Doxsey receives Keck Medical Research Grant

The intriguing premise of Principal Investigator Stephen Doxsey, PhD, for his project “A New Paradigm for Longevity” that aging may be a curable disease of the stem cells rather than an inevitable process is just the kind of outside-the-box thinking encouraged at UMMS and now being supported by a $1.5 million Keck Medical Research Grant.

Dr. Doxsey and an interdisciplinary, intramural group of collaborators will study how asymmetric cell division affects aging and longevity, building on his lab’s remarkable finding published in the journal Cell in 2005. “Our work reverses the accepted notion that the nation’s most promising young scientists have in securing traditional sources of funding to pursue potentially ground-breaking research early in their careers, and the fact that this period is often a time when they make their boldest discoveries. Nominations from institutions are accepted on an invitation-only basis. The application process for both honors is rigorous and lengthy, requiring a major investment of time and resources on the part of the institution and the individual investigators, and thus reflecting their commitment to innovative research. “The fact that the Keck Foundation has recognized two of our faculty members with a major research grant and a Distinguished Young Scholar Award is further testimony to the outstanding research enterprise that has been developed here at UMass Medical School,” said Vice Chancellor for Research John Sullivan, MD, professor of pediatrics, molecular medicine, molecular genetics & microbiology and pathology.

Dekker named Keck Distinguished Young Scholar

With his Keck Distinguished Young Scholar award for the project “Unraveling Chromatin Interaction Networks That Regulate the Human Genome,” Job Dekker, PhD, proposes to map the threedimensional organization of the genome inside cells, which may reveal how the genome normally works, as well as what goes awry to produce disease states, often characterized by alterations in the spatial organization of the genome. “Insights into the mechanisms that modulate the spatial organization of the genome will greatly contribute to a better understanding of gene regulation and may reveal causes of human diseases that are due to defects in these processes,” Dr. Dekker explained.

He will employ his own invention, the cutting-edge Chromosome Conformation Capture technology, called 3C, to detect physical interactions between genes and other genomic elements believed to be regulators. He will also employ 3C-Carbon Copy, or 5C, his further refinement of the 3C technology that dramatically increases throughout to analyze millions of interactions simultaneously. Dekker received both his BS and PhD from the University of Utrecht, The Netherlands, then came to the United States for a post-doctoral fellowship at Harvard University before joining the

UMMS awarded two Keck Foundation honors

UMMS has received two prestigious honors from the W.M. Keck Foundation: Stephen Doxsey, PhD, professor of molecular medicine and biochemistry & molecular pharmacology, was awarded a Keck Medical Research Grant; and Job Dekker, PhD, a member of the Program in Gene Function and Expression and assistant professor of biochemistry & molecular pharmacology, was named a Keck Distinguished Young Scholar.

Founded in 1954 by Superior Oil Company founder William Myron Keck and now one of the largest private philanthropic organizations in the country, the Foundation supports the work of leading researchers to lay the groundwork for breakthrough discoveries. The Medical Research Grant seeks interdisciplinary collaborations among established investigators with the potential to advance the frontiers of medicine, while the Distinguished Young Scholars in Medical Research program specifically addresses the difficulty researchers to lay the groundwork for breakthrough discoveries. The Medical Research Grant seeks interdisciplinary collaborations among established investigators with the potential to advance the frontiers of medicine, while the Distinguished Young Scholars in Medical Research program specifically addresses the difficulty

The principles of Principal Investigator Stephen Doxsey, PhD, in the study of cell division, Doxsey received both his BS and PhD from the University of Utrecht, The Netherlands, then came to the United States for a post-doctoral fellowship at Harvard University before joining the

News Makers online!

To learn what faculty experts are saying about the topics making today’s local, state and national headlines, visit www.umassmed.edu/pap/Newsmakers/. When appropriate, the page will also list upcoming UMMS expert appearances in print, TV and radio venues.
Addiction to nicotine almost immediate in youth smokers

More than four million youth between the ages of 12 and 17 are smokers, according to the National Institutes of Health, and a new study, led by Joseph DiFranza, MD, professor of family medicine & community health, looks at how easily they can become addicted to nicotine.

“Symptoms of Tobacco Dependence: Alter Brief Intermittent Use,” Dr. DiFranza’s four-year study monitoring nearly 1,250 sixth- to eight-graders in six Massachusetts communities, found 10 percent of youth who smoke cigarettes are addicted within two days of first inhaling, and 25 percent are addicted within a month. The study also discovered that adolescents who smoke only a few cigarettes each month suffer withdrawal symptoms when deprived of nicotine.

Of those who tried cigarettes, half were already addicted by the time they were smoking seven cigarettes per month. Some youth realized they were unable to quit smoking after just a few cigarettes, which confirms an earlier study by DiFranza’s research team.

Symptoms of nicotine addiction can appear when youth are smoking as little as one cigarette per month, and as tolerance to nicotine builds, the smoker finds that he or she must smoke more frequently to cope with withdrawal. “While smoking one cigarette will keep withdrawal symptoms away for less than an hour in long-time smokers, novice smokers find that one cigarette suppresses withdrawal for weeks at a time,” said DiFranza. “One dose of nicotine affects brain function long after the nicotine is gone from the body. The important lesson here is that youth have all the same symptoms of nicotine addiction as adults do, even though they may be smoking only a few cigarettes per month.”

Supported by the National Institute on Drug Abuse, the study’s findings appeared in last month’s issue of Archives of Pediatric and Adolescent Medicine. According to the National Institutes of Health, smoking remains the leading preventable cause of death in the United States, accounting for approximately 440,000 deaths annually. DiFranza worked on this study with colleagues from UMMS, McGill University and St. George’s Hospital Medical School at the University of London.

The Primary Care Award was established this year by the General Internal Medicine Division to recognize graduating residents who exemplified excellence in compassionate primary care with sensitivity to individual patient needs. Winners of this award, presented at the Department of Medicine residency graduation ceremonies held June 21, were (left to right) Heather Swales, MD, Hakan Toka, MD, Neha Vagadia, DO, and Suhruha Holka, MD. The award was initiated by Julia D. Andrieni, MD, UMass Memorial Medical Center vice chair of the Department of Medicine Ambulatory Services and Clinical Affairs and assistant professor of medicine, to underscore the importance of primary care in internal medicine resident education for both internists and sub-specialists.

Addictions other than smoking are also on the rise among those teenagers. Dr. DiFranza, director of the Research Center for the Prevention of Drug Abuse and associate professor of family medicine, noted that the increasing use of so-called “designer drugs” may be related to a rise in adolescent smoking.

During the study, the researchers asked some of the participants if they had ever tried a designer drug, and more than 40 percent of the kids surveyed said yes. The researchers also found that those who smoked had a greater chance of engaging in activities such as using Ecstasy and smoking marijuana.

Some youth realized they were unable to quit smoking after just a few cigarettes, which confirms an earlier study by DiFranza’s research team.

The utility work will take place in three phases and continue into the fall. Construction of the Advanced Education and Clinical Practice Center is moving along as scheduled, with completion of the building shell and core expected by the end of summer 2008. By the end of this month, all the structural steel will be in place, giving the campus a preview of what the building will look like when complete.

Over the next few months, work to connect the AECPC to existing utilities will continue. The plans for this phase of the construction were developed to have as little impact on everyday activities on campus as possible; needed changes to traffic patterns are scheduled to happen overnight, between 6 p.m. and 6 a.m. The utility work will take place in three phases and continue into the fall.

Plans also call for the building to be fully enclosed by the time cold weather sets in, making it possible for construction crews to work inside through the winter.

Look for continuing updates in future issues of Focus.
You won’t believe your eyes

Local researchers now have access to one of a handful of state-of-the-art environmental scanning electron microscopes in the country since its acquisition by UMass Medical School earlier this year. The half-million dollar FEI Quanta 200 FEG MKII scanning electron microscope (SEM), which arrived in March, is housed in the Core Electron Microscopy Facility, one of more than 25 research core facilities at UUMS that offer support to investigators through shared expertise, services, technology and equipment.

The SEM is capable of producing images of biological and non-biological samples at more than 300,000 times their actual size, revealing a wealth of structural detail. Like earlier SEMs, it uses an electron beam to produce highly magnified images of surface structures. What makes this particular SEM different and appealing to researchers, some of whom otherwise might not have considered electron microscopy for their research, is that it can scan the surface of nearly any substance, wet or dry, and with little or no specimen preparation.

“You can look at practically anything. For example, we recently looked at fresh yogurt and could see the protein matrix and the live cultures. We’re using this machine to look at all sorts of specimens: blood cells, immune system and bone cells, micro-bacteria, disease-causing protozoa, cilia, fly eyes and cell surface receptors,” said Gregory Hendricks, PhD, research associate professor of cell biology and manager of the Core Electron Microscopy Facility. Previously, when researchers needed high quality images of their samples, they had to travel outside Worcester to other UMass campuses or other universities.

Now UUMS scientists as well as researchers from other institutions are making use of the equipment here. The SEM is also equipped with an X-ray spectrometer, which analyses the elemental composition and distribution in the samples being observed.

“A UUMS researcher who is working on bacterial sepsis is using the microscope to understand how certain toxins cause inflammation and is able to see individual cell surface receptors by labeling them with gold particles just six nanometers in diameter [ten thousand times smaller than the width of a human hair],” said Dr. Hendricks. “A scientist from Tufts University is looking at microphores being developed as potential vaccine delivery agents to determine if their size and shape are consistent.”

Acquisition of the microscope was itself a study in scientific collaboration and perseverance. Purchased with funds from a National Institutes of Health Shared Instrumentation Grant designed to encourage sharing expenses for major equipment used by multiple research disciplines, the grant application represented the work of 11 scientists from UUMS and two from Tufts University. According to Electron Microscopy Research Core Co-director Roger Craig, PhD, professor of cell biology and the grant’s principal investigator, “We had to show that the microscope would play a key role in advancing the research of multiple NIH-funded investigators. It took three attempts over three years to succeed with the grant, and success came in the nick of time, as our previous 35-year-old SEM stopped functioning a year ago. But the wait was worth it: the new microscope performs flawlessly, is very easy to use and is already producing outstanding images for our researchers.”

For more information about the services offered by the Core Electron Microscopy Facility and the other core research facilities visit www.umassmed.edu/research/core.aspx.

Vitals

Marianne Siener
Library Assistant/Financial Assistant III
Lamar Soutter Library
Year started: 1989
Hometown: Fitchburg

Professionally Speaking

Throughout her 18-year career at the Lamar Soutter Library (LSL), Marianne Siener has remained willing to take on new challenges. It is her eagerness to learn new skills and her dedication to performing her job well that has led Siener to her current dual role as library and financial assistant.

For 10 years, she assisted the library’s customers while working at the Circulation/Reserve desk. Today, she works in the Library’s Technology Initiatives and Resource Management area and its Financial Office, while still helping out at Circulation/Reserve. Siener understands the big picture of LSL and UUMS and works to develop time-effective methods to streamline the workflow. “The variety of tasks is great, but the best part of my job is simply being a part of this institution and especially interacting with my co-workers—they are a great group of people,” she said.

Points of Pride

When Siener stepped into her role as financial assistant more than a year ago, she made an immediate impact. She decreased the turnover time for fiscal transactions and quickly resolved a system error that led to incorrect billing of nearly 25 customers during a one-month period. “Some people may think libraries are quiet, but they are quite active. There is a lot of information and there is always something new to learn. There is never a dull moment,” Siener said.

The LSL’s entire management and supervisory staff have benefited from Siener’s work and nominated her for Employee of Distinction. In the nomination, they wrote, “Marianne sets a good example for all employees. She works hard, follows through and seeks to understand what she is doing, thereby improving workflow and service. In our opinion, Marianne exemplifies the library’s motto—LSL: A Legacy of Service and Learning—by virtue of her everyday work ethic and performance.”

August Employee of Distinction Award
Radiation safety training
A one-hour training session is required for all research personnel who will be using radioactive materials or radiation-producing devices. Offered every Tuesday at 9 a.m. in 90-700, the session covers radiation definitions, types, hazards, effects and safety precautions. For additional information, contact Allison Rappa at x8-2675 or visit inside.umassmed.edu/radiation/lectures.aspx.

Walk to Cure Cancer volunteers needed
Volunteers are needed for the Walk to Cure Cancer on Sunday, Sept. 23, 2007, from 9 a.m. to 5 p.m. on the UMMMS campus. Volunteer positions available include course monitor, money room counter (for banking and accounting professionals only), money room copier, registration attendant, water stop attendant and parking attendant. For more information, contact Stephanie Rexford at x8-5552 or via global e-mail or visit www.walktocurecancer.com.

ID badge exchange schedule
The ID badge exchange for employees* takes place in the old Medical School Lobby. Students will receive their new badges when they renew their parking permit.

For additional information, visit inside.umassmed.edu/parking and click on News & Updates on the left.

* Individuals who park in the Clinical Lot can pick up their badges from the Office of Parking and Access Control in Room HA-532 during regular hours.

Calendrier
- Continuing through Friday, Aug. 24, the Lamar Scudder Library’s Artist in Residence series features Language of the Sea, the works of Marianne Felice, MD, professor and chair of pediatrics, professor of obstetrics & gynecology and physician-in-chief at UMass Memorial Children’s Medical Center. The exhibition includes oil paintings that capture Dr. Felice’s love for the sea. For information, contact Nancy Harger at x8-5334 or via global e-mail.
- On Friday, Sept. 1, the second annual Dancing with Friends, an evening of salsa, swing, foxtrot and other forms of dance, takes place at Maimonis Park, 52 Quinsigamond Avenue, Shrewsbury, from 8 to 11 p.m. The event benefits the Walk to Cure Cancer and is hosted by Pose, Style and Motion Ballroom Dance Studio. Tickets are $10. For more information or to purchase tickets, call x8-2293 or x8-5346.
- The Employee Appreciation Awards Celebration, which recognizes employees who have reached 10-, 15-, 20-, 25- and 30-year employment milestones at UMMMS, will be held Thursday, Sept. 6, at the Chocksett Inn in Sterling.
- The ninth annual Walk to Cure Cancer will be held Sunday, Sept. 23, beginning at noon on the Medical School campus. The five-mile walk around Lake Quinsigamond, sponsored by Massachusetts AFL-CIO in partnership with Blue Cross Blue Shield of Massachusetts, supports cancer research programs at UMMMS. Registration begins at 9 a.m. Participants are invited to an after-walk party on campus featuring music legend Chubby Checker. For more information, call event manager Tamara Hampton at x8-5112 or visit www.walktocurecancer.com.

August

September
- Tuesday/Thursday, 6:45 – 9:30 a.m. and 2:30 – 4 p.m. Sept. 4 and 6: Unreserved parking, name begins with “M.” Sept. 11 and 13: Unreserved parking, name begins with “N-O.” Sept. 18 and 20: Unreserved parking, name begins with “P-Q.” Sept. 25 and 27: Unreserved parking, name begins with “R.”