas.)



UNC System President Tom Ross and his wife, Susan, hosted UNC Lineberger's Board of Visitors and faculty speakers at their residence for a reception after the fall meeting on September 9th. Pictured here: Dr. Jon Serody, President Ross, Susan Ross, BOV Vice-Chair Gordon Grubb, Dr. Stefanie Sarantopoulos.



Chapel Hill and the surrounding community pull out the pink and all the stops during the month of October to benefit UNC's Comprehensive Cancer Support Program — it's 31 days of full out, fuchsia filled fun! You'll be racing to join in - literally!

The Dozen Doughnut Dash will kick off the Turn the Town Pink festivities on October 1 and the Get Heeled 5K is planned for October 22. Start early on September 30, with a pink edition of Friday on the Front Porch at the Carolina Inn.

Plan to visit Vietri's Warehouse sale October 1-3 and UNC Lineberger will receive 5 percent of your total purchase. (see [www.vietri.com](http://www.vietri.com) or call 919.732.5933 x 110 for location and directions).

Get your BBQ lunch or dinner on October 6th — \$10 a plate gets the best from the team at Coldwell Banker Howard Perry and Walston, orders of 10 or more can be delivered. Join them at their offices on East Franklin for a pig-themed silent auction. Now accepting pre-orders through Sept. 29! For more information and to place your order online, visit [pigoutforthe cure.org](http://pigoutforthe cure.org).

Interested in finding out more, hosting an event or offering a promotion through your business as part of the Turn the Town Pink campaign? Visit: [www.unclineberger.org/signature-events/ttpp](http://www.unclineberger.org/signature-events/ttpp)

# philanthropy update

## World-traveled alumnus furthers cancer research with estate plan



Zeb McMillan '55, says there is no better place to address cancer research than at the N.C. Cancer Hospital.

Zeb McMillan of Fort Lauderdale Florida says his decision to set up a Charitable Remainder Trust to benefit cancer research at the N.C. Cancer Hospital was an easy one.

"I had wanted to include UNC in my estate plans with a gift beneficial to the university while at the same time contribute to a cause beneficial to society. This charitable remainder gift is to be given for the Glory of God and for the Advancement of His Kingdom," he said.

"And one of our greatest health needs is finding a cure for cancer. When I heard of the new N.C. Cancer Hospital I knew that was the perfect vehicle to accomplish my goal and I wanted to be a part of this new hospital's future. There is a great need in this country and around the world to arrest cancer and hopefully I can make a contribution to further the

advancement of cancer research at the N.C. Cancer Hospital," he notes.

McMillan, a North Carolina native, graduated from UNC in 1955 with a B.S. in business majoring in transportation and marketing. At that time, UNC was one of the few schools in the country offering a major in transportation. Following a stint in the military he joined Sea-Land Service in 1957 during its formative year in becoming the first fully containerized ocean shipping company in the world. This new shipping concept, developed by another N.C. native, Malcom McLean, would soon transform the entire ocean shipping industry resulting in explosive growth in international trade.

McMillan grew up with the company and over the years lived, worked and traveled all over the world including some 40 plus countries in a career with Sea-Land that spanned nearly 30 years. Following an early retirement from Sea-Land he finished his shipping career as a Senior Vice President with another large shipping company, Mitsui-OSK Lines which is based in Tokyo.

"I had a fabulous career traveling extensively and I loved every minute of it. There is a lot to learn from other countries and cultures and we quickly learn that the USA does not have all the answers to the problems of the world," he says.

The charitable remainder trust is set up to fund an endowment to support cancer research at the N.C. Cancer Hospital. "I am extremely pleased to be able to make this gift in an effort to assist in combating this dreadful disease. And I feel there is no better place to address cancer research than at the N.C. Cancer Hospital," McMillan said.



### UNC Lineberger hosted the North Carolina Lung Cancer Partnership Advocacy Summit

On August 26-27, close to 40 participants braved Hurricane Irene to learn about the disease, fundraising,

advocacy tools and updates on lung cancer educational materials and projects. (l-r) Heather Hooper, director of operations; Dr. Shelley Earp, UNC Lineberger director, and Amy Cipau, president, North Carolina Lung Partnership



### The 2011 North Carolina State Employees Combined Campaign (SECC) kicked off on August 19.

Since 2008, UNC Lineberger has been fortunate to receive funds through SECC. The SECC is the only fundraising campaign authorized to solicit charitable contributions in the state employee workplace. The SECC is led by state employees for state employees and just 10 percent goes to administrative costs, so state employees can give with confidence. In the last four years, state employees have contributed almost \$30,000 though the SECC for UNC Lineberger and the N.C. Cancer Hospital! These dollars have had a direct impact on the thousands of cancer patients we serve each year.



### 7th Annual Fast Break Against Cancer with Roy Williams and ESPN Anchor Stuart Scott

This year's Fast Break breakfast is certain to be special with featured speaker Stuart Scott '87 reflecting on his own battle with cancer. Plan to join us for this seated breakfast and one-of-a-kind auction on Friday, October 14 from 7:30 am-9:30 am at center court at the Dean E. Smith Center.

Individual tickets are available for \$100 and all proceeds from the event will support cancer research and treatment in our community.

### A Toast to Woody

UNC Lineberger is hosting a dinner on Thursday, October 13 to honor and thank recently retired Hall of Fame broadcaster Woody Durham for his remarkable contributions to Carolina athletics over a 40 year career. Join emcees UNC Associate Athletic Director Rick Steinbacher and former UNC men's basketball player Eric Montross and a few surprise guests for this fun toast (and maybe a little bit of a roast). It's an evening Carolina fans will not want to miss! Individual tickets are available for \$200 and proceeds will benefit the N.C. Cancer Hospital.



Tickets for both events are available online at [unclineberger.org/signature-events](http://unclineberger.org/signature-events) or by calling 919-966-5905.

# calendar of events

## October

We'll **Turn the Town Pink** in October! Please support our community partners and visit the full calendar of events at [www.unclineberger.org/signature-events/ttpp](http://www.unclineberger.org/signature-events/ttpp).

**1<sup>st</sup>** Dozen Doughnut Dash  
Starts at the Old Well  
9:00 a.m.

Rock For Hope – a free concert for cancer awareness sponsored by UNC Cancer Care and Rex Cancer Center featuring UNC physicians John Bogges & John Soper with their band, N.E.D.  
NC Museum of Art Amphitheater  
Free tickets will be distributed at the gate to the first 2,700 attendees.  
4:00 p.m.

**4<sup>th</sup>** Dedication of the Labyrinth and Garden in front of the N.C. Cancer Hospital  
12:00 p.m.

**13<sup>th</sup>** A Toast To Woody Durham  
Carolina Inn, Hill Ballroom  
6:30 p.m.

**14<sup>th</sup>** Roy Williams' Fast Break Against Cancer  
Dean E. Smith Center, Chapel Hill  
7:30 a.m.

**22<sup>nd</sup>** Get Heeled 5K Race  
Starts at the William & Ida Friday Center, Chapel Hill  
9:00 a.m.

## November

**18<sup>th</sup> & 19<sup>th</sup>** Crown BMW Charity Challenge  
Featuring John Isner & Sam Querrey  
Starmont Forest Country Club, Greensboro, NC  
[crownbmwchallenge.org](http://crownbmwchallenge.org)

To purchase tickets or for more information about these events and other UNC Lineberger news, visit [www.unclineberger.org](http://www.unclineberger.org), or follow us on [f](#) [t](#)



UNC  
LINEBERGER

UNC Lineberger Comprehensive Cancer Center  
CB# 7295  
School of Medicine  
University of North Carolina at Chapel Hill  
Chapel Hill, NC 27599-7295  
(919) 966-5905  
[www.unclineberger.org](http://www.unclineberger.org)

Address service requested.

Nonprofit Org  
US Postage  
PAID  
Chapel Hill, NC  
Permit no. 71



The V Foundation for Cancer Research awarded Ian Davis, MD, PhD, a \$50,000 grant to fund his research into targeted treatments for pediatric sarcomas. The grant was made in honor of UNC alumnus and ESPN anchor Stuart Scott at the Jimmy V Gala, held August 27. Pictured here: Naomi Davis, Ian Davis, and V Foundation CEO Nick Valvano.

Have you seen the new television ads launching the UNC Cancer Care brand?

Thanks to the hard work of dozens of faculty and staff, as well as a talented production crew, three new ads began airing on August 15th. As part of our new integrated marketing campaign, we think the ads say a little bit about who we are and how we treat our patients. Look for them across the Triangle as well as during televised UNC sports events! The ads can also be viewed online at [unclineberger.org/commercials](http://unclineberger.org/commercials).



UNC  
CANCER CARE

## Elaine O'Neil 2012 "Luv This Place" Calendar

For over a decade, Elaine O'Neil has been recreating the places you love in North Carolina with her art. Now you can celebrate these places throughout the year with her new "Luv This Place" calendar and benefit the N.C. Cancer Hospital.

The 2012 calendar will be a limited edition with twelve original scenes that highlight the beauty and character of North Carolina. Calendars make great holiday gifts. To learn more and order your 2012 calendar, visit <http://www.elaineoneil.com/store.html>.

Sales of the 2011 calendar raised more than \$13,500 to support cancer patients and their families.

