

CIRM awards USC \$27 million for new stem cell facility

By Jennifer Chan

Noting the project as innovative in terms of energy efficiency and research collaboration, the California Institute for Regenerative Medicine (CIRM) has awarded nearly \$27 million in funding for a new stem cell facility at USC.

USC was one of 12 California institutions considered for CIRM's Major Facilities Grants, which will provide \$271 million to build stem cell research facilities throughout California. The new facility will be named the Eli and Edythe Broad CIRM Center for Regenerative Medicine and Stem Cell Research at USC.

"We are honored to be selected for funding as a CIRM institute," said Martin Pera, director of the Eli and Edythe Broad CIRM Center for Regenerative Medicine and Stem Cell Research at USC. "The funding will provide a tremendous boost for USC's stem cell initiative."

The \$26.9 million will be used to establish a five-



Martin Pera, (left) director of the Eli and Edythe Broad CIRM Center for Regenerative Medicine and Stem Cell Research at USC, and Los Angeles Mayor Antonio Villaraigosa

story building that would allow USC to carry out stem cell research in three categories: basic and discovery stem cell research, preclinical research and pre-

clinical development, and clinical research. The new facility will include 53,000 assignable square feet.

"The new center at USC will be an important addition to our campus as we create new research space for discoveries that will eventually translate to patient care," said Carmen Puliafito, dean of the Keck School of Medicine.

USC's proposal received formal approval on May 7 by the Independent Citizens Oversight Committee (ICOC), the 29-member governing board for the institute. CIRM evaluated the technical aspects of an applicant's building program and how the scientific program aligns with its objective.

"These facilities will house basic and clinical researchers working collaboratively, with stem-cell-specific core labs literally 'down the hall' – an arrangement that is critical to our ability to accelerate the pace of research toward clinical application," said Alan Trounson, president of CIRM. "Because of this, we

See CIRM, page 3

Keck School scientist outlines new model of limb development

By Meghan Lewit

A study led by a USC researcher has found a new model to explain how signals between cells in the embryo control limb development.

The study, which will be published in the May issue of the journal *Nature* and is now available online, found that secreted growth factors at the distal (farthest from the torso) tip of the embryonic limb act as instructive molecules that control the pattern of bones along the length of the limb in an animal model.

"For many years, biologists have been fascinated by the question of how the skeleton forms during embryonic development so that all the bones are in the proper place and the proper shapes, said Francesca V. Mariani, assistant professor at the Keck School of Medicine and one of the lead authors of the study. "Much of the research has been focused on the limb as a framework for understanding the basic steps of skeletal development."

Researchers have long known that the apical ectodermal ridge (AER), a special epithelial structure

See LIMB, page 3

School of Dentistry forges strong ties with universities worldwide

By David Peregrino

Students and faculty from the USC School of Dentistry are sharing knowledge across the globe, thanks to a growing number of collaborations with foreign universities.

After recently signing agreements with institutions in Manipal, India, and Ho Chi Minh City, Vietnam, the school now has 17 Memorandums of Understanding (MOUs) with universities in nine different countries, said Eugene Sekiguchi, associate dean for International, Professional and Legislative Affairs.

"We also have six more planned or in progress," said Sekiguchi, who is leading the school's effort to expand ties with institutions around the world. Expanding USC's global presence is one of the major goals set forth in the university's 2004 Strategic Plan, developed under the leadership of USC President Steven B. Sample.

MOUs are umbrella agreements that cultivate relationships between schools for many projects, such as exchanges of faculty and students and sharing of research and academic information. The School of Dentistry's efforts to build

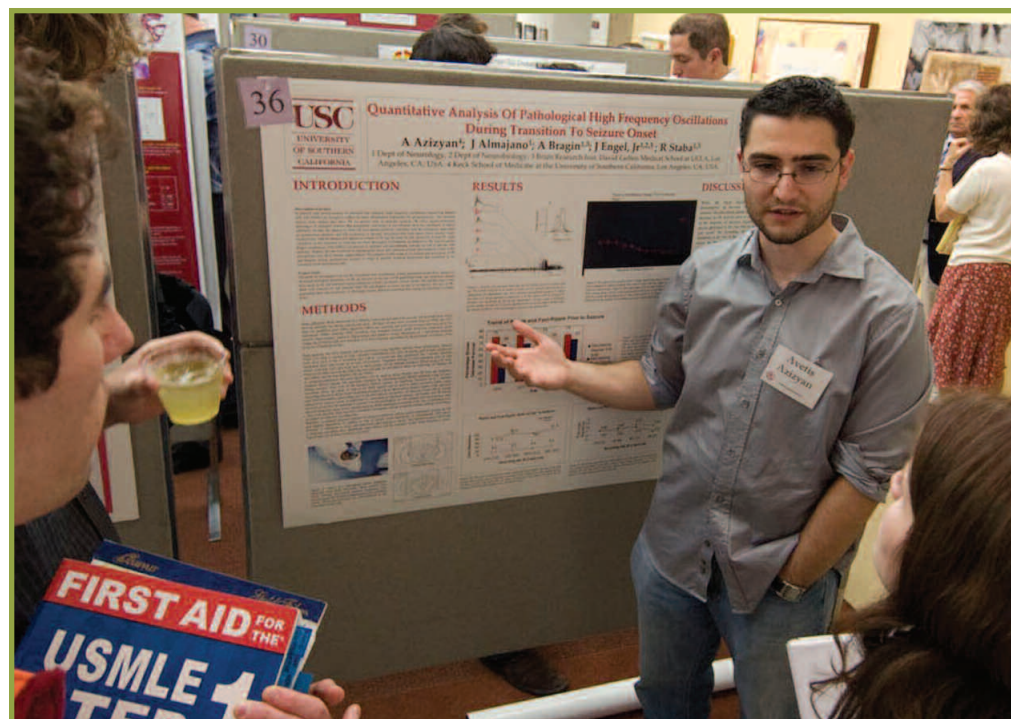
relationships around the world opened a door of opportunity for a group of dentistry students that left for Vietnam in late April and will return in early May.

The group includes junior DDS student Mary Pham, a second-generation Vietnamese-American, who will be visiting the country of her parents and grandparents for the first time.

"I had learned that many children in Vietnam have little or no access to dental care," said Pham. "I thought it would be so good if I could go there and help."

Pham said she speaks conversational

See TIES, page 3



The annual Medical Student Research Forum and Poster Day took place May 5 in Mayer Auditorium and the Hoyt Gallery on the HSC campus. Open to all medical students, the event gave student researchers a chance to present and discuss their research in the areas of preventive medicine, dermatology, neurology and general surgery, among other research areas. Seven oral presenters and 48 poster presenters (including Avetis Azizyan, left) participated.

Veronica Jauriqui

USC School of Dentistry tackles challenge of delivering quality care to autistic patients

By Beth Dunham

A visit to the dentist's office, with strange sounds, sights and smells, can give even a seasoned patient a twinge of anxiety.

For patients with autism, many of whom are extremely sensitive to changes in routine, the experience can be downright horrifying.

"Autistic individuals often crave sameness and repetition," said clinical professor Stephen Sobel. "To an autistic patient, the dental office can be a very strange new environment."

Sobel, who instructs all USC dental hygiene students how to care for patients with autism and other challenges, said autistic patients can face many obstacles in maintaining good oral and overall health—a concern for the dental community as the rates of autism diagnoses continue to rise.

Financial challenges are common; caregivers often place a higher priority on paying for the patient's other medical care and forgo dental care unless a major problem arises, Sobel said.

"Caregivers can have a significant burden, and dental care is often not given priority," he said. "In 2000, Surgeon General David Satcher stated in his report, 'Oral Health in America,' that one can't have good health without oral health. Caregivers need to recognize that the mouth is not a separate health issue."

Difficulty in establishing a good oral hygiene routine for the patient, as well as using cariogenic foods, such as sweets and sodas, as behavioral rewards can cause painful—and expensive—dental problems, Sobel added.

Clinical assistant professor Piedad Suarez said practitioners in the USC School of Dentistry Special Patients Clinic work to identify and serve the unique needs of patients, including the many autistic individuals they serve. Operating the Special Patients Clinic for 24 years, USC is one of only a few dental schools in California to have a clinic dedicated to treating patients with medical, mental and physical challenges.

"We try to work not only with the patient but also with the whole family and keep them involved in the patient's care," Suarez said. "We take the time, help them create a routine and make sure they know just how important oral hygiene is. Sometimes, we can spend a whole morning with a patient just to desensitize them to the feeling of a toothbrush."

Suarez said the Special Patients Clinic receives many referrals from regional centers and hospitals due to their ability to tailor the dental experience for a patient's unique concerns, including the use of sedation, progressive exposure to the dental clinic before the first exam and employing parents or caregivers to help calm the patient in the exam room.

"Many dentists don't feel comfortable treating patients with special needs," she said. "It can be because of fear of medical complications, lack of knowledge or understanding about the

'Many dentists don't feel comfortable treating patients with special needs. It can be because of fear of medical complications, lack of knowledge or understanding about the patient's condition.'

—Piedad Suarez, clinical assistant professor of dentistry

patient's condition, or the fact that spending hours with a single special needs patient, instead of seeing several patients, doesn't bring in as much money."

One can find help locating a dentist to treat a special needs patient by contacting the Special Care Dentistry Association at www.scdonline.org, but the number of willing dentists is small compared to the growing autistic and special needs population, Suarez said. The choice is between spending more money to travel a long distance to a dentist and simply not seeking dental care as often as recommended, she said.

To address this need for dentists willing to treat those with autism and other special concerns, the USC School of Dentistry requires every dental student to spend a weeklong rotation in the Special Patients Clinic.

Students fill out self-evaluations and are rated by faculty members after the rotation is completed, said Roseann Mulligan, director of the Special Patients Clinic and associate dean of community health programs with the School of Dentistry.



Veronica Jauriqui

DONIGER GIFT TO FUND PARKINSON'S RESEARCH—Walter and Susan Doniger were honored April 30 at the Edmondson Faculty Center for their gift of \$500,000 to support the work of Giselle Petzinger, assistant professor in the Department of Neurology and the Phillips-Fisher Center for Brain Repair and Rehabilitation. Petzinger is investigating neuroplasticity and Parkinson's disease. Walter Doniger is a former television writer for "Ellery Queen," "Bat Masterson" and "Kung Fu" among many others. The Phillips-Fisher Center is an interdisciplinary research project between the Division of Biokinesiology and Physical Therapy at the USC School of Dentistry and the Department of Neurology at the Keck School of Medicine. Faculty there study the effects of exercise on Parkinson's. Back row (from left) are: Phillips-Fischer naming donor Roger Phillips; James Gordon, associate dean of Biokinesiology and Physical Therapy; Helena Chui, professor and chair of neurology; Petzinger; Michael Jakowec, assistant professor in neurology; and Beth Fisher, assistant professor of research physical therapy. Front row (from left) Walter, Susan and Tom Doniger.

USC physical therapist named CEO of Rancho Los Amigos

Jorge Orozco, adjunct instructor of clinical physical therapy and Board of Councilors member of the Division of Biokinesiology and Physical Therapy at the School of Dentistry, has been appointed chief executive officer of Rancho Los Amigos National Rehabilitation Center in Downey.

His appointment was announced following a national executive search. Orozco had been serving as interim CEO since 2007.

Rancho is one of four hospitals run by Los Angeles County and has been a leader in rehabilitation medicine for more than half a century, providing highly specialized treatments for traumatic injuries. In 2007, *U.S. News & World Report* ranked Rancho as one of "America's Best Hospitals" for rehabilitation.

Orozco began an impressive 19-year career at Rancho as a physical therapist in 1989, and was promoted to chief of rehabilitation therapy in 2001. In 2005, he was named chief operating officer with responsibility for oversight of all facility operations. His clinical and management expertise have driven significant organizational change and growth at the facility.

"Under Jorge's steady stewardship, Rancho continues to grow in stature as a hospital that provides among the most complex medical care in the country," said DHS Director Bruce Chernof.

"His cultivation of world-class faculty has strengthened the hospital's historic mission of research and leadership in rehabilitative medicine."

Orozco has been a member of the faculty and a member of the Board of Councilors member at USC PT since 2002. His leadership as chair of the board's Outreach Committee has resulted in the successful establishment of USC Fit Families, a pro-bono community clinic in the neighborhood surrounding the Health Sciences Campus that provides preventive and wellness physical therapy services to underserved elementary-school-aged children diagnosed with or at high risk for diabetes and conditions associated with physical inactivity.

LIMB: Study details embryonic cell signaling

Continued from page 1

at the distal tip of the embryonic limb, is important for limb outgrowth. Less clear has been the role of the fibroblast growth factor (FGF) family that emanate from the AER, Mariani said.

“Our study shows that FGFs are not just important for limb outgrowth but act as instructive molecules that control the pattern of bones along the length of the mouse limb,” she said. “The study of limb development may help contribute to the further understanding of how limbs might regenerate.”

Mariani, a recent recruit to the Eli and Edythe Broad CIRM Center for Regenerative Medicine and Stem Cell Research at USC, conducted the research while at the University of California, San Francisco. She worked in collaboration with Gail Martin, a pioneer in embryonic stem cell research.

Researchers concluded that FGFs act as instructive molecules by examining the expression of a gene called *Meis1* found at the proximal (nearest to the torso) portion of the developing limb bud. The new model presented in the study proposes that proximal and distal domains are specified by two opposing signals: a proximal signal from the flank and a distal signal from the AER, and that a middle domain forms as an interaction between the two domains or two signals.

The model proposed by the study is provocative because it is similar to a model proposed for limb regeneration in amphibians, Mariani said.

The findings could have a significant impact on future study in this area.

“This exciting study proposes a new model to explain how signals between cells in the embryo control the growth and formation of the mammalian limb,” said Martin Pera, director of the Eli and Edythe Broad CIRM Center for Regenerative Medicine and Stem Cell

Research at USC. “Tissue repair processes in the adult often use the same cellular programs in building the embryo, so these new findings may provide important clues to guide future treatment of injuries using cell-based therapies.”

The study was supported by a grant from the National Institutes of Health awarded to Gail Martin. Francesca Mariani was supported by postdoctoral grants from the NIH and the American Heart Association.

Francesca V. Mariani, Christina P. Abn & Gail R. Martin. “Genetic evidence that FGFs have an instructive role in limb proximal-distal patterning,” Nature (2008). Doi:10.1038/nature06876



Francesca V. Mariani



The USC Head and Neck Cancer Support Group held its annual fundraiser at Mayer Auditorium on April 20, raising over \$8,000 to fund the Support Group efforts in reaching out to others who have head and neck cancer. The event drew a capacity filled crowd that was entertained by patients and health professionals displaying talents such as singing, dancing and acting.

Left, Bruce Spring, clinical assistant professor of psychiatry and behavioral sciences, performs a harmonica solo.

Above, Melody Ou-Young (middle), speech therapist for the Keck School of Medicine’s Department of Otolaryngology relaxes with fellow performers, Arianna Villegas (left) and Caitlin Bond, after performing a traditional Chinese song.

Sylvia Dyck

CIRM: New funding will supplement \$25 million gift from Eli Broad

Continued from page 1

believe these facilities will be an instrumental part of advancing one of CIRM’s primary objectives of helping to speed the delivery of stem-cell based therapies and cures into the clinic and to patients.”

The funding received today will supplement a \$30 million gift made in 2006 by the Eli and Edythe Broad Foundation towards a stem cell facility.

CIRM was established when voters passed Proposition 71 in 2004 to borrow and spend \$3

billion over 10 years to support stem cell research. To date, USC has received nearly \$51 million in stem cell grants from CIRM. USC is also a part of the Southern California Stem Cell Scientific Collaboration (SC3), which is an agreement among six research institutions in Southern California allowing members to share training programs, scientific core facilities and expertise, and to team up on a wide range of research programs.

For more information on USC’s stem cell program, visit <http://stemcell.usc.edu>.

TIES: School of Dentistry emphasizes importance of global collaboration

Continued from page 1

Vietnamese, and she’s eager to learn more of the language and culture during her trip.

Through the nonprofit East Meets West Foundation, Pham will help deliver dental care and education to rural Vietnamese families during part of her stay in Vietnam. Then she will spend several days with the USC group observing and sharing educational experiences with faculty and students at the University of Medicine and Pharmacy in Ho Chi Minh City.

Sekiguchi said he is excited about what the future holds, now that the school’s ties to other universities stretch from Latin America to Asia, and even to Russia, where the school has an

MOU with Moscow State Medical Dental University in Kiev.

In addition to faculty and student exchanges, research opportunities are being created, such as the strong collaborations USC School of Dentistry faculty Yang Chai and Songtao Shi have developed with Peking University in China, Sekiguchi said.

“We’ve reached a critical mass with our MOUs that will allow us to develop more and more research collaborations,” Sekiguchi said.

For more information, contact Eugene Sekiguchi at sekiguch@usc.edu.

USC School of Dentistry emorandums of Understanding:

- Peking University School of Stomatology, Peking, China

- Universidad Latinoamericana de Ciencias y Tecnologia Facultad de Odontologia, Managua, Costa Rica

- Universidad Evangelica El Salvador Facultad de Odontologia, San Salvador, El Salvador

- Manipal Academy of Higher Education, College of Dental Science, Manipal, India

- Kanagawa Dental College, Kanagawa, Japan

- Fukuoka Dental College, Fukuoka, Japan

- Niigata University, Faculty of Dentistry, Niigata, Japan

- Showa University School of Dentistry, Tokyo, Japan

- Tsurumi Dental College, Tsurumi, Japan

- Universidad de Guadalajara Centro, Universitario de Ciencias de la Salud Coordinación, Guadalajara, Mexico

- Universidad Nacional Autónoma de México, Mexico City D.F., Mexico

- Moscow State Medical Dental University, Kiev, Russia

- Seoul National University School of Dentistry, Seoul, Korea

- Yonsei University College of Dentistry, Seoul, Korea

- Kaohsiung Medical University School of Dentistry, Kaohsiung, Taiwan

- National Taiwan University School of Dentistry, Taipei, Taiwan

- University of Medicine and Pharmacy Faculty of Odonto-Stomatology, Ho Chi Minh City, Vietnam

Calendar of Events

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

Monday, May 12

NOON. Fellows' Core Curriculum Conference. "Post Transplant Immunosuppressive Therapy," Yasir Qazi, USC. GNH Drs. Dining Rm. A&B. Info: (323) 226-7307

4 P.M. "Transplant Conference," Various speakers. UH Salerno Rm. Info: (323) 226-7307

Tuesday, May 13

11 A.M. "New Understanding of Vascular and Beta Cell Dysfunction in Diabetes," Jerry Nadler, Univ. of Virginia. HMR 100. Info: (323) 442-2806

11:30 A.M. Psychiatry Grand Rounds. "Correlates of Perinatal Depression in HIV-infected Women," Suad Kapetanovic, USC. ZNI 112. Info: (323) 226-5572

NOON. "What is Concierge Medicine?" Marcy Zwelling and Thomas LaGrelus, Society for Innovative Medical Practice Design. MCH 149. Info: (949) 293-7915

Wednesday, May 14

NOON. Renal Grand Rounds. "New Advances in IV Iron Therapy in Hemodialysis Patients with Elevated Serum Ferritin, Low TSAT, and Receiving Adequate Epoetin Therapy," Kamyar Kalantar-Zadeh, UCLA. GNH 6441. Info: (323) 226-7307

NOON. "Encoding Task Performance, Rules and Objectives in Auditory and Prefrontal Cortex," Shihab Shamma, Univ. of Maryland. ZNI 112. Info: (323) 442-3219

Thursday, May 15

NOON. Pharmacology and Pharmaceutical Sciences Seminar. "Stabilization of Peptides in Organic Solvents – a Case Study," Wei Wang, Pfizer Laboratories. PSC 104. Info: (323) 442-1902

Friday, May 16

8:30 A.M. "CT Imaging in Pulmonary Vascular Diseases," Jabi Shriki, USC. GNH 11-321. Info: (323) 226-7923

11 A.M. "Making Sense of Myelodysplastic Syndromes: From Diagnosis to Treatment," Alan List, H. Lee Moffitt Cancer Ctr. and Research Inst. GNH 14-441. Info: (323) 865-3914

Monday, May 19

NOON. Fellows' Core Curriculum Conference. "Late Medical and Surgical Complications Post Transplant," Miroslaw J. Smogorzewski, USC. GNH Drs. Dining Rm. A & B. Info: (323) 226-7307

Tuesday, May 20

11 A.M. "Reciprocal Regulation of Bone and Energy Metabolisms,"

Gerard Karsenty, Columbia Univ. HMR 100. Info: (323) 442-2806

11:30 A.M. Psychiatry Grand Rounds. "Sexual Medicine: The State of the Art," Waguih IsHak, Cedars-Sinai. ZNI 112. Info: (323) 226-5572

NOON. Cancer Ctr. Grand Rounds. "Annual Poster Session for Graduate Students and Postdoctoral Fellows." NOR 7409. Info: (323) 865-0801

Wednesday, May 21

8:30 A.M. "Respiratory Issues in Neuromuscular Diseases," Ahmet Baydur, USC. GNH 11-321. Info: (323) 226-7923

NOON. Renal Grand Rounds. "Radiology of Vascular Access," Sue Hanks, USC. GNH 6441. Info: (323) 226-7307

Friday, May 23

9 A.M. C-TREC Seminar. "Evaluating the Links Between Obesity and Leukemia Relapse Using Mouse Models," Steven Mittelman, USC. CSC 250. Info: (323) 442-4101

11 A.M. "Multiple Myeloma: Translating the Evidence into Clinical Practice," Rafael Fonseca, Mayo Clinic. GNH 14-441. Info: (323) 865-3914



Veronica Jauriqui

WELCOME BACK—Members from the Keck School of Medicine class of 1957 celebrated their 51st reunion with a tour of the new LAC+USC Medical Center on April 23. The doctors toured the emergency rooms and intensive and acute care facilities as well as the rooftop helipad. "My, how times have changed," remarked James Chung Jr. (third from right). Pictured, from left: Edward Woerz, Fredrick Lieb, Robert Francis, Laird Facey, Chung, Timothy Lefevre and Daniel Hillman.

2008 COMMENCEMENT CEREMONIES

The following lists the satellite commencement ceremonies for the Health Sciences Campus. The locations and times are listed, as well as the announced speakers. Please note that the Keck School of Medicine does not participate in the main commencement ceremony at the University Park Campus.

Wednesday, May 14

Keck School of Medicine - M.S., Ph.D. & M.P.H.
4 p.m. at Harry and Celeste Pappas Quad. Kary Mullis, chemist, author, Nobel Laureate. Reception will follow.

Friday, May 16

Biokinesiology & Physical Therapy
11 a.m. at Bovard Auditorium at the University Park Campus. John Siciliano, USC alumnus, actor, motivational speaker and disabilities advocate.

Dentistry

11 a.m. at Intramural Field at the University Park Campus. Gordon J. Christensen, a world-renowned educator and expert in clinical dentistry, co-founder of the CR Foundation, a non-profit educational and research institute.

Occupational Science and Occupational Therapy

10:30 a.m. on the lawn west of Leavey Library

at University Park Campus. Richard McCauley, distinguished USC alumnus. Reception immediately following at the residence of Florence Clark, professor and chair of the department.

Physician Assistant Program

10:30 a.m. on the southwest lawn of the Hancock Building at University Park Campus. Katrina Miller, Paul Holton, Ignacio de Artoia and Department Chair Jerry Gates will speak.

School of Pharmacy

3 p.m. at Harry and Celeste Pappas Quad. Melvin F. Baron, associate professor, clinical pharmacy and pharmaceutical economics and policy. Reception will follow, tickets required.

Sunday, May 18

Keck School of Medicine - M.D./Ph.D., M.D.
3 p.m. at the Shrine Auditorium. Samuel Lee, USC School of Medicine class of 1942 graduate, Olympic gold medalist in diving. Reception will follow at Founders Park at the University Park Campus.

HSC NEWSMAKERS

Complete listing at: www.usc.edu/uscnnews/usc_in_the_news/

On May 5, *The Los Angeles Times* ran three stories with USC experts. Diabetes expert **Thomas Buchanan** discussed the risks of pregnancy for diabetic women, gastroenterologist **Thomas Zarchy** spoke about health risks associated with eating competitions and exercise expert **Allan Abbott** discussed the causes of sweat odor.

On May 4, NBC affiliate King5-TV featured research led by **Scott Fruin** and colleagues that found long commutes increase health risks.

A May 2 Reuters Health article featured research led by USC/Norris cancer researchers **Heinz-Josef Lenz** and **Oliver Press** that found gender differences in the development of colon cancer. CancerPage also covered the story.

On May 2, KFWB-AM noted that Los Angeles County + USC Medical Center and

Childrens Hospital Los Angeles are among the area hospitals with pediatric trauma care units.

On May 2, KFWB-AM covered the California Assembly Health Committee hearing on the impact of health facility and emergency room closures, which included a presentation by emergency medicine expert **Edward Newton**.

A May 2 *Jewish Journal of Greater Los Angeles* story quoted Childrens Hospital Los Angeles' **Michelle Pietzak** about celiac disease.

A May 1 United Press International article featured research by surgeons **Peter Crookes**, **Namir Katkhouda**, **Howard Kaufman**, **Michael Yung-Shun Wang** and colleagues that found that obese people who underwent gastric bypass surgery not only lost weight, but the surgery also improved lower back pain symptoms.

**USC Health Sciences
Public Relations
1975 Zonal Ave.
KAM 400
Los Angeles, CA 90033**

**Non-Profit Organization
U.S. POSTAGE PAID
University of Southern
California**