

Keck School researchers advance understanding of neural stem cells

By Meghan Lewit

Researchers at the Keck School of Medicine have identified a novel mechanism in the regulation and differentiation of neural stem cells.

Researchers found that the protein receptor Ryk has a key role in the differentiation of neural stem cells, and demonstrated a signaling mechanism that regulates neuronal differentiation as stem cells begin to grow into neurons. The study was published in the Nov. 11 issue of the journal *Developmental Cell*.

The findings could have important implications for regenerative medicine and cancer therapies, says Wange Lu, assistant professor of biochemistry and molecular biology at the Keck School, and the principal investigator on the study.

"Neural stem cells can potentially be used for cell-replacement therapy for neurodegenerative diseases such as Alzheimer's and Parkinson's Disease, as well as spinal cord injury," Lu said. "Knowledge gained from this study will potentially help to generate neurons for such therapy. This knowledge can also be used to inhibit the growth of brain cancer stem cells."

During brain development, neural stem cells respond to the surrounding environment by either proliferation or differentiation, but the molecular mechanisms underlying the development of neural stem cells and neurons are unclear, Lu noted.

Ryk functions as a receptor of Wnt proteins required for cell-fate determination, axon guidance and neurite outgrowth in organisms. Researchers at the Eli and Edythe Broad Center for Regenerative Medicine and Stem Cell Research at USC found that during neurogenesis, when neural stem cells start to grow into neurons, Ryk protein is cleaved and translocates to the cell nucleus to regulate neuronal differentiation.

This finding is extremely important for understanding the regulation of self-renewal and differentiation of neural stem cells, Lu said. Previous research has shown that Ryk functions as a receptor of Wnt proteins. However, the role of Ryk in neural stem cells and the molecular mechanism of Ryk signaling have not previously been known.

"This study will help in our efforts to produce nerve cells from embryonic stem cells, and may lead to the development of new strategies for the repair of the nervous system, using protein or small molecule therapeutic agents," said Martin Pera, director of the Eli and Edythe Broad Center for Regenerative Medicine and Stem Cell Research.

Further research is needed to explore how Ryk regulates neuronal gene expression, Lu said. Researchers are now expanding their research to studies of differentiation of human embryonic stem cells into neural stem cells and neurons. These studies are very important for regenerative medicine and drug discovery for therapy of neurodegenerative diseases.



Staff and volunteers guide patients from ambulances into the new LAC+USC Medical Center on Nov. 7.

Moving on up: LAC+USC moves into new facility

By Sara Reeve

Los Angeles County+USC Medical Center staff, physicians and administrators completed their most skillful operation—moving more than 400 patients from the 1930s era hospital building into the shining new replacement facility—on Nov. 8 after 36 hours of non-stop activity.



Veronica Jauriqui

"This is one of the largest moves in the country," said Pete Delgado, chief executive officer of LAC+USC Healthcare Network. "And it's also one of the best planned. We've spent two-and-a-half years planning this particular moment."

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Keck School forms new Health Sciences Education unit

By Sara Reeve

A new Division of Health Sciences Education has been established at the Keck School of Medicine within the Office of Research Advancement, announced Dean Carmen A. Puliafito and M. Elizabeth Fini, vice dean for research advancement.

"The new division reinforces the Keck School's commitment to excellent undergraduate and post-graduate education for students," said Puliafito.

The new Health Sciences Education division consists of two components:

- the Office of Undergraduate, Master's and Professional Degree Programs, headed by Elahe Nezami, who has been appointed to the position of Associate Dean;
- the Office of Graduate Programs, headed by Debbie L. Johnson, Associate Dean for Graduate Programs.



Elahe Nezami (left) and Debbie L. Johnson (right) were appointed to new positions in the new division of Health Sciences Education.

"Dr. Nezami and Dr. Johnson bring a tremendous amount of experience in administration, the classroom and research," said Fini. "They exemplify the Keck School's dedication to innovative education, and their leadership will ensure an educational experience that explores biomedical sciences and global

See **EDUCATION**, page 2

Cousineau honored for research on health care access for homeless

By Meghan Lewit

The non-profit JWCH Institute honored Michael Cousineau, associate professor of Family Medicine and Preventive Medicine at the Keck School, with its Innovation Award at the annual Hand & Heart Gala on Nov. 7. He was recognized for his studies to advance understanding of access to health care for the homeless.

In 2003, Cousineau led a major study that found the biggest obstacle homeless adults and families faced in accessing care was not just a lack of service availability, but rather lack of coordination between service providers.

"The problem was really the fragmentation that existed," he said. "We found that expansion wasn't the answer at least initially. What we needed to do was create a more integrated approach to health care."

The report became the foundation for the Skid Row Health Initiative—a collaboration among service providers around service integration—and the Leavey Center, a ground-breaking effort by the JWCH Institute to bring together under one roof a wide array of services aimed at addressing homelessness in downtown Los Angeles' Skid Row.

The Leavey Center will become the first comprehensive integrated community health center in downtown Los Angeles. Scheduled to open in 2009, the 12,000-square-foot center will offer multiple services in one location, including primary health care, substance abuse care, dental care, public health, mental health and public social services.

Faculty from the USC School of Dentistry will provide dental services at the center. Efforts to include residents from Family Medicine and other Keck School departments also are being considered.

"This is a major enterprise, and it really came out of our report," Cousineau said. "The award means a lot to me because it shows that the work we do at USC can be applied directly into things that help people. We were able to put our resources into doing a pretty extensive study, and it resulted in a large expansion of over \$12 million so far to improve the health of this population."



USC School of Dentistry to host Oral Medicine Symposium

Experts from various disciplines will gather together for the first-ever "USC International Oral Medicine Symposium: Where Dentistry Meets Medicine." The symposium will be held at the USC School of Dentistry on Nov. 21-22 from 9 a.m. to 4 p.m. Hosted by the USC School of Dentistry, this two-day symposium assembles experts in oral medicine, orofacial pain, chronic pain management, radiation oncology, neurology, neurosurgery and microbiology from the Keck School of Medicine, USC School of Dentistry and National Institutes of

Health.

Topics to be discussed include chronic pain, pharmacotherapeutics, bisphosphates-associated osteonecrosis of the jaw and oral cancer treatment and complications. A wide range of issues will be discussed under each theme, all dealing with conditions requiring multidisciplinary management.

For more information or to register for this event, please visit www.usc.edu/hsc/dental and click on continuing education calendar of courses.

EDUCATION: Nezami and Johnson appointed associate deans

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health in the 21st century."

The Division of Health Sciences Education will receive additional oversight and guidance from Judy A. Garner, senior associate dean for faculty affairs at the Keck School and associate provost for faculty development for the university.

Nezami brings global perspective

Nezami is an associate professor of clinical preventive medicine at the Keck School. Since 1997, she has served as the director of the undergraduate program in health promotion and disease prevention studies, the first and only undergraduate major housed within the Keck School of Medicine. Under her leadership, this program has created a professionally focused interdisciplinary major that offers students a broad view of issues affecting health and wellness.

"Based on her success in leading this program, she is well positioned to develop and enhance master's and professional degree programs within the Keck School, including the newly established Master of Science in Global Medicine," said Fini.

Nezami identified several goals for her office, including collaborating with faculty to find ways to impart

their expertise to students at all degree levels, incorporating research into all levels of learning for students, and fostering and giving incentives to faculty to create new programs.

"To compete with the plethora of academic opportunities in medicine that exist today, we need to be sure that USC offers education that has fundamental importance to students' understanding of medicine," said Nezami. "The importance of research and prevention to the future of medicine cannot be understated, and we are responsible for preparing tomorrow's health care professionals with the most pertinent knowledge for keeping our world healthy."

Johnson is advocate for faculty and students

A professor and scientist at USC since 1985, Johnson is professor of biochemistry and molecular biology. Since 2001, she has served as director of the Graduate Program in Biomedical and Biological Sciences (PIBBS), USC's highly successful recruitment mechanism that further supports the Ph.D. students through their first year as they choose a mentor and graduate program. In her role as associate dean, she has developed programs to optimize the academic success of current doctoral candidates

while raising the caliber of incoming students.

The Office of Graduate Programs oversees and administers all Ph.D. programs for the Keck School of Medicine, including the PIBBS program, and the two interdisciplinary programs in Genetic, Molecular and Cellular Biology and in Systems Biology and Disease. Both interdisciplinary programs train students in a broad and flexible manner and prepare them for careers in modern biomedical research.

"USC is a great place to do science," said Johnson. "People here really care about graduate education and the success of the students. We are competitive in our science, but we aren't competitive with each other. That's what is special about USC—it's just an extremely collaborative environment."

Johnson has put in place new programs designed to maximize and enhance graduate programs, and plans additional steps including improving support mechanisms for new students, creating a general admissions committee to review all Ph.D. students, improving career-counseling options for students and ensuring consistency and fairness in courses and across programs.

ETCETERA

James Gauderman, associate professor of preventive medicine, joined university researchers in discussing the use of genome-wide scans in research during a National Heart Lung and Blood Institute-sponsored meeting on Oct. 29 and 30.

Kathleen Ruccione, co-director of the Hematology-Oncology Psychosocial and Education (HOPE) Program and nursing administrator at the Childrens Center for Cancer and Blood Diseases at Childrens Hospital Los Angeles, and professor of clinical pediatrics at the Keck School of Medicine, received the Casey Hooke Distinguished Service Award from the Association of Pediatric Hematology/Oncology Nurses (APHON) at its annual conference recently in Albuquerque, NM.

Jeffrey Upperman, visiting associate professor of surgery in the Department of Pediatrics, represented the American Academy of Pediatrics in a Nov. 7 meeting with Department of Homeland Security officials about "Improving U.S. Medical Disaster Response: Expanding the Role of the Trauma System and its Core Constituents."

MOVE: LAC+USC completes patient move into new facility

Continued from page 1

Starting on Nov. 7, dedicated teams transported patients from Women and Children's Hospital and the old County Hospital via ambulance and transporter van. In the planning for the move, administrators had estimated up to 30 minutes of travel time per patient, but according to officials, the actual time to transport each patient, from bed to bed, averaged only 17 minutes.

The move was orchestrated so smoothly that all but 11 patients from the jail and intensive care units were transferred the first day—far surpassing the staff's plans. The remaining patients were transported by 1 p.m. on Nov. 8.

After running through six different mock moves, LAC+USC staff and physicians seemed to be moving patients with ease and efficiency. "Our biggest challenge in the old hospital was that the elevators there are very slow," said Stephanie Hall, chief medical officer of LAC+USC. "So that created a bottleneck, but we knew that was going to be a problem, so we planned for it."

Officials placed the hospital on "internal disaster" mode, which meant that ambulance traffic was diverted to other area hospitals, clinics were canceled, and all non-emergency surgeries were rescheduled. "The local hospital community has been helping us to manage our patient census so that we make this move as efficient as possible," said Cynthia Stotts, patient move committee chair and assistant professor in the Keck School department of pediatrics. "Other local

hospitals absorbed new patients for 36 hours, and they staffed up in anticipation." The new hospital began accepting ambulance traffic after 3 p.m. on Nov. 8.



CBS2/KCAL9 reporter Randy Paige interviews Pete Delgado, CEO of the LAC+USC Healthcare Network, and Stephanie Hall, LAC+USC chief medical officer, about the move of patients into the replacement facility.

Veronica Jauriqui

USC receives grant to study impact of technology on disability

By Beth Dunham

The National Institute on Disability and Rehabilitation Research has awarded a five-year, \$4.75 million grant to USC and Rancho Los Amigos National Rehabilitation Center to establish the Rehabilitation Engineering Research Center for Technologies for Successful Aging with Disability.

The new Rehabilitation Engineering Research Center, or RERC, will use the yearly grant award of \$950,000 to study the challenges of growing older with disabilities and the positive effects that new technologies can have on independence, health and quality of life. Whether an individual ages with a preexisting disability, such as spinal cord injury or cerebral palsy, or develops a new disability with age, such as osteoarthritis or Parkinson's disease, his or her aging process tends to progress much more rapidly than that of a nondisabled peer, said Carolee Winstein, professor of biokinesiology and physical therapy and the new center's director.

"This affects independence and whether someone can participate in life or not," she said. "We want to develop technology to reduce stress and decelerate this aging process."

According to Winstein, the center's four projects all revolve around optimizing participation through technology. Project 1 seeks to develop a reliable method to assess hand function and dexterity, as well as extend the technology to enjoyable immersive activities or games that help

patients analyze and improve hand and finger movement.

In Project 2, the center aims to integrate with the other three projects and to develop fun, low-cost virtual games that persons with a variety of functional impairments could use at home to retain or increase physical function and movement.

Project 3 focuses on finding ways, including virtual reality, to teach healthy movement techniques that minimize and prevent shoulder damage, which can occur as wheelchair-bound patients propel themselves or transfer themselves in and out of the wheelchair.

Project 4 will examine the use of wireless microstimulators implanted in muscles to automatically shift an immobile patient's weight and thus avoid pressure ulcers.

The Center's work brings together clinicians, researchers, policy experts and innovators from all around the university: the School of Dentistry division of biokinesiology and physical therapy and division of occupational science and occupational therapy; Davis School of Gerontology, Viterbi School of Engineering; Rossier School of Education; Keck School of Medicine; Stevens Institute for Innovation; College of Letters, Arts and Sciences; Information Science Institute and Institute for Creative Technologies.

Principal investigators for each project are Francisco Valero-Cuevas, associate professor of biomedical engineering (Project 1); Albert Rizzo, research scientist with the Institute for Creative Technologies (Project 2); Philip Requejo, adjunct assistant professor of kinesiology, and Sara Mulroy, adjunct assistant professor of biokinesiology and physical therapy (Project 3); and Lucinda Baker, associate professor of biokinesiology and physical therapy (Project 4).

For more information on the Rehabilitation Engineering Research Center for Technologies for Successful Aging with Disability, visit www.isi.edu/research/rerc.



Carolee Winstein, professor of biokinesiology and physical therapy

In Case of An Emergency...

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The emergency telephone system can handle 1,400 simultaneous calls. It also has a back up system on the East Coast.

NIH awards grant to Wong-Beringer for study of antibiotics

By Kukla Vera

Annie Wong-Beringer, an associate professor at the School of Pharmacy, has won a \$407,000 grant from the National Institute of Allergy and Infectious Diseases, National Institutes of Health, to study how the overuse of the fluoroquinolone family of antibiotics causes the *Pseudomonas aeruginosa* bacterium to become resistant and more virulent, leading to poor patient outcomes.

Wong-Beringer's project looks at the molecular mechanisms that regulate the resistance and virulence of this bacterium that is a leading cause of infections in hospitalized patients, those who have compromised immune system, and patients with cystic fibrosis. By understanding the molecular pathways that govern resistance and virulence in the bacterium, the research aims to identify novel drug targets to disarm this hard-to-treat bacterium.

"If the study bears out our thesis, it will send a strong message to the medical community of the adverse consequences that can happen when some antibiotics are not appropriately prescribed," said Wong-Beringer, who also serves as vice chair of the Titus Family Department of Clinical Pharmacy and Pharmaceutical Economics and Policy.

Wong-Beringer believes that the overuse of fluoroquinolone antibiotics plays a big role in the growing virulence and resistance of *Pseudomonas aeruginosa*. This has contributed in part to more prolonged illness and higher risk of death in affected patients.

"This bacterium presents a formidable challenge for clinicians today because some strains have already developed resistance to virtually all available antibiotics on the market. At the same time, no new antibiotics to combat these resistant strains are being developed in the drug development pipeline in the foreseeable five years," noted Wong-Beringer.

Wong-Beringer's grant from the NIH, known as an R21-Exploratory/Developmental Research Grant Award, provides support during the early stages of a project that may involve considerable risk but may lead to breakthrough in a particular area such as the development of novel agents that could have a major impact on clinical research.

"This grant will help my lab address an urgent need," said Wong-Beringer. "Our study is an initial step in the process toward developing novel therapies to attack this virulent bacterium."

The project is in collaboration with investigators at the medical schools at Harvard University, Yale University and Mercer University.

Calendar of Events

The HSC Calendar is online at www.usc.edu/hscalendar

Saturday, Nov. 15

8 A.M. "Current Management of Cardiac Arrhythmias and Atrial Fibrillation," Various speakers. KAM Mayer Aud. Info: (323) 442-2555

Monday, Nov. 17

10 A.M. Visions and Voices, the USC Arts & Humanities Initiative. "What Is This Thing Called the Slow Journalism Movement?" UPC: Waite Phillips Hall, Rm. B27. Info: visionsandvoices@usc.edu

Tuesday, Nov. 18

11 A.M. "The Effects of Drugs on Thyroid Function: New Drugs, New Insights," Bryan Haugen, Univ. of Colorado. HMR 100. Info: (323) 442-2806

NOON. Cancer Ctr. Grand Rounds. "Unexpected Consequences of p53 Activation," Carl Maki, USC. NOR 7409. Info: (323) 865-0801

Wednesday, Nov. 19

7 A.M. Medicine Grand Rounds. "Primary Adrenal Hyperaldosteronism/Adrenal CA," Shazia Khan, USC. GNH 1645. Info: (323) 226-7556

4 P.M. "Change in Washington: Assessing Your Federal Research Outlook for 2009 and Beyond," Various speakers. EFC. Info: (202) 824-5860

Thursday, Nov. 20

NOON. "Unleashing the Guardian: Developing More Effective p53 Activating Therapies by Targeting Mdm2 and Mdmx, Its Two Negative Regulators," Geoffrey Wahl, Salk Inst. HMR 100. Info: (323) 442-1283

Friday, Nov. 21

8 A.M. Pathology and Laboratory Medicine Grand Rounds. "Pathology of Pediatric Solid Tumors," Hiroyuki Shimada, CHLA. NOR 7409. Info: (323) 442-1180

9 A.M. USC Childhood Obesity Research Center TEAM Seminar. "Genetic Approaches to Identifying Factors that Modulate the Timing of Puberty," Mark R. Palmert, Univ. of Toronto. CSC/IGM 250. Info: (323) 442-2637

11 A.M. Hematology Grand Rounds. "Integrating Modern Palliative Care Principles into Practice: It's Not Just Hospice," Susan Stone, USC. GNH 14-441. Info: (323) 865-3950

9 A.M. – 4 P.M. USC International Oral Medicine Symposium. "Where Dentistry Meets Medicine," Various speakers. UPC: DEN Lecture Room 163. Info: (213) 821-2127

Saturday, Nov. 22

9 A.M. Visions and Voices the USC Arts & Humanities Initiative. "The Met: Live in HD La Damnation de Faust." UPC: Eileen Norris Cinema Theatre. Info: visionsandvoices@usc.edu

6:30 P.M. University Kidney Disease Research Assoc. Benefit Dinner Honoring Shaul G. Massry. Beverly Hilton Hotel. Info: (323) 314-7000

Tuesday, Nov. 25

NOON. Cancer Ctr. Grand Rounds. "Inferring the Past: How Did Your Cancer Grow?" Kimberly Siegmund, USC. NOR 7409. Info: (323) 865-0801

Notice: Deadline for calendar submission is 4 p.m. Monday to be considered for that week's issue—although three weeks advance notice of events is recommended. Please note that timely submission does not guarantee an item will be printed. Send calendar items to HSC Weekly, KAM 400 or fax to (323) 442-2832, or e-mail to eblauch@usc.edu. Entries must include day, date, time, title of talk, first and last name of speaker, affiliation of speaker, location, and a phone number for information.

HSC NEWSMAKERS Complete listing at: www.usc.edu/uscnews/usc_in_the_news/

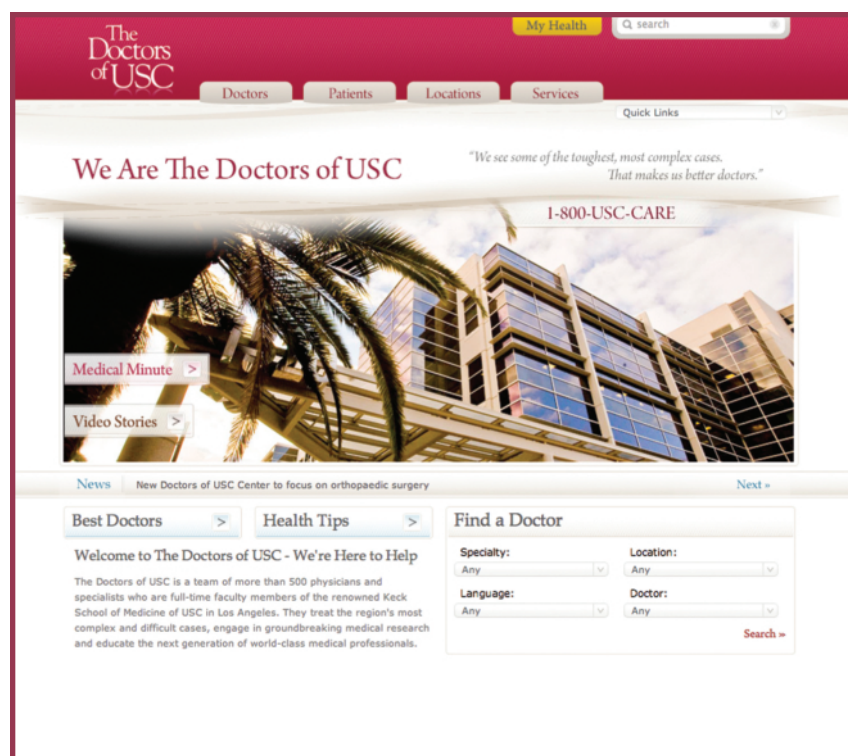
A Nov. 11 *Washington Post* article highlighted work by psychiatrist **Randy Semple** involving awareness techniques for children with behavioral problems.

A Nov. 10 *USA Today* article quoted fertility expert **Richard Paulson** about whether, from a fertility standpoint, there is an ideal age to get married.

A Nov. 10 *Los Angeles Business Journal* article noted LAC+USC Medical Center in a report on hospital availability for residents of Los Angeles County.

A Nov. 10 *Medical News Today* article quoted pediatric cardiologist **Roberta Williams** about a new set of practice guidelines on the management of adults with congenital heart disease. The guidelines were jointly released by the American College of Cardiology and the American Heart Association.

Two Nov. 7 *Los Angeles Times* articles reported on the patient move to the new LAC+USC Medical Center, and reflected on the hospital's legacy. The Associated Press, KCBS-TV, KABC-TV, KNBC-TV, Telemundo and KFWB-FM and the *San Francisco Chronicle* also reported on the move.



AND THE AWARD GOES TO—The new Doctors of USC Web site, which debuted in July, has garnered a W³ Award in a national Web competition sanctioned by the International Academy of Visual Arts. The competition recognizes excellence on the Web, as well as the creative and marketing professionals behind award-winning sites, videos and marketing programs. The site was created by USC's Health Sciences Public Relations and Marketing staff with Swanson Russell Associates on behalf of The Doctors of USC. The consumer-focused Web site received a silver award in the competition. The site can be found at www.DoctorsOfUSC.com.

CHLA receives \$1.6 million for HIV prevention

The Division of Adolescent Medicine at Childrens Hospital Los Angeles has received a five-year, \$1.6 million grant from the Substance Abuse and Mental Health Services Administration (SAMHSA) of the Department of Health and Human Services as part of the Prevention of Substance Abuse and HIV for At-Risk Racial/Ethnic Minority Subpopulations Initiative.

"The purpose of our new five-year program is to reduce substance abuse and HIV transmission among homeless youth of color between the ages of 18 and 24," said Arlene Schneir, project director. "The project will convene a multi-agency action group to conduct a needs assessment, plan capacity building activities for local programs, and develop a comprehensive strategic plan for substance abuse and HIV prevention for homeless youth in this community."

The action group will include representatives from agencies serving homeless youth, transgender youth service providers, the Los Angeles County Office of AIDS Programs and Policy, Alcohol and Drug Program Administration, STD Program, Department of Probation and Mental Health, and other agencies providing support services for persons with HIV-AIDS.

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