

Cancer Lines

The Cancer Program of UNC-Chapel Hill & UNC Health Care

Winter 2008

UNC
N.C. CANCER HOSPITAL
LINEBERGER COMPREHENSIVE
CANCER CENTER

the inside line up



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The University Cancer Research Fund: Attracting and Disseminating Excellence for North Carolina

Established by the North Carolina General Assembly last July, the University Cancer Research Fund (UCRF) was created to accelerate the battle against cancer in North Carolina. Well into its first year, the UCRF is shaping a range of cancer initiatives at UNC, many of which will transfer to communities across North Carolina.

"The reaction I have received this fall from leaders across the country makes it clear that the UCRF is being closely watched as a significant milestone and a national model of state support," said Shelley Earp, UNC Lineberger Director. "Our legislature has provided its university with the opportunity to transform cancer research and care in North Carolina. To do so we must build on the strength of our own faculty while at the same time learning from the world's best. Planning is underway including adding two of the world's foremost cancer center directors to the UCRF Governance Committee chaired by President Bowles."

"We're moving as quickly as we can to get these many initiatives going," said Dr. Etta Pisano, vice dean for academic affairs at the University of North Carolina School of Medicine. "This first year of the UCRF is about recruiting faculty and staff to help us reach out across North Carolina, developing the leading-edge programs and technology that will speed discovery, and funding innovative grants that will fuel future programs and initiatives. It's busy, but we know that these start-up efforts will facilitate discovery and dissemination to make a significant difference in the lives and health of North Carolinians."

Listening and Learning

To learn how North Carolina citizens think research can improve cancer screening, prevention and treatment in their communities, a series of listening sessions began in January in Greenville, Asheville and Wilmington. Working through NC Area Health Education Centers, UCRF leaders will hold sessions across the state. The public, healthcare professionals, advocates and cancer survivors are encouraged to participate in these sessions to help UNC develop UCRF programs and research plans to address these priorities. Additional sessions will be scheduled in other areas.

Innovative Research in Labs, Clinics and Communities

Already, a major expenditure funding grants for innovative science and clinical excellence is underway. A team of leading UNC faculty is reviewing more than 120 proposals from faculty from nearly 30 departments in the College of Arts and Sciences and in the Schools of Dentistry, Medicine, Pharmacy, and Public Health to award \$2 million for Innovation Awards and \$500,000 for the Clinical Innovation Awards.

Dr. Rudy Juliano, professor of pharmacology, principal investigator for the Carolina Center for Nanotechnology Excellence and Innovative Awards chair, describes the Awards as "a unique opportunity to support novel, imaginative pilot research projects. Often such risky work would be difficult to fund by traditional grant mechanisms, yet may have the highest potential impact on science, and ultimately on cancer care."

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Oliver Smithies Co-Recipient of 2007 Nobel Prize in Physiology or Medicine

Dr. Oliver Smithies, UNC School of Medicine Excellence professor of pathology and laboratory medicine and Lineberger member, is a co-recipient of the 2007 Nobel Prize in physiology or medicine.

The Nobel Foundation announced October 8, 2007 that Smithies, along with Mario R. Capecchi of the University of Utah's Howard Hughes Medical Institute and Sir Martin J. Evans of the United Kingdom, shared the 2007 Nobel Prize "for their discoveries of principles for introducing specific gene modifications in mice by the use of embryonic stem cells."

Smithies received the call from Stockholm at his home in Chapel Hill at 5 a.m. "I now have a peaceful sense of the

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Oliver Smithies receives the Nobel Prize from King Carl XVI Gustaf of Sweden.

director's *Message*



Dr. H. Shelton Earp, III

What is most exciting about the University Cancer Research Fund? The promise of reshaping the future of cancer research, therapy and prevention for all North Carolinians.

And this future can't come soon enough. In 2007, for the first time, cancer surpassed heart disease as the leading cause of death in North Carolina.

Scientists with the Fund will accelerate the pace of discovery and work with communities across the state to develop targeted strategies to increase cancer screening, advance cancer prevention strategies and partner with local health care providers to improve cancer therapies.

Some strategic steps already taken include adding governance committee members, hiring faculty, and funding the first phase of novel research proposals and purchases of new

equipment.

The Governance Committee, led by UNC system President Erskine Bowles, added two key members in Drs. Ed Benz, President of Dana-Farber Cancer Institute, and John Mendelsohn, President of M. D. Anderson Cancer Center. Their experience with managing large budgets and leading two of the nation's best and largest cancer centers will help us enormously.

This first year is about building infrastructure and hiring key faculty to help lead and develop initiatives. We are fortunate to have Dr. Stephen Frye join the faculty to lead the new UNC Center for Integrative Chemical Biology and Drug Discovery. He will be working with teams of scientists that will examine biological drug targets identified by UNC researchers. The teams will work to develop molecules that interact with those targets, the first step in developing a drug.

UCRF faculty leaders will review and fund a number of novel laboratory and clinical grant proposals. Funding these grants will jumpstart research by allowing scientists to initiate new

scientific efforts and/or core resources in strategic areas. To conduct this research, new equipment is being ordered so that many faculty can benefit from these purchases and thus speed the pace of discovery.

A key activity is hearing from North Carolina citizens. Over the next few months, we will be holding listening sessions across North Carolina to learn from citizens, survivors, community groups, advocates and health care providers how research could improve cancer prevention, screening and treatment in their communities. The information and insights they provide will help us shape programs and interventions.

And one of the early outreach projects is described in this issue of *CancerLines*. UNC scientists with the Jeanne Lucas Study will investigate underlying causes of breast cancer in African-American women. The study is named in memory of State Senator Jeanne Lucas, who was a champion of UNC and of our cancer center. This population-based study will honor her vision of improving cancer outcomes in this population.

And while more research, new faculty, more clinical trials, more community partnerships are all priorities, what's our bottom line? Improving the health of North Carolinians. ●



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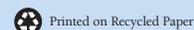
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enjoyed building telescopes and radios. He attended a high school for bright students and won a scholarship to Oxford University. He earned a bachelor of arts degree (first-class honors) in physiology from Oxford in 1946, and he went on to earn his master's degree and doctorate in biochemistry from

Oxford in 1951.

Smithies said when awarded the Lasker Prize in 2001 that scientists should have three things in their lives: their work, a hobby and a family. Smithies is married to UNC colleague Dr. Nobuyo Maeda, Robert H. Wagner distinguished professor of pathology and laboratory medicine. He also is a licensed airplane pilot and is especially fond of gliding.

Smithies came to UNC in 1988. His lab focuses on developing animal models for studying gene therapy in hypertension and other genetic disorders, including sickle cell disease. ●

Oliver Smithies

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rounding off of a scientific life," Smithies later said.

The achievement marks the pinnacle of a scientific career for Smithies, a UNC faculty member for 19 years, containing numerous honors and two major innovations that have fundamentally changed the science of genetic medicine and laid the foundation for today's research into gene therapy. Smithies is the first full-time UNC faculty member to win a Nobel Prize.

In the mid-1980s, while at the University of Wisconsin at Madison, Smithies co-discovered a technique to introduce DNA material in cells, replicated a natural process called homologous DNA recombination. He thought that genetic disorders could be treated by correcting mutations in bone marrow cells, or stem cells. This "gene targeting" led to the creation of transgenic mice, or "designer mice," that replicated human disease. Smithies' lab produced the first animal model of cystic fibrosis, a disease caused by one defective gene, and also studied high blood pressure, atherosclerosis and other diseases.

This method also enabled scientists to study specific genes by creating "knock-out mice." By targeting and removing, or knocking out, a specific gene, researchers can find out what happens when it's missing. Smithies has used the analogy of removing a steering wheel from a car; without it you soon find out why it has a steering wheel. Now this research method is commonplace in biomedical research and has been the basis for thousands of published papers.

According to the Nobel committee, "gene targeting in mice has pervaded all fields of biomedicine. Its impact on the understanding of gene function and its

benefits to mankind will continue to increase over many years to come."

In the 1950s, while at Connaught Medical Research Laboratory in Toronto, Smithies greatly improved gel electrophoresis, a process of separating proteins to identify genes, using starch. The innovation simplified the procedure and became standard in laboratories.

"Oliver Smithies' innovations have revolutionized genetic research and advanced the effective treatment of many diseases, and millions of people worldwide have better and longer lives because of the talent and determination he has brought to his work," said UNC Chancellor James Moeser. "For decades, he has embodied the very best of academic research and humanity through his modesty, good humor, creativity and love of invention. Through his example, hundreds of students and colleagues have learned how to help the world through research.

"We are honored to have him as an anchor for the UNC community and grateful that his many contributions have been recognized with a Nobel Prize."

Born in 1925 in Yorkshire, England, Smithies as a young child was drawn to the idea of invention and



New Technologies for Earlier Diagnosis, More Effective Treatment

New medical technologies are aiding doctors in their ability to diagnose and treat cancers more effectively. Devices like the CyberKnife® Robotic Radiosurgery System and the superDimension inReach™ system allow surgeons to do more with less invasive procedures.

"As people would hope, these technologies allow us to do more to treat the patient, with less discomfort or damage to normal tissue, better preservation of function and less morbidity," explains Matt Ewend, Distinguished Associate Professor of Surgery, chief of neurosurgery and leader of UNC Lineberger's neuro-oncology program.

Cutting Edge Surgery

Ewend is one of the doctors who uses the CyberKnife, made by Accuray of Sunnyvale, Calif., which allows him to direct radiation treatment more precisely. It can be used effectively to treat lesions and tumors of the brain, spine, lung, liver, prostate and kidney. UNC is one of only five NCI Comprehensive Cancer Centers in the country to have a CyberKnife.

"Other systems that are used for this type of radiation therapy, called radiosurgery, require patients to have their heads screwed in a halo ring," Ewend explains. "Then, their head and neck are inserted into a radiation chamber. It feels like having your head in a big oven with x-ray beams that are pointed to the tumor. It only works for brain cancer and can be scary," he says.

"CyberKnife allows us to treat bigger and more irregular tumors, or those that are close to important structures and we can do it in small doses over time, so it's very effective," Ewend explains. This is good news for any cancer patient, but particularly those with tumors previously deemed untreatable.

Super-Targeted Therapy

Another new device uses global positioning technology to capture and biopsy lesions from the traditionally hard to reach peripheral area of the lung. UNC is the first hospital in North Carolina and one of only 38 in the nation to perform electromagnetic navigation bronchoscopy (ENB), developed by the Minneapolis-based company, superDimension.

For patients, this innovative technology means a minimally invasive approach to biopsies, an earlier diagnosis and the potential to provide treatment sooner. The procedure allows physicians to insert a tube into the airway, locate lesions and tumors, take biopsies and deliver treatment directly to the affected area, sparing surrounding tissue.

"Our ability to cure lung cancer is intimately related to our ability to make the diagnosis early," Richard Feins, co-leader of the Multidisciplinary Thoracic Oncology program, professor of surgery and UNC Lineberger member. "Electromagnetic navigation bronchoscopy is making it much easier to do this. For those patients who are not felt to be candidates for

surgery, this system works hand-in-hand with our new Cyberknife radiation therapy program."

Until now, patients with lesions too small to reach with the standard bronchoscopes or too small to biopsy with a needle had few options for treatment short of major surgery.

Similar to GPS (global positioning system) technology, the ENB inReach System provides a three-dimensional "roadmap" of the lungs, generated from standard CT (computed tomography) images. Once the patient's lungs have been "mapped," physicians use superDimension's disposable guiding catheters with standard bronchoscopes and tools to reach the targeted lesion.

Patient Satisfaction

Mimi McDonald of Laurinburg knows the value of the technology firsthand. "Because of my heart problems, I was not a candidate for surgery," she recalls. "And because I had had radiation for my breast cancer years ago, the radiation had to be very targeted." So her doctors referred her to UNC Lineberger's Drs. David Morris, assistant professor of radiation oncology, and Feins.

"The CyberKnife experience was just fine," McDonald says. "It was hard lying still for so long, but I really like being able to get it done in three treatments instead of several weeks." ●



Dr. Richard Feins, co-leader of the Multidisciplinary Thoracic Oncology program, uses the superDimension to perform a lung biopsy.

2007 Oncology Nursing and Service Awards

UNC Lineberger recognized the hard work and dedication of four staff members with the 2007 Oncology Nursing Excellence Awards and the Clinical Services Excellence Awards.

Angela Spruill and Rachel Phipps each received a 2007 Oncology Nursing Excellence Award. Kelly Kivette and Jennifer Rittelmeyer each were recognized with a Clinical Services Excellence Award.

Spruill, RN, BSN and OCN, has worked in the Bone Marrow Transplant Unit for more than five years. She serves on several nursing committees. Her nominators said she constantly looks out for the best interest of the patients and is an advocate for them.

One nominator said she calls Spruill her "Super Nurse." She currently is pursuing a master's degree in Nursing at UNC.

Phipps, RN, BSN and OCN, is the Oncology Research Nurse Clinician in the Clinical Protocol Office working with women's cancers.

Her nominator said Rachel "made an immediate and positive impact to the productivity and performance of the group" and has raised public awareness of breast cancer in the community. She has 21 years of experience in acute medicine, 10 years in the Medical/Surgical Intensive Care Unit and six years in a general surgery office.

Kivette, a recreational therapist in the Bone Marrow Transplant Unit, has worked at Lineberger for seven years. One of her nominators said, "Kelly's role in motivating our patients to get out of bed and do something is an integral part of their recovery." She writes for the Bone Marrow Transplant newsletter, mentors new recreational therapists, and coordinates the Relay for Life event in Pittsboro.

Rittelmeyer has served as an administrative assistant in clinical cancer genetics for six years. Her nominator said, "Jennifer is the prototype of what UNC should seek in its team members" and she alleviates patients' fears and makes it clear that UNC cares about its patients. She is responsible for administering the cancer genetics clinic.

Award winners receive a \$1,500 stipend for professional education activities. The Oncology Nursing Excellence Award, in its sixth year, is presented in memory of Charmayne S. Gray, an outstanding oncology nurse practitioner who died in an auto accident in 2002. The Clinical Services Excellence Awards have been awarded for the past four years. ●



Front row (left to right): Angela Spruill; Kelly Kivette; Rachel Phipps; Jennifer Rittelmeyer; Dr. Richard Goldberg, physician in chief, North Carolina Cancer Hospital, UNC Lineberger associate director. Back row: Bobbi Marks, administrative director, UNC Health Care oncology services; Dr. Shelley Earp, director, UNC Lineberger.

Profile

"She is a compassionate physician and healer who takes the time to listen to patient and family concerns and helps them weigh treatment options and create a plan of care that is individualized to meet not only their medical needs but also understanding they still have a life outside of their disease. I have spoken with several coworkers in oncology who have chosen Claire as the physician for their own family members which as we all know is the ultimate compliment of someone's knowledge and care."

That's how a colleague described E. Claire Dees, associate professor of medicine and Lineberger member, in nominating her for the 2007 Physician Champion Award. The Planetree at UNC Steering Committee honored Dees with the award, which recognizes healthcare professionals who promote compassionate, effective, patient-centered care.

Like many oncology faculty members, Dees is a clinician and researcher. "I'm a medical oncologist who specializes in breast cancer, so about half my time is spent taking care of patients with breast cancer," she explains. "I'm also a researcher specializing in patient-oriented clinical trials research. My special area of interest is new drug development, and many of my trials are Phase I."

Phase I trials evaluate a new drug or new combination of drugs for cancer. Dees heads UNC's Phase I trials group and is the faculty director of Lineberger's Clinical Protocol Office (CPO).

Dees was raised in Northern Virginia. Her father was an attorney and her mother was a history teacher turned community volunteer. Dees attended college at Princeton University and medical school at Duke University. She is married to Dr. Mike Felker, a cardiologist at Duke, and they have two children: William, 5, and Caroline, 20 months.

It was in medical school that Dees found oncology. "Really it was a gut feeling, I suppose," she reflects. "I was drawn to cancer patients and to the study of cancer from my first rotations. Oncology is one of the medical subspecialties that has a lot of continuity of care and a breadth of medical issues."

She did her internship and residency in internal medicine at Brigham and Women's Hospital in Boston and then a fellowship in medical oncology at Johns Hopkins before joining the Carolina faculty in 1999.

"The senior leadership here -- Shelley Earp, Gene Orringer, Paul Watkins, Bev Mitchell and others -- were and are tremendously supportive of young faculty and put a real emphasis on helping young faculty grow their

careers," Dees says. "There was already a strong breast cancer program and a cancer center focus on building a phase I trials group."

Today, Dees is keenly focused on discovering new treatments and caring for patients with breast cancer. She is the principal investigator for a number of clinical trials at the Cancer Center, and for the cooperative group National Surgical Adjuvant Breast and Bowel Project trials at UNC and co-chair for several national trials through the Cancer and Leukemia Group B.

Her dedication is driven by more than an interest in cancer itself, however. Dees understands the value of her work at the patient level. "More than 40,000 women in this country die each year from breast cancer," Dees notes. "Clearly we need new drugs and new approaches." ●



Dr. E. Claire Dees

research Briefs

Breast Cancer Patients Want to Predict Risk of Recurrence

Most breast cancer patients would be receptive to a new genomic test to determine the chance of recurrence, according to new research from UNC and the National Institutes of Health.

Led by Noel Brewer, assistant professor of health behavior and health education in the School of Public Health, the study asked 139 women who were treated for early-stage breast cancer questions that presented hypothetical scenarios reflecting different test outcomes and potential treatment decisions. Brewer is also a Lineberger faculty member.

The study assessed women's attitudes towards risk for recurrence testing, how results would affect treatment choices, and concerns about and perceived benefits of testing. The majority said they would "definitely" want to be tested (76 percent), receive their results (87 percent), and discuss these results with their physicians.

The report appeared in the October 10, 2007 issue of the *Journal of Clinical Oncology*.

Maintaining Weight After Age 40 Increases Breast Cancer Survival

Women sometimes feel there's nothing they can do to improve their chances of survival after a breast cancer diagnosis. But there is, according to scientists at UNC

and other institutions: Don't gain weight after 40.

A new study shows premenopausal women who gain more than 35 pounds after age 20 - prior to breast cancer diagnosis - are two times less likely to survive the disease. Postmenopausal women who gain more than 29 pounds after age 50 are nearly three times less likely to survive.

"Our results demonstrate the importance of weight management, particularly during the perimenopausal and postmenopausal years. Weight gain between the ages of 40 and 50, in particular, substantially decreases the likelihood of surviving breast cancer," said lead study author Rebecca Cleveland, Ph.D., research assistant professor of nutrition in the UNC School of Public Health.

"We have known for some time that obesity at the time of a diagnosis of breast cancer increases the risk of dying from the disease," said Marilee Gammon, Ph.D., professor of epidemiology in the UNC School of Public Health, senior study author and UNC Lineberger member. "[But] few studies have explored whether weight gain leading up to diagnosis can influence survival after a breast cancer diagnosis."

The results were reported in the September 2007 issue of the *Journal of Cancer Epidemiology, Biomarkers & Prevention*.

Study Questions FDA Genetic-Screening Guidelines

Irinotecan, also known by its brand name Camptosar, is used mainly as a second-line treatment for colorectal cancer. The FDA recommends screening patients for a gene that could make them more susceptible to the harmful side effects of the drug, the most worrisome of which is neutropenia, an abnormally low number of white blood cells.

But UNC researchers disagree after analyzing data from nine previous studies of irinotecan which show that patients who received a medium or high dose of the drug had greater risk of neutropenia if they had two copies of a variation of the gene UGT1A1, known as UGT1A1*28. At lower doses, however, the risk was the same regardless of what UGT1A1 gene the patients had.

"Many institutions saw the FDA's recommendation as a mandate to test all patients before treating them with irinotecan even though many clinicians didn't think it was always necessary given that low doses of the drug weren't causing problems," said Howard McLeod, Pharm.D., senior author of the study and director of the UNC Institute for Pharmacogenomics and Individualized Therapy. "Our review showed that at low doses the drug is well tolerated," McLeod, a Lineberger member, said.

Added Richard Goldberg, a co-author of the study and physician in chief of the North Carolina

Breast Cancer Research to Study Risk Factors

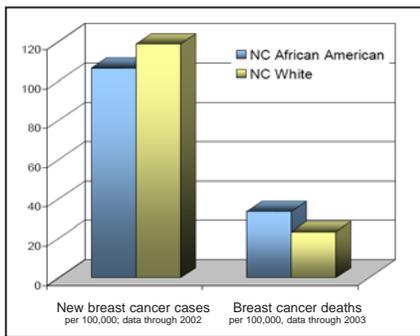
Study named in memory of Jeanne Lucas

"It's clear that breast cancer is not just one disease, but a group of related though biologically distinct diseases," says Lisa Carey, associate professor of medicine and medical director of the UNC Breast Center. "So it doesn't make sense to ask 'what causes breast cancer?'. We should rather ask 'what causes the different types of breast cancer?'"

That's the purpose of The Carolina Breast Cancer Study III (CBCSIII), part of an ongoing population-based case-control study of incident breast cancer in North Carolina. "One of the more aggressive forms of breast cancer is called the basal-like subtype, which is insensitive to our targeted therapies," Carey explains. "Fortunately it is sensitive to chemotherapy. This basal-like subtype is also overrepresented among young African-American women that get breast cancer."

The basal-like subtype makes up more than 35 percent of breast cancers in African-American women, compared with only about 15 percent in other women. The CBCSIII aims to understand why.

"If we can identify underlying causes of breast cancer, we can determine ways to prevent it from occurring in the first place," says Bob Millikan, professor of epidemiology and principal investigator of



From "Cancer in North Carolina: 2007 Report Card"

the study. "And if women do get breast cancer, we can offer more effective treatments that target their particular type of cancer. Both of these efforts together will lower the death rate."

Funds from the University Cancer Research Fund will enable CBCSIII researchers to more than double the number of younger African American women in the study. This will help investigators understand how specific risk factors such as breastfeeding and physical activity could be modified to lower a woman's risk of breast cancer.

Results so far are very exciting. "Almost every risk factor we looked

at, including a long list of genes and environmental factors, showed different results depending on the breast cancer subtype," Millikan notes.

The CBCSIII is also known as the Jeanne Lucas study, honoring the first African-American woman senator in North Carolina, who was a leading force for public education in our state, and died last year from breast cancer. Lucas was a



Jeanne and Bill Lucas, pictured here with Ramses at the 2005 Lineberger Club Luncheon

strong voice for cancer programs at UNC and throughout North Carolina as well as a determined breast cancer advocate. CBCSIII is a continuation of the Carolina Breast Cancer Study I and II, which began in 1993 and culminated in 2001 and investigated the causes of breast cancer in black and white women in North Carolina. Today it is one of the largest African-American breast cancer databases in the United States.

"The Jeanne Lucas study will depend upon the cooperation and efforts of dozens of hospitals, physicians, nurses and women throughout the state," Millikan notes. "It will truly be a statewide effort, with benefits for all women in North Carolina." The study will open in June 2008.

Cancer Hospital: "Studies such as this one give oncologists the tools needed to take better care of patients while avoiding tests and expenses that aren't needed." Goldberg is Lineberger associate director for clinical research

The authors recommended that the FDA amend the product information for irinotecan to describe the association between irinotecan dose and risk of hematologic toxicity among patients with two UGT1A1*28 genes.

The paper was published in the August 28, 2007 *Journal of the National Cancer Institute*.

Gene defects could be new cause of male infertility

UNC scientists have identified a gene crucial to the final step of the formation of a functional sperm cell.

That final step - called spermiogenesis - entails the compaction of DNA into a tight ball within the head of the sperm so it can successfully penetrate an egg. Mice engineered to lack the crucial gene, *Jhdm2a*, that triggers this process did not produce many mature sperm, and those they did produce had abnormally shaped heads and immotile tails.

"Defects in this gene could be the cause for some cases of male infertility," said study senior author Yi Zhang, Ph.D., Howard Hughes Medical Institute investigator, professor of biochemistry and biophysics, and UNC Lineberger member.

"Because this gene has a very specific effect on the development of functional sperm, it holds great potential as a target for new infertility treatments that are unlikely to disrupt other

functions within the body."

The study was published online in the October 17, 2007 issue of the journal *Nature*. The research was funded by the Howard Hughes Medical Institute and the National Institutes of Health.

Zhang and his colleagues are now looking for mutations in this gene in infertility patients, and are also interested in identifying the partners or cofactors in the cell that help this gene do its job.

Study co-authors are from UNC and the National Institute of Environmental Health Sciences.

Scientists puzzled by severe allergic reaction to cancer drug in the Middle Southern U.S.

A patient's expectations about the side effects of chemotherapy usually focus on nausea, hair loss, fatigue and other side effects. Worries about severe allergic reactions to their therapy is usually not a concern.

A study from UNC Lineberger, the Vanderbilt-Ingram Comprehensive Cancer Center and the Sarah Cannon Cancer Center in Nashville has identified an unusually high rate of allergic reaction in cancer patients living in the middle South who received a common drug used for treating their cancer.

This study was presented at the 43rd annual meeting of the American Society of Clinical Oncology in Chicago in June, 2007 and appeared online August 17, 2007 in the *Journal of Clinical Oncology*.

The drug, cetuximab, marketed by Bristol-Meyers Squibb as Erbitux, is a widely used

chemotherapeutic agent for treating colon cancer, head and neck tumors, and is being studied in the treatment of ovarian, lung, breast and gastrointestinal tumors.

When cetuximab was first approved, the first three patients treated at UNC had severe reactions to the drug. Doctors at both Sarah Cannon and Vanderbilt also had more patients than expected react with a drop in blood pressure and shortness of breath or other hypersensitivity reactions within minutes of infusion of cetuximab.

"After speaking with others, we realized that patients who lived on a line across North Carolina, Tennessee, northern Arkansas and southern Missouri had these adverse reactions to the drug," said study leader Dr. Bert O'Neil, assistant professor of medicine at UNC and co-director of the UNC Lineberger GI Oncology program. "So, we thought it appropriate to see what common bonds were there."

What is it about this strip across the middle South? "A good question," said O'Neil. "The most likely places to look would be food- or plant-based allergens. If it is of plant origin, finding the source could be a needle-in-a-haystack search."

Based on the results of this study, UNC has a physician, physician assistant or nurse practitioner present for the first 30 minutes of all infusions of cetuximab. The Sarah Cannon Cancer Center halted all studies of the drug.

The study was funded by UNC Lineberger. To read about more UNC Lineberger research, visit www.unclineberger.org/research.

Research Fund

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Clinical excellence proposals, again reviewed by UNC faculty, will be led by Dr. Richard Goldberg, UNC Lineberger associate director for clinical research and physician in chief of North Carolina Cancer Hospital. He explained, "The final mission of all cancer research is better outcomes for patients. While some of that is attained through enhancing service-oriented care delivery, an additional vital aspect is making sure that advances in therapy get to bedsides and into clinics everywhere in the state, not just in the teaching hospitals. These funds will tune up and tool up care at UNC, and importantly, will allow us to extend our reach into the care of patients statewide through increased consultative and educational endeavors that we are making available to patients and physicians through regional outreach programs."

Partnering with North Carolina Communities

Another key UCRF component involves population scientists who move findings and innovative programs into the community. Dr. Andy Olshan, professor and chair of epidemiology in the UNC School of Public Health and leader of UNC Lineberger's cancer epidemiology program, explained, "The UCRF has already provided critical support to enhance and develop new important initiatives in population sciences. Notably, we have been working with the North Carolina Central Cancer Registry to expand its capabilities to capture timely and high quality data on cancer incidence and mortality in North Carolina. In addition, the UCRF has allowed the population sciences group to begin developing two new major projects: a cohort study of cancer patients diagnosed and treated at UNC that will provide a tremendous resource for the interdisciplinary examination of survivorship; and an important new study of breast cancer in North Carolina, the Carolina Breast Cancer Study 3, to address the etiology and prognosis of breast cancer subtypes among African American women in North Carolina" (see story on page 5).

UCRF physicians will partner with community physicians in several ways. Dr. Tom Shea, professor of medicine and leader of the UNC Bone Marrow

and Stem Cell Transplant Program, explained that "UCRF funds will help fund statewide opportunities for collaborations in clinical trials research, development of survivorship programs, and teleconferencing for tumor boards and continuing education so that community physicians can partner to develop and disseminate new therapies and participate most fully in treatment planning for their patients. By developing programs throughout the State, we will improve the quality of cancer care for all the citizens of North Carolina."

Recruiting New Talent

Faculty recruitment is critical to the range of initiatives developed and implemented by UCRF scientists. The UNC School of Pharmacy, with UNC Lineberger, recruited Dr. Stephen Frye to lead the new Center for Integrative Chemical Biology and Drug Discovery (see box on page 7). His expertise will help translate bench discoveries into drug targets. Dr. Robert Blouin, dean of the School, said, "Learning more about cancer is the first step in making a real difference in the treatment of cancer patients. The cancer fund will strengthen our ability to turn our research into new therapies by supporting leading-edge programs in drug

discovery, drug delivery, and individualized therapy. The creation of the fund has allowed us to attract some of the best scientists in the world in these fields to North Carolina."

Equipping for Progress

"Part of gearing up science at any institution involves purchasing equipment that can mechanize and therefore speed the pace of science," explained Dr. William Marzluff, UNC School of Medicine executive associate dean for research, and chair of the UCRF Equipment Committee. "We have purchased high-throughput DNA sequencing equipment which will allow us to rapidly sequence genes potentially involved in tumor development. We have also purchased a cell sorter specially designed for sorting cells from human tumor samples. One immediate goal of these studies will be to isolate possible cancer 'stem cells' from human tumors. These cells could then be subject to the DNA sequencing analysis to determine what mutations may have occurred in these cells to cause cancer."

To read in greater depth about the UCRF, please visit: www.unclineberger.ucrf.

UCRF Mission Statement

The mission of the University Cancer Research Fund is to save lives and reduce suffering from cancer in North Carolina and beyond. To accomplish this mission, we are expanding our research to promote:



Discovery: *Better understanding of the causes and course of cancer;*



Innovation: *Using our new knowledge to create better ways to prevent, find and treat cancer;*



Delivery: *Improving cancer care, screening and prevention across the state.*

Leaders of Dana-Farber and M. D. Anderson Serve on UCRF Governance Committee

Drs. Edward Benz, Jr., president and CEO of Dana-Farber Cancer Institute in Boston, MA, and John Mendelsohn, president of The University of Texas M. D. Anderson Cancer Center in Houston, have agreed to serve on the University Cancer Research Fund Governance Committee at the University of North Carolina at Chapel Hill.

Benz, who is also the Richard and Susan Smith Professor of Medicine at Harvard Medical School, became CEO at Dana-Farber in 2000, after leaving Johns Hopkins University School of Medicine. He said, "The Lineberger Comprehensive Cancer Center at UNC is one of the top NCI-designated centers in the country and has an admirable record of interaction and collaboration with other cancer centers," said Benz. "I am pleased to have the opportunity to work with Dr. Earp and the Lineberger leadership to find the very best ways that this funding can be used to advance collaborative translational science and the overall mission of the Lineberger Cancer Center."



Dr. Edward Benz, Jr. (top) and Dr. John Mendelsohn

Mendelsohn, also a professor of cancer medicine and faculty member at The University of Texas Graduate School of Biomedical Sciences, became president in 1996. He came to M. D. Anderson from Memorial Sloan-Kettering Cancer Center.

Mendelsohn said, "The North Carolina General Assembly was incredibly forward thinking in establishing this fund dedicated to advancing cancer research and providing the institutions here with a steady stream of support," said Mendelsohn. "Today, funding for cancer research must come from a wide range of government, industry and private sources to step up findings and move those advancements to patients faster. The state's investment today will touch the lives of millions of North Carolinians - and Americans - for decades to come."

CANCER

IN NORTH CAROLINA

The North Carolina Cancer Report Card, released for the first time in 2007, gives an overview of cancer statistics in new cases, deaths, prevention and screening activities and disparities. These statistics will help benchmark and measure the effectiveness of UCRF activities. The report card was developed by UNC Lineberger, the Comprehensive Cancer Control Collaborative of North Carolina, and the Carolina Community Network in collaboration with the NC Advisory Committee on Cancer Coordination and Control and the NC Comprehensive Cancer Program. To download a copy, please visit www.unclineberger.org/ucrf.

First UCRF Faculty Recruit: Dr. Stephen Frye to Lead New UNC Drug Discovery Center

Stephen Frye, PhD, former worldwide head of discovery medicinal chemistry at GlaxoSmithKline, will lead the new Center for Integrative Chemical Biology and Drug Discovery at the University of North Carolina at Chapel Hill.

Frye said, "The scientific environment and collaborative spirit at UNC has made my first few months a real pleasure. There are a number of potential projects under review and discussion so the Center will be well placed to hit the ground running when our lab space becomes available in the Genetics Medicine Building."

Frye is co-inventor of GSK's Avodart, a drug used to shrink an enlarged prostate gland that is also under study for prevention of prostate cancer. Prior to his most recent role at GSK, his department in Research Triangle Park also discovered a drug candidate that became Tykerb, a breast-cancer drug approved by the FDA in March.

The center is a joint initiative supported by the UNC School of Pharmacy, UNC Lineberger Comprehensive Cancer Center, the UNC School of Medicine, and the Department of Chemistry in the College of Arts and Sciences. Frye is a research professor in the School of Pharmacy. He earned his BS degree in chemistry from North Carolina State University and his PhD in organic chemistry from UNC-Chapel Hill. ●

Eli Jordfald Joins External Affairs Staff

Eli Jordfald has been named senior major gifts director for the UNC Lineberger Comprehensive Cancer Center in the UNC School of Medicine. Jordfald has over twenty years of fundraising



Eli Jordfald

experience, most recently as vice president of development at Exploris in Raleigh and prior to that as vice president of development at the Museum of Discovery and Science in Ft. Lauderdale. Jordfald is a member of the Raleigh Professional Women's Forum and serves on the Board of Directors for the Triangle chapter of the Association for Fundraising Executives. She is a Certified Fundraising Executive and earned her MPA degree from Nova Southeastern University in Davie, Florida. She and her family live in Cary, NC. ●

Ian Davis Honored with Inaugural Martin D. Abeloff, MD V Scholar Award

Ian Davis, MD, PhD, the Denman Hammond Assistant Professor of Pediatric Oncology and Lineberger member, was recently honored with the inaugural Martin D. Abeloff, MD V Scholar Award. The V Foundation for Cancer Research bestows this award upon the investigator with the top-ranked scientific proposal. The award is the namesake of Dr. Martin Abeloff, the highly respected director of the Sidney Kimmel Cancer Center at Johns Hopkins. Dr. Abeloff died of leukemia in September 2007.



Dr. Ian Davis

UNC Lineberger faculty members have been named V Scholars in seven of the last eight years. The V Scholar Program is designed to retain and further the careers of talented young investigators. The grants enable young scientists to establish their own laboratories and gain a competitive edge necessary to earn additional funding.

The V Foundation for Cancer Research was started fourteen years ago by Jim Valvano, former North Carolina State basketball coach, ESPN broadcaster who died from cancer in 1993. ●



Pictured at the Lilly Oncology Art Exhibit are (left to right): John Wilson; Anne Wilson; Dr. Shelley Earp, UNC Lineberger director; Ann Steagall, thoracic oncology nurse coordinator; Dr. Mark Socinski, thoracic oncology program co-leader; Liz Sherwood, patient counselor; Dr. Rich Goldberg, UNC Lineberger associate director and physician-in-chief of NC Cancer Hospital.

Lilly Oncology Art Exhibit Visits UNC

The traveling exhibit included 50 pieces of artwork in various media, one of which was the international award-winning photo titled "This is Not a Dress Rehearsal," by Anne Wilson of Morganton, N.C., which was named the 2006 competition's "Best of the United States." The exhibit was displayed in the lobby of NC Children's Hospital and along the corridors to NC Women's and NC Memorial Hospitals. Thousands of patients and visitors viewed the artwork. A reception featured a talk by Anne Wilson, Katherine's mother, who took the award-winning photo of Katherine and her father, John.

The "Lilly Oncology on Canvas: Expressions of a Cancer Journey," was developed by Eli Lilly and Company in 2004 to help people affected by cancer express their emotions about the disease, an important part of the healing process. The 2006 competition, from which the UNC exhibition was drawn, received more than 2,000 entries from 43 countries, including 492 pieces of art from the US and Puerto Rico. ●



UNC Lineberger Team Lights the Night

A 45-member team representing UNC Lineberger participated in the Eastern NC Leukemia and Lymphoma's annual Light the Night walk in Raleigh on September 8, 2007. The event raised over \$300,000 for blood cancer research, with the UNC Lineberger team raising \$2,000.

volunteer *Spotlight*

Alexis Westbrook is a wonderful example of the "heart" of UNC Healthcare. For years her talents in sewing and crocheting have brought warmth to many of our patients. From tiny, crocheted blankets and caps for our preemies, cuddly, soft pillow hearts for women undergoing mastectomies, neck pillows for those dozing off during chemotherapy to her most famous creations for our "Hats and Hearts" program, Alexis puts a little bit of her own heart into each creation.

In the fall of 2002, Alexis approached the staff of The UNC Oncology Patient and Family Resource Center and asked if there might be a need for her handcrafted hats for our patients experiencing hair loss due to cancer treatment. After a brief "clinical trial" of Alexis's designs and unanimous approval from our patients, the "Hats and Hearts" program was born. Alexis has made hundreds of hats for this program. In fact, her original hat pattern has lovingly been named "The Alexis".

We can't thank Alexis enough for the momentum she has added to this special oncology support program. In the fall of 2004, The Patient and Family Resource Center sponsored its first annual "Hats and Hearts" contest. Fifty handcrafted hats were submitted for judging. Alexis served as a consultant in the development of the hat design criteria and as a judge in the contest. Each year, the contest has continued to attract new seamstresses and knitters to our program.

The "Hats and Hearts" program at UNC brings a warm, personal touch to the cancer treatment plan. Alexis's special vision in 2002 has now blossomed into an active and well-loved community program. The UNC "Hats and Hearts" Program distributed over 1000 hats to our patients in 2007 free of charge.

In addition to her work with "Hats and Hearts," Alexis has become a trained volunteer cosmetologist for UNC's Look Good...Feel Better program. Thank you, Alexis, for sharing your heart with all of us here at UNC.



Alexis Westbrook

Roy Williams' Breakfast: Over \$500,000 Raised for Cancer Research

Nearly 400 guests attended the third annual Roy Williams' Fast Break Against Cancer on the floor of the Smith Center October 12. The seated breakfast raised more than \$180,000 to support cancer research in our community, bringing the three year total to over \$500,000!

Former UNC basketball player and now ESPN color analyst Hubert Davis shared his moving story about his mother's battle against cancer while he was in high school. Davis' hope in sharing his story was that it would encourage others who are battling an illness to be more pro-active about their health, allowing them more time with their loved ones, which is what Hubert and his family did not have.



ESPN's Hubert Davis and Coach Roy Williams.

"Voice of the Tar Heels," Woody Durham, served as master of ceremonies and auctioneer for the event. For the third year in a row the auction was very spirited. Auction items included a large piece of the 2005 National Championship floor, the opportunity for one

lucky winner to sit with the team on the bench at a home game, and as a last minute item, Hubert Davis offered a personal tour of the ESPN Game Day set at the Duke vs. UNC game at Cameron Indoor stadium. As the bidding took off for the Game Day experience, Coach Williams sweetened the pot by offering the lucky winner two of his personal tickets to the game-right behind the UNC bench!

Special thanks to Atlantic Corporation, presenting sponsor, and lead sponsors AT&T, BlueCrossBlueShield of North Carolina, Curtis Media Group, GlaxoSmithKline, Long Beverage, and Jo and Eddie Smith, Jr.

Mark your calendars for the 2008 Roy Williams Fast Break Against Cancer, which is scheduled for Friday, October 10th on the floor of the Smith Center.



Coach Roy Williams and Jo Smith, UNC Lineberger Board of Visitors member and lucky winner of a seat on the bench at the UNC-Asheville basketball game on January 9, 2008

Hats Off to Ticked Pink!



Teresa Lutes, Yvonne Knutson and Susan Reda get into the spirit of the hats theme at Ticked Pink at Twilight.

Themed "Hats off to Women ... for all the Hats They Wear," the Fourth Annual Ticked Pink series, three very festive, totally crazy all pink events to benefit women's cancer research at UNC Lineberger, was a great success. The 2007 events attracted over 500 guests and raised over \$75,000 for women's cancer, bringing the four year total to \$236,000. Drs. Claudio Battaglini and Diane Groff spoke at the luncheons about their program

Get Real & Heel, a recreational and exercise therapy program for breast cancer patients and one of the programs supported by Ticked Pink.

Chaired by Julie Amos Sermans, Jean Durham and Gail Fearing, the 2007 Ticked Pink events were made possible by the tireless efforts of over 50 volunteers! Our thanks to our generous Ticked Pink hosts, Top of the Hill Restaurant, Galloway Ridge in Fearington and Squid's Restaurant. Additional thanks go out to BlueCrossBlueShield of North Carolina and Long Beverage, Inc. were lead sponsors of the 2007 Ticked Pink series.



Jean Durham, Ticked Pink co-chair, with Dr. Lisa Carey, Dr. Diane Groff, Dr. Claudio Battaglini and Tammy Davis.



UNC Lineberger Co-sponsors NC's First Free to Breathe Lung Cancer 5K

A UNC team braved the November cold to take part in the first-ever Free to Breathe Lung Cancer 5K. UNC Lineberger and Rex Cancer Center helped to sponsor the event that netted over \$85,000 for the National Lung Cancer Partnership to fund research into lung cancer.

Shown here are team members: front row (left to right): Catherine Alexander; Anne Wilson; Ann Stegall; Dr. Ben Hatchercock; Dr. Mark Socinski; Dr. Tom Stinchcombe; and Dr. Patrick Roberts. Second row (left to right): Fletcher Wilson; J.D. Wilson; and John Wilson. The Wilson family participated in the race as a tribute to their late daughter Katherine, who died of lung cancer in 2005. Not pictured are team members Dr. Carrie Lee, team captain Tammy Alfred and Tasha Dawson.



Talbots Hosts Fashion Show

Talbots of Chapel Hill, NC, hosted a Fall Fashion Show on October 20, 2007. The eleven models that participated are breast cancer survivors. The store also presented over 500 scarves to the Patient and Family Resource Center, donated to the center as part of the store's third Annual Scarf Drive. Scarves were donated from as far away as Pennsylvania and Texas. Pictured here is Karla Werner of Garner, NC.

Dr. Earp Delivers 2007 Norma Berryhill Distinguished Lecture

Dr. Shelley Earp, UNC Lineberger director, delivered the 2007 Berryhill Lecture on November 28. Former Lineberger faculty came from as far away as California to hear the talk and to honor Dr. Earp. More than 300 people attended the lecture and reception at the Carolina Club.

His talk traced his first 40 years- calling them a "brief sojourn" - at UNC and gave a look at his next years here. He explored the UNC scientific culture of collegiality and discussed why UNC is a superb setting for science and for families, saying, "There isn't any place in America where it is more fun to live and where you can do biomedical research at the highest level."

He also talked about the "tremendous love affair" that the people of North Carolina have with UNC-Chapel Hill. "Part of the reason for that is the University's health care system and its influence on people's lives across the state. It is thrilling to see how much consistent support there is from the people and their legislative representatives for what we are doing here."

Dr. William Roper, Dean of the UNC School of Medicine and CEO of UNC Health Care, said about Dr. Earp, "Shelley is unsurpassed in his passion for fighting and conquering cancer and in his commitment to the Cancer Center, the Medical School and the University."

UNC School of Medicine Dean Emeritus Dr. Jeffrey Houpt said, "Obviously, Shelley has been a very effective Cancer Center director. But what makes Shelley stand out is his willingness to work as hard for other parts of the medical school as he does for his own area of responsibility. This

commitment to excellence for the entire enterprise separates Shelley from many others."

Earp has helped establish cancer epidemiology and prevention research programs with faculty in the School of Public Health. Dr. Michael O'Malley, Center Associate Director, said, "We are recognized



Norma and Reece Berryhill's daughter Cat Berryhill (in middle) and their granddaughter Jane Williams Meyer with husband David Meyer (on left); Dr. Shelley Earp, UNC Lineberger Director

as one of the most outstanding and truly comprehensive cancer centers in the country, with strong programs of basic research, clinical translational research and population science research. Under Shelley's leadership, we have built wonderful partnerships with the School of Public Health, with the behavioral sciences and other schools and departments on campus."

His laboratory conducts basic research on the behavior of cancer cells, studying signals that

regulate cell growth, differentiation and death.

Dr. David C. Lee, former program leader for Cancer Cell Biology at UNC Lineberger and now Vice President for Research at the University of Georgia, explained, "I think Shelley sees himself first and foremost as a scientist. The fact that he maintains such a high-impact research program is truly awe inspiring, particularly to those of us who have done this firsthand and know what it takes to be competitive in today's scientific world." Lee and his wife, Leslie, traveled from Georgia to attend the lecture.

The recipient of several UNC School of Medicine teaching awards, Earp has served on boards and chaired national review committees for the American Cancer Society and the National Cancer Institute. He is an elected member of the American Association of Professors, the American Society of Clinical Investigation, and served as President of the Association of American Cancer Institutes.

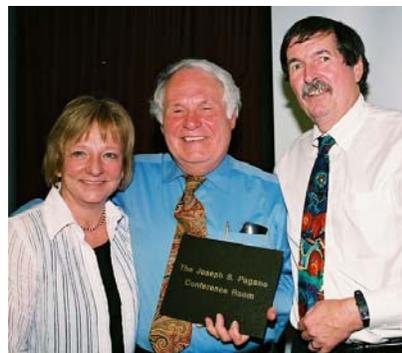
The Norma Berryhill Distinguished Lecture began in 1985. Established to honor the medical school's "most able scientists and scholars," the lectureship is named after the late Norma Berryhill, whose late husband, Dr. Walter Reece Berryhill, was dean of the school from 1941 to 1964. ●

Conference Room Named in Honor of Joseph Pagano

UNC Lineberger's Plaza Level Conference room is now named the Joseph S. Pagano Conference Room. The naming ceremony took place at the conclusion of his December 12, 2007 seminar. During the surprise ceremony, the plaque was unveiled. The Pagano Conference Room is the largest and most-used space in the Lineberger building, hosting numerous groups.

Dr. Pagano, a faculty member in the Department of Medicine since 1965, was the founding director of UNC Lineberger. He is one of the world's leading virologists and has served in numerous leadership roles for national and international professional organizations. As a visionary educator, he established Lineberger's weekly seminar series, the annual scientific symposium and a post-doctoral training program through the NCI. These programs have trained and educated thousands of fellows and faculty. ●

Dr. Joseph Pagano (center) is pictured here with Nancy Raab-Traub, UNC Lineberger Virology Program leader and former Pagano post-doctoral fellow, and Dr. Shelley Earp, UNC Lineberger director.



US sanofi-aventis establishes GI Oncology Professorship

At a dinner in December, Dean William Roper honored Jean-Luc Roberts and other representatives from US sanofi-aventis for their \$1,000,000 gift to establish a Gastrointestinal Oncology professorship in the UNC School of Medicine. This professorship will be named the Richard M. Goldberg Distinguished Professorship in Gastrointestinal Medical Oncology and honors Dr. Goldberg for his work as an internationally recognized clinical investigator in the area of gastrointestinal cancer research.

Dr. Richard M. Goldberg will be the first recipient of the named professorship. Dr. Goldberg has been a member of the UNC faculty since July 1, 2003 when he was recruited from the Mayo Medical School to be Professor of Medicine and Chief of the Division of Hematology/Oncology.

As Chief of the Division of Hematology/ Oncology, Dr. Goldberg has led the clinical, teaching and research programs of the Division. He serves as the Physician-in-Chief of the NC Cancer Hospital, Director of Oncology Services for the UNC Health Care System and Associate Cancer Center Director for Clinical Research for the UNC Lineberger Comprehensive



Mr. Jean-Luc Robert, Associate VP, Elox & Elitek Marketing, US sanofi-aventis, is pictured here with Dr. Richard Goldberg and Dean William Roper.

Cancer Center. In all of these administrative positions, he has had a major leadership role in building cancer programs at UNC.

Dr. Goldberg is an excellent clinician and has been listed in *The Best Doctors in America* since 2001, *Best Doctors in North Carolina* by *North Carolina Business Journal*, and named as one of the leading cancer specialists by *Good Housekeeping*. ●

UNC Lineberger Matches Challenge Gift for Seed Grant Research

During 2007, the last year of the Carolina First campaign, UNC Lineberger's top priority was to secure additional funding for its Seed Grant Program. Established in 1986, the Seed Grants Program has been highly successful, allowing UNC Lineberger faculty to produce significant and surprising new knowledge in many areas of cancer research and in many cases, use their findings to leverage major funding from conventional sources. Dr. Nancy DeMore knows first hand what this program can do for cancer research. "Because of that initial investment in my work from the Seed Grant Program, I was able to generate the data needed to successfully compete for significant funding from the National Institutes of Health and the Department of Defense. Without the support from the Seed Grant Program this would not have been possible. This work has led to the discovery of novel targets in breast cancer which can be used to design new treatment strategies which may have the potential to help breast cancer patients."

To allow this program to grow and get on more secure financial footing, two anonymous challengers committed to match 1:1 gifts and pledges to the Lineberger Seed Grant program up to \$1,000,000! The terms of the challenge required that the gifts and pledges had to be \$25,000 or more and they had to be received before the December 31, 2007 deadline. The response was quick and enthusiastic. By the end of October, the full \$1,000,000 had been committed.

Vernon Averett of Durham, NC was one of the first to commit to participate in the Challenge. As Vernon explained, "The Capstone Challenge appealed to me for several reasons. Overall, it is another way to help in our long-term battle against cancer. Personally, it means so much to me because my wife got breast cancer at 35 and died at 37 with a heart problem likely brought on by the breast cancer. Plus, it is such a great feeling to know that every dollar I give will be matched thus doubling the benefit of the gift."

There was still significant interest in this challenge and two months remaining until the December 31, 2007 deadline so a third challenger was recruited, committing an additional \$250,000 in matching funds. Once again Lineberger



supporters responded and the additional matching gifts were secured.

The Carolina Capstone Challenge for Innovative Cancer Research was a resounding success! In just ten months, over \$2.6 million was raised from 51 different donors for this

leading-edge, high-reward research. "Thanks to the generous response of everyone, UNC Lineberger will be able to expand this innovative research program to directly benefit all cancer patients," said Dr. Shelley Earp, UNC Lineberger Director. ●

It's a Party for Prevention. It's Carousing for a Cure.

It's Reveling for Research. It's the

5th Annual Lineberger Beach Ball!

Saturday, April 12, 2008

9:00 pm-1:00 am

University Mall, Chapel Hill



Join us for an evening of good food and drink, exciting auctions, and music and dancing with The Troupers! For more information, visit www.unclineberger.org/gift/events/bb.

UNC Football Coach Butch Davis and Tammy Davis, Honorary Chairs, 2008 Beach Ball

calendar of events

APRIL 2008

12th Fifth Annual Lineberger Beach Ball, University Mall, Chapel Hill, NC

18th Spring Lineberger Board of Visitors meeting, Kenan Center, Chapel Hill, NC

MAY 2008

13th and 14th 32nd Annual Lineberger Scientific Symposium: Drug Discovery and Development, Friday Center, Chapel Hill, NC

JUNE 2008

14th Komen Race for the Cure, NC Triangle Affiliate, Raleigh, NC

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