

Fall 2009

UConn School of Medicine Dean's Newsletter, Fall 2009

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**UConn Creates
Two New Stem Cell Lines**

*New
discovery*

Dean's Message



Welcome to the first issue of our new publication. Designed to be a quick and easy read, our goal is to convey the energy and passion found throughout the dynamic University of Connecticut School of Medicine.

I became the seventh dean of the UConn School of Medicine and vice president for Health Affairs at the UConn Health Center just a year ago. I joined the UConn community from the University of Virginia, where I served as the Lillian T.

Pratt Distinguished Professor and chair of the Department of Orthopaedic Surgery.

Since my arrival, I have been continually impressed with the quality and intellectual vigor of our medical school faculty, students and alumni. Three times a year, these pages will highlight just some of the extraordinary accomplishments and talents of these people. We will share their stories and describe the impact they are having both here in Connecticut and well beyond.

As you will see, I am unabashedly proud of this medical school and the entire UConn Health Center. Please spend a few minutes with the newsletter and let me show you why...

Cato T. Laurencin, M.D., Ph.D.
Vice President for Health Affairs
Dean, School of Medicine

P.S. I would enjoy hearing from you. I can be contacted at 860-679-2594 or laurencin@uchc.edu.

Grants

Grant from Gates Foundation's Grand Challenges Explorations Initiative

Arthur Günzl, Ph.D., associate professor in the Department of Genetics and Developmental Biology, is the first Health Center researcher to be awarded a grant by the Bill and Melinda Gates Foundation. Günzl is one of 81 researchers around the world to receive a grant of \$100,000 each through the foundation's Grand Challenges Explorations initiative, which aims to develop a pipeline of creative ideas that could change the face of global health. The projects focus on novel approaches to prevent and treat infectious diseases, such as HIV, malaria, tuberculosis, pneumonia, and diarrheal diseases.

Günzl's research focuses on *Trypanosoma brucei*, the parasite carried by the tsetse fly in Sub-Saharan Africa that causes sleeping sickness. There are an estimated 500,000 cases each year, and in some African provinces, half of the population is infected. Untreated, the disease is invariably fatal. However, existing drugs are very toxic, too expensive, difficult to administer, and/or not effective against all subspecies



of the parasite. Moreover, resistance to existing drugs is on the rise and vaccine development is not in sight. Thus, new strategies to combat the parasite are urgently needed.

In light of the Gates Foundation grant, Günzl will be able to concentrate on a unique trait of *T. brucei*. The parasite lives freely in the human bloodstream and it must continuously swim forward to evade immune responses. Günzl will attempt to develop serum-stable adhesive RNA molecules which immobilize trypanosomes on human endothelial cells.

"It's just an idea, I have no preliminary data," says Günzl. "From my previous research experience, I can see where it may work but I can also think of reasons why it might not work. But it is definitely worth trying."

Günzl's proposal to the Gates Foundation was only two pages long, which differs greatly from the lengthy and data-proven proposals researchers need to submit to the National Institutes of Health in order to receive grant money. "It's a nice thing for a scientist," explains Günzl. "This grant is allowing me to go and do something completely new and unconventional, and that's what can lead to big discoveries." For instance, if Günzl's hunch proves true, it could lead to a shortcut for a new treatment. The other funded researchers will explore a wide range of new ideas, including giving mosquitoes a "head cold" to prevent them from detecting and biting humans; developing a tomato to deliver antiviral drugs; and using a laser to enhance the effect of vaccines. Projects that show promise are eligible for additional funding of \$1 million or more. ✨



Dr. Cheryl Oncken is studying the connection between exercise and smoking cessation.

American Cancer Society Supports Taylor's Bladder Cancer Research

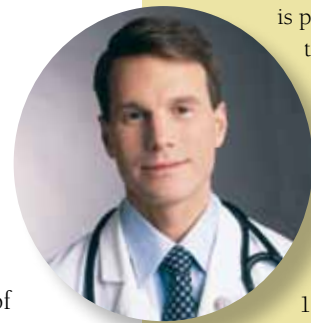
John Taylor, III, M.D., a urologist, researcher and assistant professor of surgery at the UConn School of Medicine, has received a five-year, \$729,000 research grant from the American Cancer Society for his study of the role of inflammatory molecules on the development and progression of bladder cancer.

"We currently have no markers to determine which patients with bladder cancer will have progression, which patients would benefit from early aggressive treatment, or even which patients will respond favorably to treatment," Taylor says. "Our early data are quite promising and could lead to novel ways to manage this disease."

The grant is one of 27 research projects the American Cancer Society is funding in Connecticut, totaling nearly \$10 million.

"Virtually every major development in cancer research in the last half century can point to a Society-funded researcher who played a key role along the way, with most of those investigators getting Society support early in their careers when funding is particularly difficult to get," says Sarah Shafir, American Cancer Society Connecticut vice president of health initiatives.

In 2005, Taylor was one of 10 researchers in the country to receive a Dennis W. Jahnigen Scholars Award from the American Geriatrics Society. The two-year, \$200,000 grant helped fund his work on age-related changes in the bladder. ❄



\$4 Million Grant

Studies Exercise as Aid to Quitting Smoking

Cheryl Oncken, M.D., associate professor of medicine, has received a five-year, \$4 million federal grant to study whether exercise can help older women quit smoking and improve their overall health.

"Our goal is to study whether an exercise program can help postmenopausal women quit smoking and abstain from cigarettes," says Oncken, a nationally recognized expert on smoking cessation, who received the grant from the National Institute on Drug Abuse.

"Most smoking research focuses on healthy women. Our study is looking at postmenopausal women who have greater risk of lower bone density, depression and weight gain than younger women," says Oncken.

About 30 percent of female smokers are postmenopausal, and the proportion is expected to grow as the population ages. Smokers generally know about the harmful effects of smoking and want to stop, but most people have a hard time quitting. "It takes an average of three to five quit attempts to finally kick the habit," says Oncken, who has studied the use of various medications and behavioral therapies designed to help people abstain. "Our goal is to find the most effective treatment or combination of treatments to help people achieve their goal."

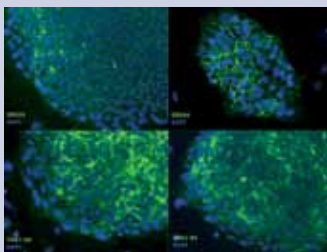
The study will recruit about 300 postmenopausal women, all of whom will receive behavioral counseling and the medication varenicline, and then be randomly assigned to either a supervised exercise program or a supervised relaxation control program.

"We hypothesize that women in the exercise program will have greater abstinence rates at the end of treatment and at the end of a year than women in the relaxation program," says Oncken. The researchers also hypothesize that the ameliorative effects of exercise on smoking cessation and depression will improve abstinence rates among women with a history of depression equal to those with no history of depression, and that exercise will improve smoking cessation by reducing nicotine craving and by increasing self-confidence. ❄



Dr. Ge Lin working on new stem cell lines he created.

Two New Stem Cell Lines



UConn School of Medicine scientists recently made two new lines of human embryonic stem cells available to academic researchers, joining an elite group of universities engaged in efforts to create, characterize and distribute new human embryonic stem cell lines for research and therapeutic purposes.

“Distribution of these new lines helps broaden the state’s growing stem cell research community, and creates an additional supply of stem cells for research here and around the world,” says Ren-He Xu, M.D., Ph.D., associate professor in the Department of Genetics and Developmental Biology at the medical school, and director of the university’s Stem Cell Core Laboratory. The two new lines – identified as CT1 and CT2 – were created last summer by Xu and Ge Lin, Ph.D., his colleague in the core lab.

The university’s core facility was established in 2007 after the Connecticut legislature and Gov. M. Jodi Rell set aside \$100 million for embryonic and adult stem cell training and research programs at state universities. UConn’s core lab is culturing, testing and banking both federally approved and unapproved stem cell lines.

Because of the tendency for chromosomal abnormalities to increase with the cells’ age, or higher passages, Xu’s team applied DNA sequencing technology to obtain a detailed analysis of the molecular

signature of each cell line. “This established a genetic database for our cell lines against which researchers can compare their work. It helps them make sure any results they find are reliable,” says Xu.

Because the new Connecticut stem cell lines lack the genetic mutations and chromosomal abnormalities that often occur and accumulate in cell lines cultured and stored for a long time, they are highly prized by researchers. And because the cells are stored to await distribution after fewer than 15 passages – each passage is about one week’s growth of the embryonic stem cell colonies in vitro – they have greater research value. “Many scientists seeking to understand how embryonic stem cells differentiate need lines with low passage to guarantee a longer window of opportunity to manipulate the cells. Because our lines are younger, the scientists can work with them longer,” says Xu.

The two new Connecticut cell lines were derived from unused embryos donated for research with informed, written consent by patients of UConn’s Center for Advanced Reproductive Services. The work also was reviewed and approved by the university’s Embryonic Stem Cell Research Oversight Committee, a panel that oversees work with human stem cells.

Besides creating the new lines, Xu and his team have been very involved in training other researchers in the culture

In June of 2005, Connecticut became only the third state in the country to use its own money to fund human embryonic stem cell research. That pivotal decision helped to keep Connecticut in the forefront of stem cell research.

By creating and establishing the two new human embryonic stem cell lines, UConn joins an elite group of universities engaged in efforts to create, characterize and distribute new human embryonic stem cell lines for research and therapeutic purposes.

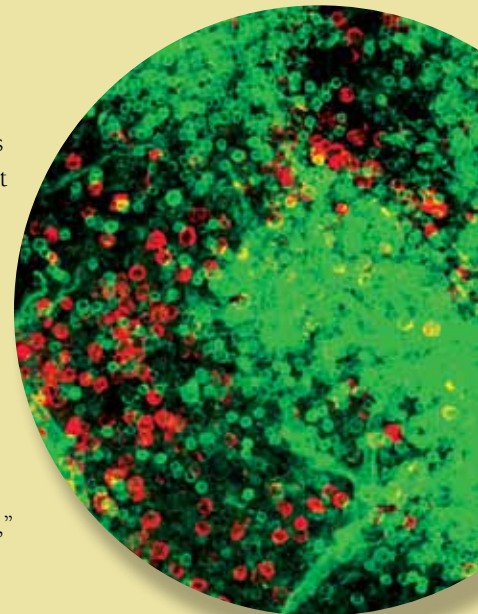
and use of human embryonic stem cells. “We have held 15 training classes and trained 100 scientists from UConn, Wesleyan University, Yale University and the University of Massachusetts.” In addition, UConn researchers are working on more than 20 different projects designed to promote understanding of the differentiation of stem cells and harness their therapeutic potential.

“We are extremely fortunate to have a network of investigators with expertise in human embryonic stem cell culture methods, cell characterization methods and a core cell production facility adjacent to clinician scientists working to introduce stem cell therapies in medical practice,” says Marc Lalonde, Ph.D., senior associate dean for research planning and coordination, professor and chair of the Department of Genetics and Development Biology, and director of the university’s Stem Cell Institute. “It is a unique collaboration that will help bring the potential benefits of this research to fruition.” ✨

Understanding the Immune Response

Using laser scanning microscopy, Health Center researchers have examined the cell dynamics of an immune response. By examining the spleens of mice infected with bacteria at different times during the infection, the researchers learned that the immune response appeared to begin in the lymphocyte-containing white pulp. A few days after the beginning of the immune response, the T cells moved between the white pulp and the red blood cell rich red pulp areas of the spleen through structures called “bridging channels.”

“Our study was designed to increase our understanding of the precise anatomical movement of cells responding to a real infection,” says Leo Lefrançois, Ph.D., professor of immunology, and one of the researchers involved in the study with graduate student Jeffrey McNamara and Kamal Khanna, Ph.D., a Damon-Runyon fellow. “The study revealed for the first time the anatomy of an ongoing immune response, information that could ultimately be used to help develop better therapies for fighting infection or blocking the response in autoimmune disorders,” says Lefrançois. Their research was published in a recent issue of *Science*. ✨



Two Recent Honors: Laurencin Recognized for Contributions to Biomedical and Tissue Engineering, Receives Presidential Award for Mentoring

Cato T. Laurencin, M.D., Ph.D., vice president for health affairs and dean of the medical school, recently received two prestigious honors related to bioengineering and mentoring aspiring researchers.

In February, Laurencin was named the 2009 winner of the Pierre Galletti Award, the highest honor bestowed annually by the American Institute for Medical and Biological Engineering. He was recognized for “seminal contributions to tissue engineering and leadership in international biomedical engineering.” Established in 1999, the award is presented to an individual in recognition of his or her contributions to public awareness of medical and biological engineering, and to promotion of the national interest in science, engineering and education.

In July, Laurencin was among a select group of science, math and engineering educators named by President Barack Obama to receive the Presidential Award for Excellence. Each year, this award recognizes the crucial role that mentoring plays in the academic and personal development of students studying science or engineering.

“There is no higher calling than furthering the educational advancement of our nation’s young people and encouraging and inspiring our next generation of leaders,” President Obama said in a White House statement.

Throughout his career, Laurencin has earned national and international prominence as an orthopaedic surgeon and chemical engineering expert. He holds the Health Center’s Van Dusen Endowed Chair in Academic Medicine and is a professor in the Department of Orthopaedic Surgery. He also holds an appointment in the UConn School of Engineering as a professor of chemical, materials and biomolecular engineering. He is a fellow of the American Surgical Association and the American Academy of Orthopaedic Surgeons and was named one of the 100 engineers of the modern era by the American Institute of Chemical Engineers.

Laurencin joined UConn in 2008 from the University of Virginia where he was the Lillian T. Pratt Distinguished Professor and chair of the Department of Orthopaedic Surgery, the orthopaedic surgeon-in-chief at the University of Virginia Health System and a university professor, one of the university’s most prestigious titles. ✱

Fast Fact

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Percent of applicants accepted into the UConn School of Medicine Academic Year 2008-2009

Kastner Receives AMA Leadership Award

Theodore A. Kastner, '81, M.D., M.S., founder and president of Developmental Disabilities Health Alliance (DDHA), a New Jersey health care organization exclusively for individuals with developmental disabilities, has been named a recipient of the American Medical Association’s 2008 Leadership Award.

Kastner was among 56 individuals nationwide honored by the AMA Foundation at its annual Excellence in Medicine Awards ceremony. Recipients of the award are recognized for demonstrating outstanding non-clinical leadership skills in advocacy, community service and education.

Throughout his career, Kastner has focused on a chronically underserved population: people with developmental disabilities. DDHA began as a single office in 1997 serving 200 patients; today, it has six offices across New Jersey providing comprehensive health care services to more than 3,000 patients and health care management to 3,400 patients. ✱

Physician-Researcher Honored



Zhihai Li, M.D., Ph.D., a prominent physician-researcher and leader in the field of immunotherapy, was recently inducted into the American Society for Clinical Investigation, one of the nation’s oldest and most respected medical honor societies.

Li’s research team has made seminal contributions to understanding the immunological properties of heat shock proteins (HSPs) in cancer immunotherapy and immune tolerance. His work has broad implications in understanding how the immune system operates physiologically and how it might be harnessed for the prevention and treatment of human diseases. ✱

Dr. Joseph Anderson, left, led a new initiative to improve access to colonoscopies among underserved populations.



Neag Gift Supports Imaging, Treatment Upgrades

A \$3.8 million gift from Carole and Ray Neag, two of the university's most generous supporters, will help the Health Center upgrade its diagnostic, planning and treatment services.

The first installment, a new computerized tomography (CT) scanner offering unprecedented precision, speed and patient comfort, arrived this spring. The new scanner uses "dual-source energy" technology, in which two sources of radiation are used to acquire information and create a complex 3D image of a patient's anatomy. The technology gives physicians and researchers sophisticated images not previously available.

The Neags' gift also provides for a high-dose radiation system and a CT simulator which, together with the scanner and the TomoTherapy cancer treatment system (provided by a previous gift from the Neags), greatly enhances research, education and treatment at the Health Center.

"Its functionality for cardiology alone will be leaps and bounds beyond our existing capabilities," says Bruce Liang, M.D., director of the Pat and Jim Calhoun Cardiology Center.

Advantages of the new scanner include clearer images, a 90 percent reduction in scanning times and selective presentation of a scanned image. The CT simulator will enhance treatment planning, and the high dose rate brachytherapy will treat a variety of cancers at the Neag Comprehensive Cancer Center.

"Carole and I feel strongly about the state and its university, and believe the state's flagship research university should have the very best if at all possible," says Ray Neag. ✨

Improving Access to Colonoscopies

Earlier this year, a statewide effort led by the UConn Health Center's Colon Cancer Prevention Program made colonoscopies available to uninsured and underinsured Connecticut residents. The initiative provided colonoscopies to nearly 300 patients at no cost to them, nearly 50 of them done by Joseph C. Anderson, M.D., at the UConn Health Center.

"The colonoscopy is a major prevention tool, but not everyone has access," says Anderson, the clinical director of the colon cancer prevention program and medical director for the Connecticut project. "The more people we can screen, the more people we can help. Polyps in the colon will become cancerous whether people have insurance or not."

Unfortunately for those without insurance, the cost of the test, which can detect early signs of cancer, generally places it out of their reach.

Using a grant of \$950,000 from the state Department of Public Health, the Health Center formed a partnership with federally funded community health centers and endoscopists around the state to identify patients between the ages of 50 and 65 and provide them with colonoscopies. The program provided follow-up services to participants.

"The goal is to promote, improve and optimize the appropriate use of high quality colorectal cancer screening and follow-up services, and eliminate or decrease racial, ethnic and socioeconomic disparities in access to these screenings," says Jennifer Granger, chief operating officer of the Community Health Center Association of Connecticut.

Colon cancer is the second most common cancer and the third leading cause of cancer deaths in the nation. ✨



***Director of New England
Musculoskeletal Institute
Is Named Fellow of AIMBE***

The American Institute for Medical and Biological Engineering has inducted Jay R. Lieberman, M.D., an internationally recognized joint replacement expert and director of the Health Center's New England Musculoskeletal Institute, into its College of Fellows.

Lieberman, professor and chairman of the Department of Orthopaedic Surgery and a member of both the prestigious Hip Society and Knee Society, was nominated for "significant and sustained contributions to understanding the biology of arthroplasty implants, and for innovative strategies for bone regeneration using gene therapy and materials science," according to the AIMBE.