

Science lists USC research among top breakthroughs of 2010

Groundbreaking research by Keck School of Medicine researchers has been selected as one of *Science* magazine's top 10 Breakthroughs of 2010.

The study, Production of p53 gene knockout rats by homologous recombination in embryonic stem cells, marked the first time that "knockout" rats—animals genetically modified to lack one or more genes—had been generated through embryonic stem (ES) cell-based gene targeting. The long-awaited achievement provides scientists with a far more effective animal model to study a range of human diseases. The research was published in the Aug. 11 edition of the journal *Nature*. Principal investigator is Qi-Long Ying.

"This accolade indicates the

importance of this advance to biomedical research and its likely impact on many fields of study," said Martin Pera, director of the Eli and Edythe Broad CIRM Center for Regenerative Medicine and Stem Cell Research at USC. "Past discoveries that have been recognized as Breakthroughs of the Year by Science include cell reprogramming, climate change research, and the multiple roles of noncoding DNA. I am delighted that the rat stem cell technology, based on years of work by Qi-Long's lab, has achieved this level of international recognition."

The development of knockout rats will have a significant impact on biomedical research because the rat physiology is much more closely related to humans than mice in many

aspects of biology. Also, rat models more closely mimic human diseases in many areas such as cardiovascular disease, neurodegenerative disease, nephropathy, obesity, and breast cancer.

Science magazine listed USC's achievement in a Dec. 17 article recognizing achievements in areas from genomics to cosmology. USC's achievement is listed under "Rats Redux:"

"In 2009, researchers adapted to rats a method, previously used in fruit flies and zebrafish, that uses enzymes called zinc finger nucleases to knock out genes," the article states. "In August, another group announced a tweak that produced 'knockout rats' by the same genetic trick used for knockout mice. Also this year, several groups reported advances in using transposons, DNA sequences that jump from one location to another within a genome, to generate rats with genetic mutations—animals useful for developmental biology and disease research. As a result of such techniques, knockout and genetically modified rats may soon displace their smaller

cousins in lab cages around the world."

Science magazine editors compiled a list of groundbreaking achievements during the year and asked select experts in the science and research fields to add their choices. Robert Coontz, deputy news editor for physical sciences at Science, said the USC research made it onto the list because of its significance to scientists.

"People have been trying to develop 'knockout' rats for years," he said. "This is something that the scientific community wanted very much, and will affect scientific research in a big way."

Keck School Dean Carmen A. Puliafito, pointed to Ying's research as key resource in the medical community's efforts to save lives.

"It is an honor to have a highly respected publication like *Science* recognize this research among the best of the year," said Puliafito. "Principal investigator Qui-Long Ying and his team deserve this recognition for providing the scientific community with a critical resource that will help other researchers develop cures for devastating diseases."

More information on the USC research is available online on the Keck School of Medicine of USC web site.



Qi-Long Ying

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—Martin Pera, director of the Eli and Edythe Broad CIRM Center for Regenerative Medicine and Stem Cell Research at USC

Hospitals providing increased support to University programs

By Tania Chatila

USC University Hospital and USC Norris Cancer Hospital provided nearly \$30 million in support of the Keck School of Medicine, its clinical departments and other University programs during fiscal year 2010, and are poised to increase that support significantly in the current fiscal year.

The hospitals' support – in the form of assumption of physician clinic expenses, direct payments for services such as anesthesia and laboratory services, medical directorships, salary support and various other payments – assist in the growth and advancement of other University programs, which include the Physical Therapy Department, the School of Pharmacy, and Keck School clinical departments such as orthopedics, surgery and medicine.

"This is something the hospitals have always done historically, but now under USC ownership we have taken that support to a new level," said hospitals Chief Financial Officer Jon Spees.

In fiscal year 2009-10, the hospitals provided nearly \$19 million in support to the Keck School clinical departments alone, up from the \$8 million Tenet Healthcare Corp. provided in its last full year of ownership. Next fiscal year the hospitals intend to raise that figure even further, to nearly \$27 million.

"Because the hospitals provide this money, the school gets healthier because its clinical programs are able to do more research, recruit more top talent and expand," Spees said. "In turn, those programs provide increased business to the hospitals and we're able to funnel even more money back, starting the process all over again."

Edward Crandall, chair of the Department of Medicine, said support from the hospitals is key to building mutually beneficial clinical programs and the USC brand of medicine. "It's an invaluable investment upon which we all can leverage our future as an integrated health care enterprise."

The money is also critical in supporting USC's focus on clinical practice, research and education, said Brad Selby, chief administrative officer of the Department of Surgery.

"Because our surgeons spend a significant amount of time educating the future surgeons of America, publishing papers and doing research, mission support from the hospital is critical to our success and survival," Selby said. "Unlike community-based surgeons who spend virtually all of their time practicing clinical surgery, our surgeons spread their time across all three key components of the USC mission. Without hospital support, this would not be possible."



THANK YOU!—Students from Sheridan Street Elementary School show their Trojan spirit along with Farren Benjamin, USC Trojan Athletic Senate Vice president at the school's "Thank You USC" holiday breakfast celebration on Dec. 15. Sheridan Street Elementary is one of the five USC Health Sciences Campus Family of Schools, and participates in several programs supported by the USC Good Neighbors campaign. HSC Students, faculty and staff were invited to enjoy a home-cooked meal as an expression of appreciation.

What is Occupational Therapy and Do You Need It?

‘Our minds and our bodies are really reflections of everything we’ve done throughout our lifespan.’

**—Florence Clark,
chair of the Division of
Occupational Science
and Occupational
Therapy**

By Ryan Ball

The term “occupational therapy” conjures up images of people trying to get back to work after debilitating accidents or strokes, or coping with chronic conditions that threaten job performance. While these scenarios certainly fall under the OT umbrella, the practice in fact has something to offer everyone who needs help balancing work or study with everything else that occupies their time.

Occupational therapy was founded as a health profession in 1917 and the first occupational therapists worked with wounded World War I veterans, helping them reengage in productive activity and re-integrate with society.

Today, therapists are more heavily involved in trying to prevent chronic disease and disability, according to Florence Clark, chair of the USC Division of Occupational Science and Occupational Therapy.

“Our minds and our bodies are really reflections of everything we’ve done throughout our lifespan,” said Clark. “In our practices, when a person comes to us, we look at what they do all day long and how that’s affecting their overall health and productivity. We then develop customized plans for daily living that can

maximize health.”

Kimberly Kelton, an admissions counselor for the Division of Occupational Science and Occupational Therapy, said one of the biggest misconceptions about OT is that it is strictly job-related.



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“That’s a very small part of what an occupational therapist does,” Kelton noted. “The occupational therapists who are working with autistic children are obviously not counseling them about their career prospects.”

Located on the Health Sciences campus, the USC Occupational Therapy Faculty Practice offers “Lifestyle Redesign” programs for students, faculty and staff. Developed by Clark, these programs help clients manage weight, diabetes,

chronic pain and other conditions that can be positively influenced by behavior and environmental adjustments.

“You won’t see a cookie-cutter kind of OT prescription because everybody’s life is different,” said occupational therapist Karen McNulty, who specializes in working with students on both campuses. Like a detective, she examines each student’s life and helps students to create solutions to improve time management skills, sleep habits, exercise, diet and other aspects of student life that tend to get out of whack.

Services provided by the USC Occupational Therapy Faculty Practice are free to students on the Health Sciences campus with the student insurance program. Students on the University Park campus are required to make a \$15 co-payment. Faculty and staff on the network insurance plan can get reimbursed for certain programs, such as weight management, provided they make measurable progress.

For more information on occupational therapy at USC, go to <http://ot.usc.edu> and www.usc.edu/otfp. You can also attend the second annual USC Occupational Therapy Faculty Practice Open House on January 14 from 11 am to 1:30 pm. If you would like to

see if your work or study habits can be improved, request an ergonomic evaluation by calling 323-442-3340 or emailing otfp@usc.edu.

Keck School surgeon calls for pediatric trauma research network

By Ellin Kavanagh

Jeffrey S. Upperman, director of the Trauma Program at Children’s Hospital Los Angeles, has co-authored a call to action for filling a significant gap in pediatric public health care and seeks federal oversight to establish the framework for a pediatric applied trauma research network (PATRN). This call to action was published simultaneously in the *Journal of Pediatric Surgery* and the *Journal of Trauma*.

“The establishment of a

pediatric trauma research network will be an important advance in trauma care in the U.S.,” said Upperman, associate professor of surgery at the Keck School of Medicine.

The article emphasizes that the societal costs of pediatric trauma are enormous. Because trauma is a disease process with identifiable and reproducible patterns, interventions can be developed to minimize its occurrence and to reduce its severity when trauma does occur. To make these changes,

a pediatric trauma research network needs to be established to conduct research in this area in order to make evidence-based recommendations to improve the standard of care for this devastating pediatric health issue.

The World Health Organization established injury as the top pediatric public health problem in the world. Statistics for the United States support this finding with unintentional injury being the leading cause of death in

young people from ages 1 to 24. National authorities have identified critical deficiencies in pediatric trauma care and insufficient research to address these deficiencies. Despite this enormous public health problem, there is no national pediatric trauma research network.

The paper noted that pediatric trauma affects both sexes and all economic, racial and social backgrounds. Children are injured in rural, suburban and urban environments. These injuries affect not only the physical well-being of the child, but also the child’s mental health and school performance, in addition to the well-being of the child’s family. The societal cost of pediatric trauma due to lost years of productive life is enormous.

Because the number of seriously injured children treated at a single center is relatively small, and because an individual hospital is unlikely to have sufficient patient diversity, collaborative multicenter studies are required to address the differences in treatment of pediatric injury at trauma centers in diverse settings, the paper said. Moreover, collaborative networks for pediatric

critical care and pediatric emergency care currently exist but only address specific sections of the care required by a pediatric trauma patient. The goal of PATRN is to address the critical unsolved problems that typically cross specialty boundaries including emergency transport to the hospital, emergency room care, pediatric surgery, neurosurgery, intensive care, physical therapy and rehabilitation. Establishment of a pediatric trauma network will enable cohesive care from admission to discharge for the patient with multisystem injuries.

The development of PATRN should include thought leaders from level 1 pediatric trauma centers from across the country, the paper said.

These subject matter experts will work with a panel of nationally recognized advisors to determine a research agenda. The National Institutes of Health, Center for Disease Control and Prevention, and Agency for Health Research and Quality are obvious choices to orchestrate and oversee the framework and infrastructure for this much needed network.

The Weekly

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The Weekly is published for the faculty, staff, students, volunteers and visitors in the University of Southern California’s Health Sciences Campus community. It is written and produced by the Health Sciences Public Relations and Marketing staff. Comments, suggestions and story ideas are welcome. Permission to reprint articles with attribution is freely given.

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CHLA Liver Transplant Program honored for excellence in patient outcomes

The Children’s Hospital Los Angeles Liver Transplant Program was honored by the United States Department of Health and Human Services with its prestigious Bronze Award. The award, which was presented in November, recognized the program for its excellence in liver transplantation.

“This award is a tribute to the excellence that is fostered at Children’s Hospital Los Angeles,” said Yuri Genyk, assistant professor of surgery,

Keck School of Medicine and surgical director of liver and small bowel transplant at CHLA. “The decrease in pre-transplant mortality is mainly due to our active living donor transplant program, which is a major step forward in managing children with end stage liver disease in an environment where there is a shortage of deceased donor organs.”

More than 700 individual transplant programs were analyzed for excep-

tional outcomes in one of three areas: one-year post-transplant survival rates, decreased donor transplantation rates and waitlist mortality rates.

CHLA was the only hospital in its region, which included California, Nevada, New Mexico and Utah, to be recognized with the Bronze Award. CHLA was recognized for having significantly lower-than-expected patient mortality rate while on the transplant waitlist and excellent patient outcomes

in liver transplantations.

The Liver Transplant Program at CHLA is the largest pediatric living donor center in California. Since opening in 1998, the Liver Transplant Program has performed 188 liver transplants, of which 83 were from a live donor. CHLA has performed more than 43 percent of the state’s pediatric living donor transplants.



HONORING EXCELLENCE—University Kidney Research Organization (UKRO) honored Keck School of Medicine Dean Carmen A. Puliafito (right), along with UKRO spokesperson and Grammy Award winning singer/songwriter, Natalie Cole (center), and Fresenius Medical Care CEO Ben J. Lipps (left). UKRO is a Los Angeles-based nonprofit organization supporting medical research related to the prevention, treatment, and eradication of all forms of kidney disease.

Keck School’s Dept. of Otolaryngology chair to step down

Dale Rice, chair of the Keck School of Medicine’s Department of Otolaryngology, has announced that he will step down from the chairmanship of the department to focus on his clinical practice and research.

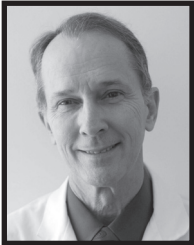
Rice, who has served the Keck School of Medicine, USC University Hospital and USC Norris Cancer Hospital, and the LAC+USC Medical Center as a surgeon, researcher, teacher and leader for more for more than 27 years, will remain as chair until a new chair of the department is identified.

Rice began his career as an undergraduate at Case Western Reserve University and remained in the Midwest for his medical degree and residency in general surgery and otorhinolaryngology at the University of Michigan. At the end of his training and following service in the

Air Force as a surgeon, he began his academic career in 1976 as an assistant professor of surgery, division of head and neck surgery, at UCLA. He continued his career at UCLA with promotions to associate professor and professor, and was appointed vice chief of the Department of Surgery in 1979. That same year, he became chief of the Department of Surgery, section of Head and Neck Surgery, at the VA Wadsworth Medical Center. In 1983, Rice was recruited to USC as professor and chair of the Department of Otolaryngology.

He currently holds the endowed Tiber/Alpert Chair in Head and Neck Surgery. He has been board certified in otolaryngology since 1976.

Rice is a nationally and internationally recognized



expert in endoscopic sinus surgery, and has organized and continued to present a popular and well-regarded postgraduate training course on that subject for many years.

Rice has been an active researcher and scholar his entire career. He is an author of nearly 200 peer reviewed articles in high quality journals in his specialty, and more than 30 book chapters, and has been an author or editor of eight books.

Steven Giannotta, chair of the Department of Neurosurgery, will chair the search committee for a new leader for the Department of Otolaryngology. When a new chair is named, Rice will rejoin his department as an active surgeon in the otolaryngology-head and neck surgery clinical practice.

Women’s Heart Health Screenings

USC’s female faculty and staff have the opportunity for a very special “valentine” next month in the form of a free heart disease screening on Feb. 7 at the USC Women’s Cardiovascular Center, located on the Health Sciences Campus. Screenings are limited, so call (323) 442-6278 today to make an appointment.

The screening appointment will include hypertension and diabetes screenings, a cholesterol panel, nutritional consult, lifestyle redesign and individualized consultations with one of the Center’s female physicians.

“The purpose of the event is to raise women’s awareness about risk factors for cardiovascular disease, as well as the status of their own heart health. We want the women of USC to know that our all-women, multidisciplinary team of health care professionals is here to provide open, expert and personalized comprehensive cardiovascular education and care to women of all ages,” says Vivian Y. Mo, assistant professor of clinical medicine and director of the Women’s Cardiovascular Center.

The Women’s Cardiovascular Center, which is part of the Cardiovascular Thoracic Institute at USC, is devoted to helping women, especially those at USC, understand the prevention, detection and treatment of cardiovascular disease. They want to help you get on track to having a healthier heart.



SPREADING HOLIDAY CHEER—The Sheridan Elementary School Choir sings for all to hear in Mayer Auditorium during the Keck School of Medicine and School of Pharmacy Holiday Breakfast on Dec. 17. Hosted by Deans Carmen A. Puliafito and R. Pete Vanderveen, the festivities ushered in the holiday season and welcomed faculty and staff from both schools.

The Weekly NEWSMAKERS

A **Dec. 15** story broadcast on **KTTV Fox 11 News** cited a study authored by **Heather Volk** that found that children born to women living within about a thousand feet of a freeway are twice as likely to have autism. The story was also covered by the **Los Angeles Times**, **Los Angeles Daily News**, **KABC**, **KCBS/KCAL**, **WebMD**, and numerous other news outlets.

A **Dec. 16** broadcast of **KPCC FM’s “Air Talk”** featured **Joseph Haraszti** discussing new results from the annual “Monitoring the Future” study by the National Institute on Drug Abuse which shows that marijuana use by teens increased in 2010, reversing a 10-year decline.

A **Dec. 16** broadcast by **KNX 1070** Newsradio featured **Michael Cousineau** talking about healthcare reform as related to a decision by a federal judge in Pensacola, Fla. about Florida’s lawsuit challenging requirements that are part of the new federal healthcare reform law.

A **Dec. 22** story in the **Los Angeles Times** quoted **Leslie Saxon** about a \$100,000 medical research grant given to USC by NFL Charities. The grant will be used to study heart rate behavior in National Football League players and USC student-athletes.

Calendar of Events

This Calendar of events is also online at www.usc.edu/hscalendar for the Health Sciences Campus community

Tuesday, Jan. 11

Noon. “Negative Feedback Signaling is Required for Leukemia Cell Survival,” Markus Müschen, UC San Francisco. NRT Aresty Auditorium. Info: (323) 865-0801

Noon. USC Women in Management Speaker Luncheon. “Maximizing your Impact with Innovation: A Contrarian’s Guide,” Krisztina Holly, USC. NRT LG 503/504. Cost: \$15 members, \$18 non-members. Info: (323) 442-1865.

Wednesday, Jan. 12

Noon. ZNI Seminar Series. “Clathrin is Not Required for Clathrin-Mediated Endocytosis,” Erik Jorgensen, Howard Hughes Medical Institute. ZNI 112. Info: (323) 442-2144

Thursday, Jan. 13

Noon. Cellular Homeostasis Lecture Series. Graduate Student Seminar Course: Student Orientation. MCH 156. Info: (323) 442-3121

Friday, Jan. 14

8 a.m. Pathology and Laboratory Medicine Grand Rounds. “An Update on Lipomatous Tumors: New Concepts and Old Standbys,” John Goldblum, Cleveland Clinic. NOR 7409. Info: (323) 442-1180

8:30 a.m. Surgical Grand Rounds. “Future of Minimally Invasive Surgery: Looking into the Crystal Ball,” Richard Satava, Univ. of Washington. DOH 100. Info: (323) 442-2506

11 a.m. Hematology Grand Rounds. “Review of New ITP Data From ASH,” Howard Liebman, USC. IPT C2J103. Info: (323) 865-3950

Thursday, Jan. 20

Noon. Cellular Homeostasis Lecture Series. “Aging-related Changes Stem Cells and the Stem Cell Niche,” Leanne Jones, Salk Institute. MCH 156. Info: (323) 442-3121

Noon. USC Black Staff and Faculty Caucus: 30th Annual Dr. Martin Luther King, Jr. Celebration 2011. Program will feature music performances, presentations and a keynote address. UPC Bovard Aud. Info: (213) 740-5649

Noon. KSOM Cellular Homeostasis Lecture. “Aging-related Changes Stem Cells and the Stem Cell Niche,” Leanne Jones, Salk Inst. MCH 156. Info: (323) 442-3121

Friday, Jan. 21

8:30 a.m. Surgical Grand Rounds. “Thoracic Surgery Education in the Future,” Edward Verrier, Univ. of Washington Regional Heart Center. DOH 100. Info: (323) 442-2506

11:30 a.m. Physical Sciences in Oncology Center Seminar. “Cancer Cell Stress Response and the Evolution of Resistance – the Connection between the Physical Microenvironment and Nuclear Structure,” Robert Getzenberg, John Hopkins Univ. CSC 240. Info: (323) 442-3849

Thursday, Jan. 27

10 a.m.. “Business Diversity EXPO 2011,” showcasing USC small local, women, minority,, and veteran-owned businesses. UPC: TCC Ballroom (lower level). Info: (213) 821-1787

Noon. Cellular Homeostasis Lecture Series. “Modeling Immunopathogenesis and Therapy of HIV-1 and HCV in Humanized Mice,” Lishan Su, Univ. of North Carolina. MCH 156. Info: (323) 442-3121

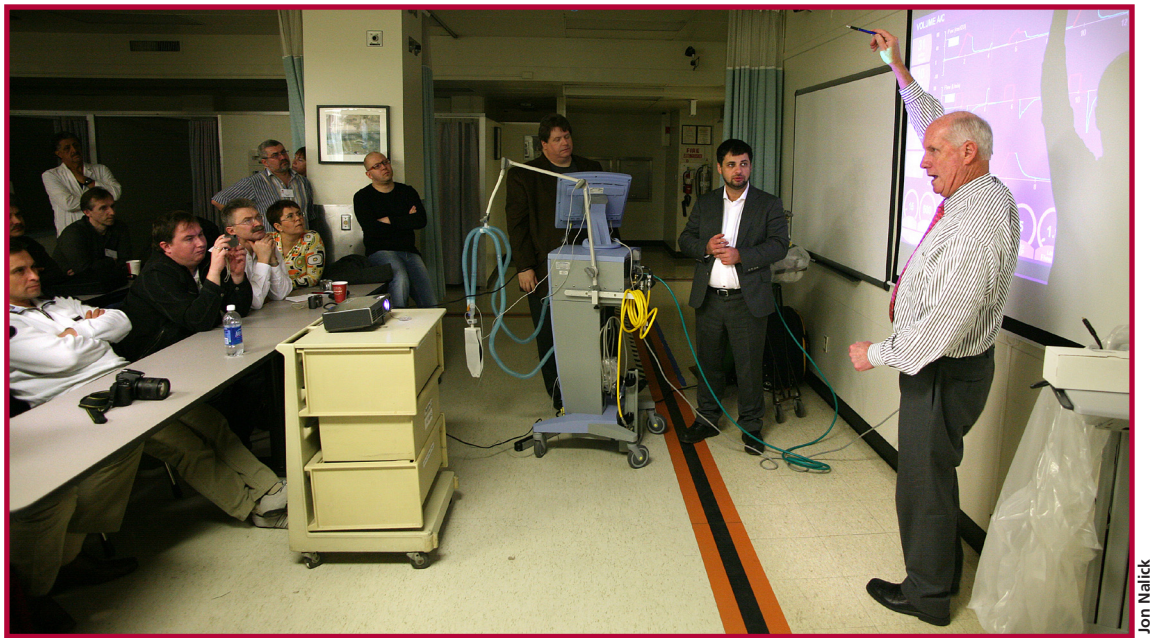
Monday, Feb. 7

Noon. 5 p.m. USC Women’s Cardiovascular Center. Free Heart Screenings. Register by calling 323 442-6278.

Tuesday, Feb. 8

5 p.m. Global Health Lecture. “Combustion Particles and Global Health: Cooking, Smoking, and Climate,” Kirk Smith, UC Berkeley. NRT Aresty Aud. Info: (323) 865-0419

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 *The Weekly*, KAM 400 or fax to (323) 442-2832, or e-mail to eblaauw@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.



Jon Nalick

The Department of Anesthesiology was pleased to host a contingent of Russian Anesthesiologists and Critical Care Specialists for an educational update in the management of acute stroke, closed head injury and mechanical ventilation at the LAC+USC MC and Keck School of Medicine, Nov. 30 to Dec. 3, 2010. Neil R. MacIntyre (right), medical director of respiratory care services, the pulmonary function laboratory, and the pulmonary rehabilitation program at Duke University Medical Center, lectures on ventilation techniques and procedures, at the Russian-American Medical Symposium on Dec. 3, 2010. The symposium was designed to offer a collegial exchange of ideas and information between USC and Russian physicians in a collaborative, educational environment.

Novel device opens clogged arteries in the brain

By Meghan Lewit

Neurosurgeons at USC University Hospital recently performed the first procedure in California using a unique, balloon-expandable stent to treat narrowing in the arteries of the brain.

The patient is the first in the state to be in enrolled in the Vitesse Intracranial Stent Study for Ischemic Therapy (VISSIT) clinical trial. The device is aimed at opening blocked arteries (stenosis) in patients who have suffered a stroke and to recover blood flow to the brain.

“Stroke is the third leading cause of death in the U.S.,” said William Mack, assistant professor of neurosurgery at the Keck School of Medicine of USC, who performed the procedure. “For many patients who have suffered a stroke, there is no option available aside from medication to treat the narrowing of the arteries that can lead to a second stroke.”

Patients who have a stroke due to severe narrowing of the vessel have a 24 percent chance of having another stroke in the following year, he noted.

The PHAROS™ Vitesse™ Neurovascular Stent System is an investigational device in the United States and is the first balloon expandable stent that is specifically designed and tested for intracranial use. Unlike other stents, which require surgeons to open the clogged artery and then insert the stent into the dilated vessel, the PHAROS Vitesse

Stent is mounted onto a balloon catheter, which can be precisely positioned across the stenotic portion of the target vessel.

When in position, the balloon is inflated, which expands the stent to the proper diameter of the vessel anatomy. The balloon is then deflated and withdrawn, leaving the stent firmly implanted at the site of the stenotic lesion. The stent is intended to remain permanently implanted in the vessel. Endovascular techniques that employ stents also are potentially less invasive, as they are inserted through the femoral artery in the leg instead of an open surgical procedure.

“Anytime you go into the brain, there are associ-

ated risks,” Mack said. “This technique is unique because everything is done in one pass.”

USC University Hospital is the only California site for the randomized international trial that will compare clinical outcomes between patients treated with the balloon-expandable stent and the current best medical practice of treatment with aspirin or Plavix, a medication that helps prevent blood clots. The trial is designed to include up to 250 patients at 30 sites in the United States, Europe and China. The VISSIT trial is sponsored by the San Jose-based Micrus Endovascular Corp., now part of Codman & Shurtleff Inc. The full treatment for patients will include a low cholesterol

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Visit the USC Web: <http://emergency.usc.edu> This page will be activated in case of an emergency. Backup Web servers on the East Coast will function if the USC servers are incapacitated.