New, high-tech surgical suite debuts at Keck Hospital

By Alison Trinidad

A high-tech operating room that will help improve patient care debuted at Keck Hospital of USC on April 24, making it one of three Southern California hospitals with such a room, often called a “hybrid OR.”

Cardiothoracic surgeon Vaughn Starnes and interventional cardiologist Ray Matthews led three back-to-back heart valve replacements on patients who are part of a U.S. clinical trial testing a non-surgical, minimally invasive treatment for aortic stenosis.

To complete the experimental procedure, doctors need advanced imaging equipment to replace the diseased valve by threading a narrow catheter through the skin.

Typically, interventional procedures such as a transcatheter aortic valve implantation (TAVI) are performed in a catheterization lab, which is not equipped for surgery.

Imaging instruments are usually not found in ordinary operating rooms, since surgeons do not use cameras for open surgical procedures.

“The new 1,100-square-foot hybrid room at Keck Hospital is designed for both catheter-based and surgical treatments.

“We would have done this procedure in the cath lab … but the real concern here is when things go bad,” said Matthews, professor of clinical medicine and director of the interventional cardiology program at the Keck School of Medicine of USC. “We want to be in the best position to perform an aortic valve replacement in a new hybrid operating room at Keck Hospital of USC. At right is the Console—on experimental device being studied in a U.S. clinical trial to treat aortic stenosis, or narrowing of the aortic valve.

Above, (from left) USC physicians David Shavelle, Vaughn Starnes and Ray Matthews perform an aortic valve replacement in a new hybrid operating room at Keck Hospital of USC. At right is the Console—on experimental device being studied in a U.S. clinical trial to treat aortic stenosis, or narrowing of the aortic valve.

‘This opens a whole new portal for us, in terms of the types of therapy we can provide to our patients.’

—Vaughn Starnes, chair of the Department of Surgery and surgeon-in-chief of the USC hospitals

USC research opens doors to better leukemia treatments

By Robin Heffler

Scientists in the Keck School of Medicine of USC have discovered that a protein commonly overexpressed in solid cancer cells—one previously found to enable breast, prostate and other tumors to grow and resist treatment—is also overexpressed in multiple types of leukemia, and can be successfully targeted to block the disease.

“Our work further shows that if you suppress the level of the protein GRP78 in human leukemic cells, these cells are killed more efficiently by chemotherapy,” said Amy Lee, professor of biochemistry and molecular biology at the Keck School and associate director for basic research at the USC Norris Comprehensive Cancer Center, who served as principal investigator of the study. “We discovered that GRP78 is necessary for the activation of the PI3K/AKT signaling pathway, a major pathway that helps leukemia cells to survive, proliferate and become drug resistant.”

The findings were recently published in the journal Blood.

The research, which used mice models to study leukemia development and human leukemia cells to examine responsiveness to drug therapy, was funded by the National Cancer Institute.

Lee said that drug design is now under way to inactivate GRP78. “This novel approach to block the PI3K/AKT pathway could have great clinical implications for a wide range of cancers and may avoid complications that accompany other types of therapy,” she said.

Joining Lee in the study, titled ‘Inducible knockout of GRP78/GRP78B in the hematopoietic system suppresses Pten-null leukemogenesis and AKT oncogenic signaling,’ were coauthors Shuian Wey and Biquan Luo, graduate students in her lab; Chun-Chih Tseng, a research assistant; and collaborators at New York University.

Violence Intervention Program moves to new center

By Ryan Ball

Operating in a tiny, dark and dingy room off of the emergency room at the Los Angeles County+USC Medical Center, Astrid Heger, a pediatrician specializing in child abuse, had her life changed by a seven-year-old girl who had been brutally raped on the train tracks in South Central Los Angeles. The girl came in draped in a dress made for a girl twice her age and the dirt from the assault was ground into her skin.

Heger sent her assistant to a dollar store to buy underwear for the child and realized that there was a greater need beyond what she could do forensically.

“All I wanted to do was take her home and put her in my swimming pool. I wanted to give her a bath and clothes,” Hege recalled decades later during the April 26 grand opening of the Violence Intervention Program Forensic Center and Community-Based Assessment and Treatment Center and Plaza, part of the LAC+USC Medical Center Outreach Department.

As director of the Violence Intervention Program (VIP), Heger, a professor of clinical pediatrics at the Keck School of Medicine of USC, addressed a crowd assembled in the newly renovated 20,000-square-foot facility.

The space boasts an inviting lobby and waiting rooms, a childcare center, a high-risk premature infant clinic, a sexual assault center, a number of kid-friendly examination rooms, an area dedicated to adult protective services and an outdoor green space. Enlarged photos of staff members’ children adorn the walls, and the airy, outdoor green space. Enlarged photos of staff members’ children adorn the walls, and the airy

Critical care nurse Rebecca Quintero (center) leads a tour of the new Violence Intervention Program’s Assessment and Treatment Center, whose lobby is decorated with photos of the children of its staff members.

See VIP, page 3

See HYBRID OR, page 3
Precisely remove parts of the years to test the function of
receive $540,000 over two
been part of the NHGRI
that may one day shed light
microbiology at the Keck
of biochemistry and
Stem cell therapy may keep immune system under control
infusions of MSC appeared
toid arthritis.
erythematosus and rheuma-
host disease, systemic lupus
disorders, such as graft versus
patients with immune-related
USC's Center for Craniofacial
Ostrow School of Dentistry of
Songtao Shi, professor at the
cal cord.
be isolated from several kinds
or middle layer of tissue, in a
originate from the mesoderm,
stem cells (MSC).
by infusions of mesenchymal
searchers at USC, outlines the
A new study, appearing in
Cell Stem Cell and led by re-
searchers at USC, outlines the
specifics of how autoimmune
disorders can be controlled
by infusions of mesenchymal
stem cells (MSC).
Highly versatile MSC
originate from the mesoderm,
or middle layer of tissue, in a
developing embryo. MSC can
be isolated from several kinds
of human tissue, including
bone marrow and the umbili-
cal cord.
Principal investigator
Songtao Shi, professor at the
Outow School of Dentistry of
USC’s Center for Craniofacial
Molecular Biology, said recent
studies have shown the ben-
efits of administering MSC to
patients with immune-related
disorders, such as graft versus
host disease, systemic lupus
erythematosus and rheuma-
toid arthritis.
These studies showed that
infusions of MSC appeared
to quell the production and
USC researcher awarded grant for human genome research
Peggy Farnham, professor of biochemistry and
microbiology at the Keck
School of Medicine of USC, was awarded one of 10
National Human Genome
Research Institute (NHGRI)
grants intended to develop
groundbreaking technologies
that may one day shed light
on the secrets of the human
genome.
Farnham, who has
been part of the NHGRI
Encyclopedia of DNA
Elements (ENCODE) project
for the last two years, will
receive $540,000 over two
years to test the function of
regional genes that bind
large clusters of regulatory
proteins.
Farnham’s team will
precisely remove parts of the
genome and ask how
neighboring genes are
affected.
The 10 grants total $10.5 million
and were awarded to researchers at the
Massachusetts Institute of
Technology (MIT),
University of
Michigan, University
of Washington School of
Medicine, University of
Washington; Washington
University in St. Louis,
University of North
Carolina at Chapel Hill,
Institute of MIT and Harvard,
Memorial Sloan-Kettering
Cancer Center, and Dana-
Farber Cancer Institute.
The ENCODE project was
determined to how
the sequence of the human genome
communicates to our bodies at a
molecular level.
The NHGRI is
part of the National
Institutes of Health.
In 2011, Farnham
was part of a team
that developed “A
User's Guide to the
Encyclopedia of DNA
Elements (ENCODE),”
published in PLoS Biology,
providing a guide for using
the vast amounts of data and
resources produced by the
project.
Farnham is holder of the
William M. Keck Endowed
Chair in Biochemistry at the
USC Norris Comprehensive
Cancer Center.
USC researchers uncover a protein’s role in genetic repair, stability

By Robin Heffer

Examining basic cellular processes, researchers at the University of Southern California have discovered how an anti-tumor protein plays an important role in activating the process of repairing damaged DNA, and a direct role in maintaining chromosomal integrity. With chromosomal chaos long being linked to cancer, the finding of expected tumor help researchers eventually develop cancer-fighting tools.

Chengyu Liang, an assistant professor of molecular microbiology and immunology at the Keck School of Medicine of USC, is the corresponding author for a paper titled “A dual role for UVRAG in maintaining chromosomal stability independent of autophagy,” published online April 26 in the journal Developmental Cell.

Also contributing to the research were first author Xiaofeng Zhao, a USC postdoctoral fellow in Liang’s laboratory, and Soohwan Oh, a former technician in the lab and currently a doctoral student at UC San Diego.

The research unveiled a new role for the protein UV irradiation resistance associated gene (UVRAG), which is at work during the routine cellular self-cleaning and recycling process called autophagy.

“Basically, UVRAG acts as a scaffold or adaptor protein by binding to and activating the DNA-dependent protein kinase (DNA-PK) enzyme,” Liang said. “When there is a double-strand break, one of the most severe types of DNA damage, DNA-PK fixes the damage through a kind of gluing process.”

Conversely, Liang said, when UVRAG is removed from the cells, DNA-PK activity is impaired or reduced. “As a result, the cells can’t repair damaged DNA in a timely and accurate manner, and this damage accumulates in cells, which in turn leads to alterations of the chromosomes and enables tumors to grow.”

Previously, Liang and her co-investigators had identified UVRAG as a tumor suppressor that activates the autophagy pathway in cells. They had found that UVRAG plays a critical role in both early and late stages of autophagy, which rids cells of toxins, viruses and bacteria.

With the latest study, which was funded by grants from the National Institutes of Health, the American Cancer Society and the Baxter Foundation, the researchers also discovered that UVRAG helps to stabilize the number of centrosomes, specialized structures in the cell that play an important role in cell division.

“We found that UVRAG helps to maintain the correct number of centrosomes, and that if it is deleted or reduced, the centrosomes multiply and duplication during cell division becomes out of control,” Liang said. “As a result, the genetic material can’t equally divide into daughter cells, and the number of chromosomes will change to either too many or too few.”

When that happens, it causes problems with growth, development and functions of the cell’s system.

“UVRAG seems to be new cells’ guardians,” she added. “Keeping an eye on our DNA and centrosomes, fixing damage and preventing improper cell division. So this study represents a major conceptual advance in understanding UVRAG’s role as an autophagy-related protein in the suppression of cancer, while at the same time unfolding elegant mechanisms whereby UVRAG acts to maintain genomic integrity.”

Liang said the research will focus on an in-depth analysis of how UVRAG maintains the integrity of centrosomes, how UVRAG’s dual roles during DNA damage repair and cell division are coordinated and how UVRAG’s role in autophagy is related to these dual roles.

The May 2 edition of Modern Medicine quoted Neda Shami, associate professor of clinical ophthalmology at the Keck School, about a modified surgical technique that facilitates optical graft preparation.

An April 30 broadcast of MSNBC’s “Morning Joe” featured an interview with David Agus, professor of medicine at the Keck School, about his book The End of Illness.

An April 29 report in The Chronicle of Higher Education noted that stem cell scholar Andrew McMahon will leave Harvard University to direct the Eli and Edythe Broad Center for Regenerative Medicine and Stem Cell Research at USC, housed within the Keck School. McMahon will chair the university’s new Department of Stem Cell Biology and Regenerative Medicine. Most of the team from McMahon’s Harvard laboratory will come with him to USC, and he will also be hiring roughly 12 scientists for new positions.

An April 26 article in the Los Angeles Times quoted Astrid Heger, professor of clinical pediatrics at the Keck School, about the opening of a newly renovated building for the Violence Intervention Program at LAC-USC Medical Center. Heger is director of the program, which treats victims of violence and abuse.

An April 25 story in Medscape Medical News quoted Helena Chui, chair of the Keck School’s neurology department and director of USC’s Memory and Aging Center, about how PET scan readings may lead to misdiagnosis of Alzheimer’s disease. “Actually, when I do the full work-up, I sometimes tell these patients, the good news is that I don’t think you have Alzheimer’s disease,” Chui noted. “I may link it to the PET scan and I also don’t think the PET scan supported AD.”

An April 25 post on Business insider quotes a blog that cites a review paper co-authored by the Keck School’s Steven Sussman, professor of preventive medicine, and doctoral student Nadra Lisha about 11 potentially addictive behaviors, including love.

An April 24 story on Kaiser Health News about Los Angeles County’s health services director quoted Michael Cousineau, associate professor of family medicine and preventive medicine at the Keck School.

An April 24 article in the Daily Mail (U.K.) quoted William “Billy” Mallon, associate professor of clinical emergency medicine at the Keck School, about teenagers distilling hand sanitizer to get drunk. Mallon also was interviewed by CW News Los Angeles affiliate KTLA-TV.

VIR: Hundreds celebrate center’s grand opening

HYBRID OR: New room boosts medical capabilities

The Weekly NEWSMAKERS

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Continued from Page 1

The Hybrid room is equipped with multiple high-definition cameras and video monitors that give surgeons better views of the operating field during minimally invasive surgery. Using technology developed by Karl Storz EndoscopyAmerica, the audiovisual system links with electronic patient records and hospital information systems and can support live, on-demand teleconferencing.

The system allows surgeons to use a laptop device to access live and stored surgical videos through an Internet link, watch live cases as they are being performed, and communicate between ORs.

“This combines the operating room and catheterization laboratory into one, giving us the capability to perform procedures like coronary or aortic graft stenting and open heart surgery at one time,” said Starres, chair of the Department of Surgery and surgeon-in-chief of the USC hospitals. “This opens a whole new portal for us, in terms of the types of therapy we can provide to our patients.”

Mark Cunningham, assistant professor of cardiothoracic surgery at the Keck School, spearheaded the design of the hybrid suite at Keck Hospital, visiting hospitals across the country for the best technology available. Although the room is targeted to augment cardiovascular therapies, Cunningham said the setup will also benefit general surgery and other specialties such as neurological and laparoscopic services.

To view videos of the hybrid OR, visit http://keck.usc.edu/hybridOR.

Use your smart phone to scan the QR code at left to view video of the new hybrid OR.
**Wednesday, May 9**
9 a.m. - 4 p.m. USC AirPollBrain Retreat 2012. Various speakers. ZNI 112. Info: (323) 442-2144

**Saturday, May 12**
7 a.m. - noon. Revlon Run/Walk For Women at Los Angeles Memorial Coliseum at Exposition Park. The cost to run/walk is $35 through May 11 ($40 day of the event). Your registration fee includes an EIF REVLOn Run/Walk For Women T-shirt and goodie bag. It will also include a USC Norris Team T-shirt. Info: (323) 965-0668

**Monday, May 14**
 Noon. KSIOM Research Seminar. “SRHIV: Latency and Reactivation,” Blossom Damania, University of North Carolina - Chapel Hill. SRT Averyt Aud. Info: (323) 442-7732

**Tuesday, May 15**
10 a.m. Keck Medical Center of USC Gould Outreach Speaker Series. “Regenerative Medicine: An Organ Recital,” David Warburton, USC/CHLA. Presentation of Outstanding Faculty Award to Henry Ford, USC/CHLA. Private Club in Pasadena. Reservations by May 7 and Info: (626) 440-6079

**Wednesday, May 16**

**Friday, May 18**
8:30 a.m. Surgical Grand Rounds. Clinical Research Presentations from Breast/Soft Tissue and Endocrine Surgery. DOH 1st Floor Auditorium. Info: (323) 442-2506

10 a.m. - 3 p.m. HTE @ USC Second Annual Frontiers Symposium. “Matchgame 2012: Linking Clinical Needs with Engineering Know-how,” Dave Marvit, Fujitsu Laboratories of America. SSB 1st Floor Conference Room. Info: (323) 442-7732

**Monday, May 21**
1 p.m. - 4:30 p.m. ZNI Mini-Symposium. “Advancing Biomedical Technologies,” various speakers. ZNI 112. Info: (323) 442-2144

**Friday, May 25**
8:30 a.m. Surgical Grand Rounds. “Instrumental: A Tale of the Tools of Our Trade Told in Verse,” Jonathan Hiatt, UCLA. DOH 1st Floor Auditorium. Info: (323) 442-2506

**Thursday, May 31**
 Noon. Cardiology Grand Rounds. “Diabetes and Stable Ischemic Heart Disease,” Prakash Deswani, UCSD. BCC 1st Floor Conference Room. Info: (323) 442-2506

**Friday, June 8**
8 a.m. - 5 p.m. Stem Cell Research at USC Stem Cell Symposium. “The Stem Cell Niches in Development and Regeneration,” various speakers. NRT Averyt Aud. Info: (323) 442-6060

**Friday, June 15**
8:30 a.m. - 2 p.m. Southern California Alzheimer’s Disease Centers Research Symposium 2012. “Vascular Cognitive Impairment and Dementia,” various speakers. PUG. GER Auditorium. Info: (323) 930-9290

**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) 442-8212, or email to eblaueuw@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.

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**USC research institute trains academic leaders in China**

By Nasim M. Thompson

Susan Autry, executive director of USC’s Southern California Clinical and Translational Science Institute, joins colleagues from the U.S. and China in Shanghai as part of a series of workshops designed to help teach the Chinese how to build clinical and translational research institutes (CTSI) and centers.

Susan Autry (in red), executive director of USC’s Southern California Clinical and Translational Science Institute, joins colleagues from the U.S. and China in Shanghai as part of a series of workshops designed to help teach the Chinese how to build clinical and translational research institutes (CTSI) and centers.

The three-day workshop, held March 23-25, explained the history and concepts of clinical and translational research at academic health centers in the U.S. and other countries; taught effective ways to build leadership teams at CTSIs; and taught how to develop the key components of CTSIs, such as training programs, clinical research support, informatics and collaborations with industry.

Distinguished leaders at the workshop included Barbara Alving, former director of the NIH National Center for Research Resources—the NIH center that developed the Clinical and Translational Science Awards (CTSA) program, which funded the SC CTSI; Michael Conlon, associate director and chief operating officer at University of Florida’s CTSI; Paul Harris, associate professor of biomedical informatics and director of the Office of Research Informatics at Vanderbilt University; and Tsehaye Johnson, chief operating officer of the Yale Center for Clinical Investigation.

Attendees—executives and administrators from major hospitals and universities working to establish clinical and translational centers in China—including representatives from Shanghai Jiao Tong University School of Medicine, Nanjing Medical University, Chinese University of Hong Kong and the Shanghai Food and Drug Administration.

The SC CTSI is one of 60 premier research institutes in a national consortium that aims to speed the translation of research discoveries into solutions for better health.

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**USC research institute trains academic leaders in China**

**Online Extras**

Read more USC news online:

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- **Karen Baas luncheon kicks off student advocacy trip**
  [Link](http://tinyurl.com/tygyakp)

- **Occupational Therapy**
  “Lights It Up Blue” for World Autism Awareness Day
  [Link](http://tinyurl.com/rlq4f0w)

- **Keck School scientist finds higher risk for ovarian cancer for women with endometriosis**
  [Link](http://tinyurl.com/6wz7hxm)

- **Turkish urologists visit USC Institute of Urology**
  [Link](http://tinyurl.com/75yukqd)

- **Going for the gold at World Health Day L.A.**
  [Link](http://tinyurl.com/75sxcoq)

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**ONLINE EXTRAS**

- **Call the Emergency Information Phone:** (213) 740-9233 The emergency telephone system can handle 1,400 simultaneous calls. It also has a backup system on the East Coast.

- **Visit the USC Web:** [http://emergency.usc.edu](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.