HSC

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Kristopher Boesen received an experimental treatment made from stem cells after a traumatic spinal injury.

Stem cell therapy aids paralyzed man

By Meg Aldrich

n March 6, just shy of his 21st birthday, Kristopher (Kris) Boesen of Bakersfield suffered a traumatic injury to his cervical spine when his car fishtailed on a wet road, hit a tree and slammed into a telephone pole.

His parents were warned there was a good chance their son would be permanently paralyzed from the neck down. However, they also learned that he could possibly qualify for a clinical study that might help.

Enter the Keck Medical Center of USC, which announced that a team of doctors became the first in California to inject its patient with an experimental treatment made from stem cells, AST-OPC1, as part of a multi-center clinical trial.

Charles Liu, MD, PhD, director of the USC Neurorestoration Center, led the surgical team, working in collaboration with the Rancho Los Amigos National Rehabilitation Center and Keck Medicine of USC, that injected an

"There was never a moment through all of this when we

experimental dose of 10 million AST-OPC1 cells directly into Boesen's cervical spinal cord in early April.

"Typically, spinal cord injury patients undergo surgery that stabilizes the spine but generally does very little to restore motor or sensory function," explained Liu, a professor of clinical neurological surgery at the Keck School of Medicine of USC. "With this study, we are testing a procedure that may improve neurological function, which could mean the difference between being permanently paralyzed and being able to use one's arms and hands. Restoring that level of function could significantly improve the daily lives of patients with severe spinal injuries."

Two weeks after surgery, Boesen began to show signs of improvement. Three months later, he's able to feed himself, use his cellphone, write his name, operate a motorized wheelchair and hug his friends and family. Improved sensation and movement in both arms and hands also makes it easier for him to care for himself, and to envision a life lived more independently.

"As of 90 days post-treatment, Kris has gained significant improvement in his motor function, up to two spinal cord levels," Liu said. "In Kris' case, two spinal cord levels mean the difference between using your hands to brush your teeth, operate a computer or do other things you wouldn't otherwise be able

Little library brings books to community

By L. Alexis Young

The USC Department of Public Safety (DPS) is hoping to build a relationship with children and youth in the Boyle Heights community one book at a time.

DPS and Keck Medicine of USC collaborated to bring a Little Free Library to Hazard Park Recreation Center, which sits across the street from the USC Health Sciences Campus. The Literacy Club is an organization that partners with law enforcement and community leaders to create custom-built miniature

libraries in inner-city communities. The program's mission is to cultivate community and knowledge through reading and education.

On Aug. 19, Keck Medicine executive leadership, DPS and officers from the Los Angeles Police Department Hollenbeck Division gathered to unveil the new Little Free Library at Hazard Park, the sixth library DPS has helped bring to communities surrounding the USC University Park and Health Sciences campuses. "We're putting books in

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Children and leaders from Keck Medicine of USC and the Department of Public Safety are seen in front of a Little Free Library.

Anesthesiology chair named

he Keck School of ▲ Medicine of USC has named Holly A. Muir, MD, as the new chair of the Department of Anesthesiology, effective Jan. 1.

Muir specializes in obstetric anesthesia, with expertise in

anesthetics in a resourcestrained environment. Muir is currently a



didn't think our son was

getting world-class care."

— Kris Boesen's father

See STEM CELL, page 3

\$6 million NIH grant to fund study of asthma, obesity

Keck School of Medicine of USC researchers have received a two-year, \$6 million National Institutes of Health grant to examine health issues related to asthma and obesity.

Part of the funding will go toward the USC Children's Health Study, the nation's longest study on air pollution and kids'

health. The new research program, "Life Course Approach to Developmental Repercussions of Environmental Agents on Metabolic and Respiratory Health," or LA DREÁMERs, will be led by Carrie Breton, ScD, assistant professor of preventive medicine, and Frank Gilliland, MD, PhD,

professor of preventive medicine.

"Frank Gilliland and Carrie Breton have been instrumental in leading the Keck School's extraordinary environmental health research with the groundbreaking USC Children's Health Study and the MADRES Center," said Rohit Varma, MD,

See **GRANT**, page 3

the effects of interventions on obstetric outcome, both maternal and neonatal. She has published extensively on the management of childbirth pain and is investigating ethnic and cultural influences on pain expression. Her secondary research emphasis is on genetic and molecular aspects of pain perception. Muir recently completed studies in Ghana to demonstrate the effectiveness and acceptability of regional



ment of Anesthe-

the Depart-Hollv A. Muir siology at Duke University School of Medicine, where she

has been on the faculty since 1998. She is also the vice chair of clinical operations and the anesthesia medical director of perioperative services at Duke Medical Center. She has a dual appointment in the Depart-

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Flu vaccine available

Flu vaccines will be available to all faculty, nurses and Keck Medicine of USC staff starting Sept. 12 at Employee Health Services, Monday through Friday from 7:45 a.m. to 4 p.m. and the Evaluation & Treatment Clinic, Monday through Friday from 4 p.m. to 7:45 a.m., weekends and holidays.

Preservative-free and egg-free vaccines are available on request. Flu season begins Nov. 1 and stretches to March 31.

Students share global lessons

By Larissa Puro

'So ... Cabo next break?" jokes a global medicine student in the elevator. His classmates laugh and roll their eyes. Last spring break they donned scrubs, not bathing suits, while taking a course in a remote area of Panama only reachable by boat.

The students reunited Aug. 23 in Aresty Auditorium as one of several cohorts to discuss their experiences at the Global Citizenship Roundtable, hosted by the Keck School of Medicine of USC Master of Science in Global Medicine program.

More than 100 students and guests gathered to share and learn from stories, photos, videos and findings of students who traveled the world to study health and health care. At the daylong symposium, students compared and contrasted their experiences and highlighted how the journeys changed their understanding of what constitutes health care access challenges.

Working with UNICEF, clinics, hospitals, ministries of health, rehabilitation centers and partner universities, global medicine students traveled abroad for courses in India, Nepal, Denmark and Panama. In each country they learned about common health issues affecting communities as well as unique issues they confront delivering care.

Also among the students who presented were recipients of the Dhablania and Kim Family Global Medicine Fellowship, which supports Keck School students and residents interested in researching or studying global medical need. Now in its second year, the fellowship awarded approximately \$50,000 to 13 students in 2015-2016.



Global medicine alumna Rasa Rafie interviews Fijian schoolchildren about nutrition, sugar consumption and health on the island of Malolo.

The DK fellows' projects examined different aspects of health systems around the world, including attitudes towards secondhand smoke in China, health services in rural Nigeria, prenatal care in Panama and oncology in Haiti.

In Fiji, fellow Rasa Rafie analyzed children's sugar consumption. She led activities and interviewed students in primary and secondary schools to assess their dental histories, diets and understanding of nutrition.

"I chose to focus my research on the pediatric population because, as we learned in many of our global medicine classes, in any emergency situation children will always be the most vulnerable — and in this case, also forgotten," she said.

By participating in educational trips and research, global medicine students witness firsthand the health needs of individuals and communities worldwide. In the process they become global citizens who value cross-cultural understanding and building connections across diverse societies, according to Elahe Nezami, PhD, the program's director.

"When you see the problems of the world, you will never be able to rest and say, 'I'm not going to do anything,' "said Nezami, an associate professor of clinical preventive medicine (educational scholar) and associate dean for graduate programs. That's why the students in her program travel thousands of miles away from home each year to learn, she explained.

"It is a responsibility for anyone who is in health care to learn about the world, to give back to the world."

For more information about the Master of Science in Global Medicine and its opportunities abroad, visit http:// keckmed.usc.edu/msgm/

CHAIR

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ment of Obstetrics and Gynecology.

Muir received her medical degree from Dalhousie University in Halifax, Nova Scotia, where she also did her residency training. She then pursued subspecialty fellowship training in obstetric anesthesia at the University of Pennsylvania. She returned to Halifax where she served on the faculty at Dalhousie until she was recruited to Duke, where she was appointed chief of the division of women's anesthesia and residency program director.

Muir will succeed Philip Lumb, MB, BS, MCCM, who has served as chair of the Keck School's Department of Anesthesiology since 2001.

In a memo sent to Keck School faculty, staff and students, Lumb was praised by Rohit Varma, MD, MPH, interim dean of the Keck School, and Tom Jackiewicz, MPH, CEO of Keck Medicine of USC.

"We are indebted for his tremendous leadership of the complex services provided by the Department at all its sites, his continued commitment to faculty development and his stewardship to maintain a fiscally sound department," they stated in the memo.

Calendar of Events

Friday, Sept. 23

Noon. USC Research Center for Liver Diseases Seminar. "Human Liver Engineering: From Safer Drugs to Regenerative Medicine," Gary Peltz, MD, PhD, Stanford University School of Medicine. Hastings Auditorium. Info: Dolores Mendoza, (323) 442-1283, dmmendoz@usc.edu

Friday-Saturday, Sept. 23-24

7 a.m. USC Institute of Urology Symposium. "Live Surgery Symposium: A-to-Z Robotic Radical Cystectomy & Intracorporeal Diversion." Aresty Auditorium. Info and RSVP: Regina Rezex, (323) 865-3594, rezex@med.usc.edu, http://urology.keckmedicine.org

Saturday-Sunday, Sept. 24-25

7 a.m.-4 p.m. Department of Surgery & Department of Medicine Continuing Medical Education. "Inflammatory Disorders of the Gastrointestinal Tract, Liver & Pancreas: A State of the Art Symposium," Dilip Parekh, MD, Jeffrey Kahn, MD, and Jacques Van Dam, MD, PhD. Westin Pasadena Hotel. Info: Anika Bobb, (323) 442-2547, RSVP: Chelsea Michel, (323) 442-2555, usccme@usc.edu, http://www.usc.edu/cme

or foundation grant proposal. Specific aims of grants in revision are particularly appropriate. Must submit the RFP description.

Wednesday, Sept. 28

Noon-2 p.m. Office of Research Workshop. "Developing and Submitting a Successful Mission Agency Grant," James Murday, PhD, associate director for physical sciences, Washington, D.C., Office of Research Advancement. CUB 329, University Park Campus. Info and RSVP: (213) 740-6709, usccer@usc.edu, http://research.usc.edu/forinvestigators/training/mission/

Noon. The Saban Research Institute. "Research Seminar: From Biology to Prevention – A Translational Science Story about Type 2 Diabetes,"Thomas Buchanan, MD. Saban Research Building Auditorium, 4661 Sunset Blvd. Info: Ritu Gill, (323) 361-8715, tecpad@ chla.usc.edu, http://chla.org/tecpad

12:30 p.m. USC Stem Cell. "Presentation: Sony SI8000 Live Cell Imaging Platform," Michael Trujillo, PhD, Adeline Madeksho, PhD. Broad CIRM Center First Floor Conference Room. shop. "Optimizing NIH R01 Grant Funding Success," Lynn Carol Miller, professor, Annenberg School of Communication. Saban Research Building, First Floor Auditorium, Children's Hospital Los Angeles. Info and RSVP: (213) 740-6709, usccer@usc.edu, https://research.usc.edu/optimizing-nih-r01grant-funding-success/

Noon. USC Research Center for Liver Diseases Seminar. "HCV Pathogenesis: What are the remaining questions?" Hugo Rosen, MD, University of Colorado Health Sciences Center. Hastings Auditorium. Info: Dolores Mendoza, (323) 442-1283, dmmendoz@usc.edu

Saturday, Oct. 1

7:30 a.m.-3:30 p.m. Department of Medicine, division of pulmonary, critical care and sleep medicine, USC Office of Continuing Medical Education. "USC Pulmonary Symposium: 2016 State of the Art," Kamyar Afsar, DO, and Adupa Rao, MD. The Hilton Pasadena. Info: Anika Bobb, (323) 442-2547, "Introduction to Improvement Methodology," Carol Peden, MD, MPH, executive director, Center for Health Systems Innovation (CHSI). DML 233, University Park Campus. Info and RSVP: (213) 740-6709, usccer@usc.edu, https://research.usc.edu/introduction-toimprovement-methodology/

Wednesday, Oct. 5

7:30 a.m. Institute for Integrative Health Seminar. "Ayahuasca, Psychiatric Distress and the Meaning of Life: Results from a Pilot Study in Peru," Brad Adams, PhD, UCLA Medical Center. Harkness Auditorium. Info and RSVP: Quintilia Avila, (323) 442-2638, iih@usc.edu, http://integrativehealth.usc.edu

Thursday, Oct. 6

10:30 a.m.-Noon. Amgen and the Eli and Edythe Broad Center for Regenerative Medicine and Stem Cell Research at USC. "R&D Insights from Lab Bench to Patient Bedside." Broad CIRM Center First Floor Conference

Tuesday, Sept. 27

11 a.m. USC Stem Cell Seminar. "Regeneration of adipocytes in skin scars via reprograming of myofibroblasts," Maksim Plikus, PhD, University of California, Irvine. Broad CIRM Center First Floor Conference Room.

3-5 p.m. Keck School of Medicine and SC CTSI Workshop. "Writing Winning Proposals," Bonnie Lund, The Writing Company. Harkness Auditorium. Info and RSVP: Aileen Dinkjian, (323) 442-1087, aileen.dinkjian@ med.usc.edu, http://scctsi.formstack.com/ forms/registration_wwp. Must submit an advanced, working draft of a federal, private

Thursday, Sept. 29

10:30 a.m.-Noon. Amgen and the Eli and Edythe Broad Center for Regenerative Medicine and Stem Cell Research at USC. "R&D Insights from Lab Bench to Patient Bedside." Broad CIRM Center First Floor Conference Room. Info: qliumich@usc.edu, karenw03@ amgen.com. RSVP: www.usc.edu/esvp, Code: amgenlecture

5 p.m. HTE@USC Discussion. "Product Innovation in Healthcare Event," Stuart Karten. Center for Health Professionals (CHP 225). Info: nafari@usc.edu, http://hte.usc.edu

Friday, Sept. 30 11:45 a.m.-1 p.m. Office of Research Work-

anika.bobb@med.usc.edu. RSVP: Chelsea Michel, (323) 442-2555, usccme@usc.edu, http://www.usc.edu/cme

8 a.m.-4 p.m. Center for Cerebrovascular Disorders, Department of Neurosurgery and Neurology Continuing Medical Education. "2016 Annual Cerebrovascular Disease Symposium: From Clinical Trial to Clinical Practice," Arun Paul Amar, MD, and Gene Sung, MD. Aresty Auditorium. Info: Anika Bobb, (323) 442-2547, anika.bobb@med.usc.edu. RSVP: Chelsea Michel, (323) 442-2555, usccme@usc.edu, http://www.usc.edu/cme

Tuesday, Oct. 4

11 a.m. USC Stem Cell Seminar. Fabio Rossi, MD, PhD, University of British Columbia. Broad CIRM Center First Floor Conference Room.

1:30-4:30 p.m. Office of Research Workshop.

Room. Info: qliumich@usc.edu, karenw03@ amgen.com. RSVP: www.usc.edu/esvp, Code: amgenlecture

Thursdays, Oct. 6, 20 and Nov. 3

4-6 p.m. Office of Research Workshop. "Writing Winning Proposals," Bonnie Lund, professional grant writer. CUB 329, University Park Campus. Info and RSVP: (213) 740-6709, usccer@usc.edu, http://research.usc.edu/forinvestigators/training/persuasiveproposals/

Friday, Oct. 7

9 a.m.-3 p.m. USC Stevens Center for Innovation. "10th Annual USC Stevens Student Innovator Showcase." Hancock Foundation Building (AHF), University Park Campus. Info: Peijean Tsai, peijeant@usc.edu, http://stevens.usc.edu/events/studentinnovator-showcase

Notice: Calendar items are due at least 10 days before publication date. Timely submission does not guarantee publication in print. See more calendar entries at *hscnews.usc.edu/calendar-of-events*. Submit items at *tinyurl.com/calendar-hsc*. Include day, date, time, title of talk, first and last name of speaker, affiliation of speaker, location and a phone number/email address.

USC and Amgen launch two lecture series

By Cristy Lytal

Without collaboration between universities and pharmaceutical companies, scientists might never have developed essential medicines ranging from the antibiotic streptomycin in the 1950s to HIV medications in the 1990s. In recognition of the everincreasing importance of these academia-industry partnerships, USC and Amgen are jointly offering two new opportunities: a 10-week biotechnology lecture series for students and postdoctoral researchers, and a monthly seminar series open to all.

"Strong relationships between academia and industry are vital to accelerating our progress in medical research," said Andy McMahon, PhD, W. M. Keck Provost Professor and Chair of Stem Cell Biology and Regenerative Medicine and Biological Sciences, and director of the Eli and Edythe Broad Center for Regenerative Medicine and Stem Cell Research at USC. "Through these new opportunities for interaction and exchange, we look forward to deepening our collaboration with Amgen for the ultimate benefit of patients."

Rohit Varma, MD, MPH, interim dean of the Keck School of Medicine of USC and director of the USC Gayle and Edward Roski Eye Institute, added, "Our close connections with Amgen and other industry partners support the medical school's larger mission of promoting education, research and clinical care in the context of a world-class research university."

To provide an introduction to Amgen, Qing Liu-Michael, PhD, program director of USC's stem cell research center, invited Bill Richards, PhD, the



Bill Richards, Amgen executive director of Discovery Research, speaks July 21 at USC.

company's executive director of Discovery Research, to visit USC on July 21. Liu-Michael and Richards have been instrumental in building bridges between USC and Amgen. In addition, Richards, who has worked at Amgen for more than 20 years, is currently collaborating on a kidney project with USC researcher Janos Peti-Peterdi, MD, PhD, professor of physiology and biophysics and director of the ZNI Multiphoton Core Facility.

'We're pleased to partner with USC to provide Amgen and USC scientists with opportunities to learn more about the innovative science happening at our respective institutions," Richards said. "Academic collaboration continues to be a key priority for Amgen and we look forward to identifying additional ways to partner with USC to advance innovative science for the benefit of patients."

Following this introduction, the inaugural seminar will feature McMahon, who will deliver a talk at Amgen on Sept. 28. Sasha Kamb, PhD, senior vice president for Discovery Research at Amgen, will deliver the next seminar at USC on Oct. 26.

Moving forward, the monthly seminars will alternate between USC speakers at Amgen and Amgen speakers at USC.

Throughout the fall, Amgen scientists also will lead a 10-week biotechnology lecture series for master's and PhD students studying stem cell biology and regenerative medicine as well as postdoctoral fellows at USC.

Titled "R&D Insights from Lab Bench to Patient Bedside," the series will cover the process of bringing a drug from the discovery stage into clinical use, and culminate with a tour of Amgen's global headquarters in Thousand Oaks.

USC and Amgen also recently signed a three-year master agreement for future research collaborations with the goal of accelerating scientific discoveries into clinical therapies.

'We welcome these new partnerships with Amgen because such collaborations can have crucial results for some of our most serious health care challenges," said USC Provost Michael Quick, PhD. "USC is involved in these types of efforts for the public good — they are aimed at swiftly moving our scientific research to the marketplace."



Charles Liu explains how Kristopher Boesen's spinal cord injury affected the way his brain and limbs communicate.

STEM CELL: Boesen happy with 'fighting chance'

Continued from page 1

to do, so having this level of functional independence cannot be overstated.'

Doctors are careful not to predict Boesen's future progress.

"All I've wanted from the beginning was a fighting chance," said Boesen, who has a passion for repairing and driving sports cars and was studying to become a life insurance broker at the time of the accident. "But if there's a chance for me to walk again, then heck yeah! I want to do anything possible to do that."

early April, a surgical team from Keck Hospital of USC carefully injected 10 million AST-OPC1 cells directly into Boesen's cervical spine. Nearly six weeks later, he was discharged and returned to Bakersfield to continue his rehabilitation. Doctors reviewed his progress at seven days, 30 days, 60 days and 90 days postinjection, and Boesen can look forward to detailed assessments after 180 days, 270 days and one year. His parents said they are amazed at the level of collaboration and cooperation that enabled their son to participate in the study. "So many things had to happen, and there were so many things that could have put up a roadblock," Boesen's father said. "The people at Keck Medical Center of USC and elsewhere moved heaven and earth to get things done. There was never a moment through all of this when we didn't think our son was getting worldclass care." The stem cell procedure Boesen received is part of a Phase 1/2a clinical trial that is evaluating the safety and

efficacy of escalating doses of AST-OPC1 cells developed by Fremont, Calif.-based Asterias Biotherapeutics. AST-OPC1 cells are made from embryonic stem cells by carefully converting them into oligodendrocyte progenitor cells (OPCs), which are cells found in the brain and spinal cord that support the healthy functioning of nerve cells. In previous laboratory studies, AST-OPC1 was shown to produce neurotrophic factors, stimulate vascularization and induce remyelination of denuded axons. All are critical factors

GRANT: Study to focus on youth risks

Continued from page 1

MPH, interim dean of the Keck School. "This grant reinforces the commitment our faculty scientists have made to the investigation of environmental pollutants and their impact on the health of children. I am delighted that the NIH has recognized the potential of their research and funded them for this important study."

The seven-year NIH initiative, the Environmental Influences on Child Health Outcomes (ECHO), awarded more than \$150 million to over 30 research institutes. USC will analyze data collected from prenatal to young adult participants in two existing studies: the Maternal and Developmental Risks from Environmental and Social Stressors (MADRES) and Children's Health Study.

"While much is known about the negative impacts of air pollution and exposure to toxic metals on human health, many questions remain," Gilliland said. "What we know for sure is that a good start is essential for a healthy life. LA DREAMERs will help us gain a better understanding of what it takes to ensure newborn children get off to a great start so they can avoid lifelong health

Respiratory health research will focus on systematically assessing critical windows of exposure, including in utero, early and late childhood and across generations.

The metabolic research project will evaluate the respiratory and metabolic health effects from environmental exposures experienced across the life span: from childhood to adulthood.

"We are becoming increasingly aware that different environmental exposures occurring early in life, even prenatally, have the potential to cause lasting harm to children as they grow into adults," Breton said.

Southern California has long been home to one of the most extensive air pollution monitoring networks in the country. This data has been used by USC researchers and other groups to establish links between regional air pollution levels and the health of communities.

Rima Habre, ScD, assistant professor of clinical preventive medicine, noted the significance of the exposure-modeling component within the two research projects.

"LA DREAMERs will develop new, hybrid models that incorporate satellite and groundbased measurements and rich information on local sources of air pollution in order to overcome the shortcomings of traditional approaches that solely rely on data from ambient monitors separated by a few kilometers," Habre said. "Models will be developed for the Southern California region and extended nationwide to contribute to the ECHO consortium." Additional resources will be provided by the Southern California Environmental Health Sciences Center, the MADRES Center (NIEHS/NIMHD/EPA), the Southern California Children's Environmental Health Center, the Hastings Center for Pulmonary Research, the Southern California **Clinical Translational Sciences** Institute and the Diabetes and Obesity Research Institute. Research was supported by the Office of the Director of the National Institutes of Health under award number

UG3OD023287.

in the survival, regrowth and conduction of nerve impulses through axons at the injury site, according to Edward Wirth III, chief medical director of Asterias and lead investigator of the study, dubbed "SCiStar."

"At the 10 million cell level, we're now in a dose range that is the human equivalent of where we were when we saw efficacy in pre-clinical studies," Wirth said. "While we continue to evaluate safety first and foremost, we are also now looking at how well treatment might help restore movement in these patients.'

To qualify for the clinical trial, enrollees must be between the age of 18 and 69, and their condition must be stable enough to receive an injection of AST-OPC1 between the 14th and 30th days following injury.

Keck Medical Center is one of six sites in the United States that is authorized to enroll subjects and administer the clinical trial dosage.

consequences from environmental exposures that can even impact future generations within a family."

Continued local, national and global awareness of the negative health impacts of air pollution and exposure to toxic metals have created more questions for researchers that the team at USC will attempt to answer. The LA DREAMERs program will include two research projects: one focusing on respiratory health and the other focusing on metabolic health. Assessing exposure to environmental pollutants, including air pollution and metals, will be integrated into both projects.

The idea that environmental pollutants can exacerbate preexisting asthma is supported by decades of research. However, whether these pollutants can cause asthma has remained less clear, and the critical time periods of exposure remain largely unknown.

HSC Newsmakers

A roundup of news items related to Keck Medicine of USC, which may include philanthropic donations, research grants, publication in academic journals and mentions in the news media:



Ruth Barber Goodson, Erin Higginbotham and Dani Glaeser are seen in Kansas City after receiving a Program of Excellence award on behalf of the Family Medicine Interest Group.

Family Medicine Interest Group awarded for excellence

ON JULY 29, THE FAMILY MEDICINE INTEREST GROUP (FMIG) at the Keck School of Medicine of USC received a Program of Excellence Award based on their commitment to engaging students interested in pursuing family medicine. One of only 10 schools to be awarded for overall excellence nationally, the Keck School of Medicine of USC's FMIG was also the only one from California honored at the American Academy of Family Physicians National Conference of Family Medicine Residents and Medical Students in Kansas City. Students who participate in the FMIG at the Keck School are involved in numerous activities that allow them to participate in diverse health care experiences with patients of all ages. — Claire Norman

Study: Stroke-induced long-term disability can be reversed

PERMANENT BRAIN DAMAGE FROM A STROKE may be reversible thanks to a developing therapeutic technique, a new study has found. The novel approach combines transplanted human stem cells with a special protein that the U.S. Food and Drug Administration already approved for clinical studies in new stroke patients. Berislav Zlokovic, MD, PhD, senior author of the Aug. 22 Nature Medicine study, and his colleagues identified a protein that spurs neural stem cells to become functional neurons: 3K3A-APC, a variant of the human protein "activated protein C." Researchers in a National Institutes of Health-funded Phase II clinical trial administer 3K3A-APC to patients who have very recently suffered from an ischemic stroke. However, Zlokovic, director of the Zilkha Neurogenetic Institute at the Keck School of Medicine of USC, said he and his colleagues are the first to use 3K3A-APC to produce neurons from human stem cells grafted into the stroke-damaged mouse brain. – Zen Vuong





Zachary Steel and Caitlyn Conlin stand at attention during a recent session as "medical clown practitioners" at USC Norris Cancer Hospital and Los Angeles County + USC Medical Center.

Laughter is the best medicine

By Gabrielle Forte

To many, the term "clowning" may not invoke more than an image of childhood birthday party entertainment. However, recent studies show that there is more to clowning than what initially meets the eye. Over the past three decades, a new form of drama therapy called Medical Clowning has risen in children's hospitals around the globe. Programs like Doutores da Alegria in Brazil and Dream Doctors in Israel kickstarted the rapid rise of Clown Care in 1991 and 2002, respectively.

Zachary Steel, professor at the ÚSC School of Dramatic Arts and former teacher at The Clown School in Los Angeles, witnessed the healing powers of laughter firsthand when studying medical clowning in Israel.

"There's a depth to which a clown can be effective in a hospital setting beyond an entertainment factor," Steel said. "It's a form of empowerment, an avenue for a patient to escape the isolation of post-trauma."

For the past few months, Steel has been spending weekly shifts in full gear as a "medical clown practitioner" at USC Norris Cancer Hospital and Los Angeles County + USC Medical Center, entertaining patients and providing vital support to hospital staff.

He recalled an incident when he and assistant Caitlyn Conlin sang with a 9-year-old girl, distracting her while hospital staff provided treatment.

"It is a nice reminder that amidst all the horror and all the wicked problems of the world, that there is still so much love and magic," he said.

In light of the practice's newfound popularity, Steel and David Bridel, dean of the USC School of Dramatic Arts, set out on a quest to bring medical clowning to the USC community by co-creating an undergraduate program in the School of Dramatic Arts designed to train individuals in therapeutic medical clowning, thanks to a generous seed gift from the Albert & Bessie Warner Fund.

The School of Dramatic Arts program will be segmented into three classes. The first class, "Intro to Medical Clowning," opened to all USC undergraduates in the fall of 2016 and focuses on basic clowning techniques. "Advanced Medical Clowning" will delve into the intricacies of patient-clown interaction and after completing the two courses, successful students can intern at select hospitals during the summer.

In the future, Steel hopes to expand the newly released program into an emphasis for School of Dramatic Arts undergraduates and ultimately create a progressive degree track.

A version of this article appeared in the Trojan Health Connection.

Non-Profit Organization U.S. POSTAGE PAID Industry CA Permit 4029

LIBRARY Continued from page 1

kids' hands, hoping to spark a passion and to encourage literacy in the community for kids who don't readily have access to books or libraries," said DPS Chief John Thomas. "We want the community to look at USC as partners and to know that we care. These USC Health Sciences Public Relations and Marketing 2011 N Soto Street - SST-2830 Los Angeles, CA 90032

Biodegradable scaffold, left, and human tissue-engineered liver.

Functional human liver made from stem, progenitor cells

A RESEARCH TEAM LED BY INVESTIGATORS AT The Saban Research Institute of Children's Hospital Los Angeles has generated functional human and mouse tissue-engineered liver from adult stem and progenitor cells. Tissue-engineered Liver (TELi) was found to contain normal structural components such as hepatocytes, bile ducts and blood vessels. The study has been published online in the journal Stem Cells Translational Medicine. "Based on the success in my lab generating tissueengineered intestine and other cell types, we hypothesized that by modifying the protocol used to generate intestine, we would be able to develop liver organoid units that could generate functional tissue-engineered liver when transplanted," said Tracy C. Grikscheit, MD, a pediatric surgeon and researcher at The Saban Research Institute of CHLA and co-principal investigator on the study. Grikscheit is also a tenured associate professor of surgery at the Keck School of Medicine of USC. Ellin Kavanagh

libraries allow DPS to engage in the community in a nontraditional way and bridge the gap between USC and their neighborhoods."

The Little Free Library was stocked with new books that didn't stay on the shelves long, as dozens of excited children were awaiting their arrival. Thomas said DPS doesn't just drop the books off, he encourages his officers to regularly visit the libraries to restock the books and read to children. DPS holds book drives to make sure the libraries shelves are fully stocked. The Hazard Park Little Free Library was built as a replica of a hospital, a tribute to the neighboring Keck Hospital of USC.

"People may forget what you do for them, but they never forget what you do for their children,"Thomas said.

HSC News

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