

FOCUS

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 the nation's most promising young scientists have in securing traditional sources of funding to pursue potentially groundbreaking research early in their careers, despite the fact that this period is often 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 ViceChancellor for Research John Sullivan, MD, professor of pediatrics, molecular medicine, molecular genetics & microbiology and pathology.

"The fact that the Keck Foundation has recognized two of our faculty members ...

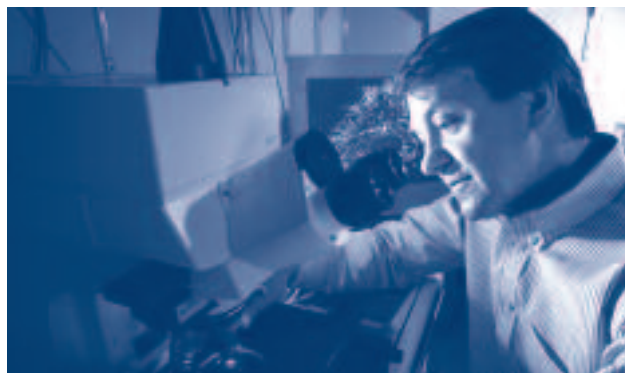
is further testimony to the outstanding research enterprise ... here at UMMS."

John Sullivan, MD

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 by the journal *Cell* in 2005. "Our work reverses the accepted notion that human cell division creates two equivalent daughter cells," said Doxsey. "Rather, we discovered a process that produces cells with different life spans through asymmetric cell division." Doxsey explained that "immortal" stem cells and some cancerous cells inherit the original centriole and accumulate midbodies, which are essential structures for division. In contrast, the cells that lack midbodies and receive a copy of the centriole instead of the original are destined to die. "The goals of our project are to test whether cellular longevity contributes to human life span with a



Stephen Doxsey, PhD

set of experiments designed to address the mechanism, significance and clinical applications of midbody inheritance in human stem cells and cancer cells," said Doxsey.

A leader in the study of cell division, Doxsey received his undergraduate degree from the University of Connecticut and his PhD in cell biology from Yale University. He completed a post-doctoral fellowship at the University of California at San Francisco before coming to UMMS in 1993.

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 three-dimensional 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 throughput 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



Job Dekker, PhD

UMMS Program in Gene Function and Expression in 2003. He is a member of the NIH's National Human Genome Research Institute's Encyclopedia of DNA Elements (ENCODE) consortium.

"Our project is very ambitious, which is what the Keck Foundation looks for," said Dekker. "Ambitious undertakings are high risk, but when they work they have high payoffs. The Keck funding will enable us to use the available technology to its fullest potential to understand the basic workings of the human genome as well as the molecular basis of human disease." ■

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 After Brief Intermittent Use,” Dr. DiFranza’s four-year study monitoring nearly 1,250 sixth-graders in six Massachusetts communities, found 10 percent of youth who smoke cigarettes are addicted within two days of first

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,



Joseph DiFranza, MD

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

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

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. ■

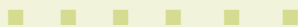


The Primary Care Award was established

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 Suhrutha Holla, 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.

achievements

■ **Suzanne Cashman**, ScD, associate professor of family medicine & community health, was elected to serve a second three-year term on the Board of the Association for Prevention Teaching and Research (APTR), an organization of health promotion and disease prevention educators and researchers that advances population-based and public health education, research and service. She will also continue serving as member-at-large on APTR’s Executive Committee.



Following are faculty who have joined UMMS as professors or associate professors or who have been promoted to those positions, as documented by the Office of Faculty Administration:

- **Charles Mayo**, PhD, appointed clinical associate professor of radiation oncology
- **Savant Mehta**, MBBS, MD, appointed clinical associate professor of medicine

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- **Susan E. Andrade**, ScD, promoted to research associate professor of medicine
 - **Philip J. Candilis**, MD, promoted to associate professor of psychiatry
 - **Stephen T. Earls**, MD, promoted to clinical associate professor of family medicine & community health
 - **Katherine A. Fitzgerald**, PhD, promoted to associate professor of medicine
 - **Zhong Jiang**, MD, promoted to professor of pathology
 - **Yuan-Chyuan Lo**, PhD, promoted to clinical associate professor of radiation oncology
 - **Elise H. Pyun**, MD, promoted to clinical associate professor of medicine
 - **Neal Silverman**, PhD, promoted to associate professor of medicine



AECPC construction update

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.

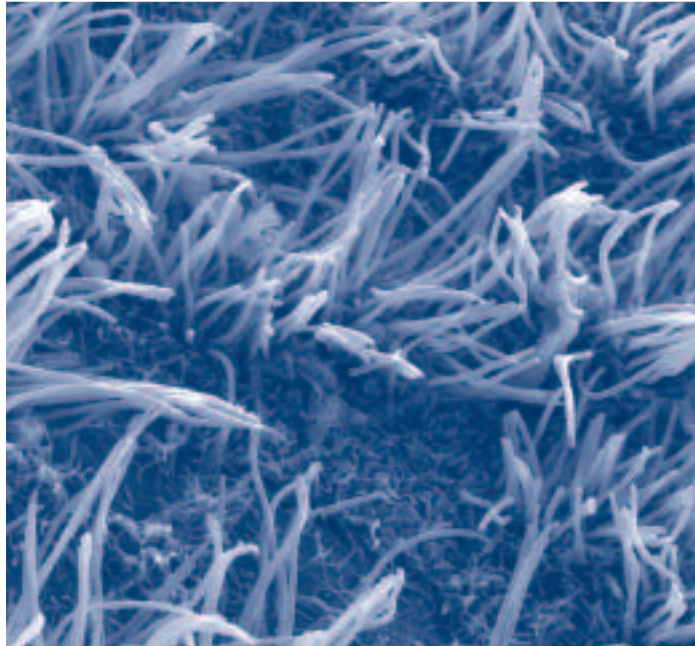
Look for continuing updates in future issues of *Focus*. ■

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 UMMS 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 who

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 UMMS scientists as well as researchers from other institutions are making use of the equipment here. The SEM is also equipped with an X-



SEM image of a brain ventricle—the fluid space within the brain. The anemone-like structures are cilia, which circulate the cerebrospinal fluid. Individual cilia are about 250 nanometers in diameter and 5 to 10 micrometers long.

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.

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

ray spectrometer, which analyses the elemental composition and distribution in the samples being observed.

"A UMMS 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 microspheres 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 UMMS 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. ■



SEM FEI Quanta 200 FEG MKII scanning electron microscope

employees infocus

August Employee of Distinction Award

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 UMMS 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."

Calendar

information infocus

Radiation safety training

A one-hour training lecture is required for all research personnel who will be using radioactive materials or radiation-producing devices. Offered every Tuesday at 9 a.m. in S9-700, the session information covers radiation definitions, types, hazards, effects and safety precautions. For additional information, contact Allison Rappa at x6-2673 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 3 p.m. on the UMMS 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 x6-5552 or via global e-mail or visit www.walktocurecancer.com.

■ Continuing through Friday, Aug. 24, the Lamar Soutter 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 x6-3334 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 Maironis Park, 52 Quinsigamond Avenue, Shrewsbury, from 8 to 11 p.m. The event benefits the Walk to Cure Cancer and is hosted by Poise, Style and Motion Ballroom Dance Studio. Tickets are \$10. For more information or to purchase tickets, call x6-2293 or x6-3346.

■ The Employee Appreciation Awards Celebration, which recognizes employees who have reached 10-, 15-, 20-, 25-, 30- and 35-year employment milestones at UMMS, 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 UMMS. Registration begins at 10 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 x6-5512 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-531 during regular hours.

August

Tuesday/Thursday, 6:45 – 9:30 a.m. and 2:30 – 4 p.m.

Aug. 2: Unreserved parking, name begins with "E-F"
Aug. 7 and 9: Unreserved parking, name begins with "G"
Aug. 14 and 16: Unreserved parking, name begins with "H-I"
Aug. 21 and 23: Unreserved parking, name begins with "J-K"
Aug. 28 and 30: Unreserved parking, name begins with "L"

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"

grants infocus

□ **Donna M. Ambrosino**, MD, professor of pediatrics: *Monoclonal Antibody Development and Manufacturing for the Treatment of Emerging Infections*, USA Med Research ACQ Activity, one year, \$888,000.

□ **Elliot J. Androphy**, MD, the Barbara and Nathan Greenberg Chair in Biomedical Research and professor of medicine and molecular genetics & microbiology: *Control of Papillomavirus Expression and Transformation*, National Cancer Institute, one year, \$360,126; recommended for four more years, \$1.4 million.

□ **Anthony Carruthers**, PhD, professor of biochemistry & molecular pharmacology and physiology and dean of the Graduate School of Biomedical Sciences: *Metabolic Control of Sugar Transport*, National Institute of Diabetes and Digestive and Kidney Diseases, one year, \$266,332.

□ **Paul R. Clapham**, PhD, associate professor of molecular genetics & microbiology and molecular medicine: *HIV-1 Tropism Neuropathogenesis and Therapy*, National Institute of Mental Health, one year, \$406,250; recommended for four more years, \$1.5 million.

□ **Michael P. Czech**, PhD, professor and chair of molecular medicine and professor of biochemistry & molecular pharmacology: *Membrane Topography of Cell Signaling Complexes*, National Institute of Diabetes and Digestive and Kidney Diseases, one year, \$1.7 million; recommended for four more years, \$6.9 million.

□ **J. Lee Hargraves**, PhD, research associate professor of family medicine & community health: *Perceived Bias in Medical Care Among Ethnically Diverse Adults with Diabetes*, National Cancer Institute, one year, \$162,500; recommended for one more year, \$195,000.

□ **Donald J. Hnatowich**, PhD, professor of radiology: *Optical Antisense Breast Tumor Targeting*, National Cancer Institute, one year, \$162,500; recommended for one more year, \$195,000.

□ **Jinhee Lee**, PhD, DVM, instructor in medicine: *Liposome-Based Tuberculosis Vaccine Enhanced by Immunostimulatory Ligands*, American Thoracic Society, two years, \$100,000.

□ **Mary A. Logan**, PhD, post-doctoral fellow in the lab of Marc R. Freeman, PhD, assistant professor of neurobiology: *Exploring the Mechanisms of Glial Migration and Glial Responses to Injury*, American Cancer Society New England Division Postdoctoral Fellowship, one year, \$44,000; recommended for two more years, \$94,000.

□ **Nathan A. Marengi**, SOM '08, in the lab of Babs R. Soller, PhD, professor of anesthesiology and surgery: *Evaluation of a Low Profile Metabolic Sensor for EVA Studies*, Foundation for Anesthesia Education and Research, eight weeks, \$3,200.

□ **Arthur M. Mercurio**, PhD, professor of cancer biology: *Glycolysis, IRS-2 and Metastatic Breast Cancer*, Susan G. Komen for the Cure, two years, \$300,000.

□ **Matthew J. Paul**, PhD, post-doctoral fellow in the lab of William Schwartz, MD, professor of neurology: *The Chronobiology of Cohabitation*, National Institute of Neurological Disorders and Stroke, one year, \$49,646; recommended for one more year, \$51,278.

□ **Nicholas R. Rhind**, PhD, assistant professor of biochemistry & molecular pharmacology and cell biology: *Single Molecule Analysis of the Regulation of DNA Replication Origin Firing*, American Cancer Society, one year, \$180,000; recommended for three more years, \$540,000.

□ **Joel D. Richter**, PhD, professor of molecular medicine: *RNA Localization 2006*, National Institute of Mental Health, one year, \$15,000.

□ **Sean Ryder**, PhD, assistant professor of biochemistry & molecular pharmacology: *Regulation of Alternative Splicing in Oligodendrocytes by QKI*, National Multiple Sclerosis Society, one year, \$44,000.

□ **Yong-Xu Wang**, PhD, assistant professor of molecular medicine: *PPARdelta and Its Co-Regulators in Energy Metabolism*, National Institute of Diabetes and Digestive and Kidney Diseases, one year, \$203,125.

focus

Editor: Ellie Castano
Editorial staff: Andrea Badrigian, Kelly Bishop, Alison Duffy, Sandra Gray, Lanny Hilgar, Mark Shelton, Nicole Soucy
Photography: UMMS Technology and Media Services, Rob Carlin, Pat O'Connor

Office of Public Affairs and Publications
University of Massachusetts Medical School
55 Lake Avenue North, Worcester, MA 01655-0002
508-856-2000
Focus@umassmed.edu