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Cancer survivors and loved ones attended the USC Norris Comprehensive Cancer Center's 26th annual Festival of Life celebration, which included a dove release and the Trojan Marching Band.

Cancer survivors' strength celebrated at Festival of Life

By Amanda Busick

bright, sunny morning provided a Ajoyous backdrop for a celebration of resilience and tenacity at the 26th annual Festival of Life on the Health Sciences Campus.

Hosted by the USC Norris Comprehensive Cancer Center on June 4, the event was both upbeat and introspective, providing the more than 700 cancer survivors and their supporters with a place to share their experiences and talk about their hopes for the future.

Prostate cancer survivor Felipe Arias attended the event with several loved ones, and he appreciated the sense of commulove and affection from all who approached them.

USC Norris Ambassador Art Ulene, MD, who has attended the event and been master of ceremonies almost every year since the festival's inception in 1990, led a program of speakers and entertainment.

'Twenty-nine years ago, the National Cancer Survivors Day Foundation established a worldwide celebration of cancer survivorship. It was something, in those days, that was a bit of a surprise," Ulene told the crowd. "Today, we almost take it for granted. I think it's a mistake to take survivorship for granted, and that is why we are here to celebrate it. Because your survivorship is the result of decades of work that have gone on in science centers like this around the country and days, weeks, hours, and months of effort.' Among the speakers was the wife of cancer survivor Gordon Case, Amaryllis. The Cases drive to Southern California every year for both Gordon's treatment and for the festival. She spoke to the audience about how welcomed they felt coming to USC Norris after looking hard See FESTIVAL, page 5

Los Angeles to host international stem cell conference

By Cristy Lytal

n recognition of its growing stature as an incubator for the biosciences, Los Angeles will be the host city for the 2019 International Society for Stem Cell Research (ISSCR) Conference. With the generous support of the Choi Family, USC Stem Cell will co-host the conference, and the city-owned Los Angeles Convention Center will serve as the venue.

"We are extremely excited to welcome the International Society for Stem Cell Research to Los Angeles for the first time

ever and look forward to their 17th annual meeting in 2019," Mayor Eric Garcetti said. "L.A. is the latest and most innovative bioscience hotspot in the state, and ISSCR's choice is a reflection of the scientific advances occurring in our city today."

Previous host cities include Barcelona, Boston, San Francisco, Stockholm, Toronto, Vancouver, Yokohama and Philadelphia.

Rohit Varma, MD, MPH, interim dean of the Keck School See **CONFERENCE**, page 5



From left, philanthropists Kin-Chung Choi and Amy Choi with Andy McMahon, chair of the executive committee of USC Stem Cell.

Leaders address state of health sciences

By Meg Aldrich

n front of a full house at Aresty Auditorium on the morning of June 9, Thomas E. Jackiewicz, MPH, senior vice president and CEO of Keck Medicine of USC, and Rohit Varma, MD, MPH, interim dean of the Keck School of Medicine and director of the USC Gayle and Edward Roski Eye Institute, updated faculty and staff on past accomplishments and future plans for both the medical school and the clinical enterprise. Varma detailed the school's

long-term vision to rise to No. 20 in rankings, explaining, "There's a linear relationship between funding and rankings, which entails setting aggressive goals to recruit and retain NIHfunded principal investigators."

He highlighted the integration required between medical school and medical center as

nity that he felt at the event.

"This means everything to me, the happiness, the joy," he said. "I am happy to celebrate with all of the people here. It's very nice and very helpful to me."

Attendees had the opportunity to interact with some members of the animal community also. Traveler, the Andalusian horse who is the USC mascot, was available for photo opportunities and two canine ambassadors from the Paws 4 Life program were in attendance, accepting

Commuter Alert

The intersection at Valley Boulevard and San Pablo Street will be closed to both vehicles and pedestrians for roadwork this summer.

Union Pacific Railroad has notified the university of an approved traffic control plan issued by the Los Angeles Department of Transportation (LADOT) for a full street closure, tentatively scheduled for the entire month of July. Citations will be issued to pedestrians and vehicles that try to cross the construction zone. Check hscnews.usc.edu for more information, including a map with detour routes.

Questions can be directed to Jason Tichota from Union Pacific Railroad at jmtichot@up.com.

being an essential catalyst for growth. Keck Medicine of USC has experienced exponential clinical growth, with patient volumes up 40 percent since USC ownership.

See STATE, page 5



Thomas Jackiewicz, left, and Rohit Varma speak during the first State of the Health Sciences, held June 9 at Aresty Auditorium.

Former Keck School honored dean at reception

By L. Alexis Young

riends, colleagues and former students of Carmen A. Puliafito, MD, MBA, gathered for a reception in recognition of his leadership and accomplishments as the former dean of the Keck School of Medicine of USC. Kind words and excited greetings were exchanged at the intimate reception of about 150 people, held June 7 on the Broad Lawn at the Health Sciences Campus.

Puliafito, recognized worldwide as an innovator in the diagnosis and treatment of retinal disease and an accomplished leader in academic medicine, began his career as dean in 2007. He was tasked with ensuring accreditation of the school's teaching programs and leading the school to the top ranks through medical breakthroughs and recruiting top-notch faculty.

"Today, USC has one of our nation's preeminent medical schools and medical enterprises, thanks in no small measure to the leadership of Carmen Puliafito," USC President C. L. Max Nikias said. "Carmen's proven business expertise meshed



From left, Provost Michael Quick, Carmen A. Puliafito, President C. L. Max Nikias, Keck School of Medicine of USC Interim Dean Rohit Varma, and Keck Medicine of USC Senior Vice President and CEO Thomas Jackiewicz are seen at a reception honoring Puliafito.

perfectly with his superb medical skills, and he brought a new generation of exceptional clinical leaders, department chairs and world-class talent to our campuses."

Puliafito shared a note that he wrote before accepting the job as dean. The note listed things he planned to accomplish, which included creating a robust universitybased academic medical practice and recruitment and leadership in neuroscience, regenerative medicine, oncology and bioengineering. He said he felt best about his recruitment efforts.

"I feel best about that because I think the primary job of dean of a

medical school is to bring leaders that will really set the tone of the organization," he said. "What did I love about the job? I like the institutional culture at the medical school, it's part of the Trojan Family but a little bit different, and the sense of clinical excellence, commitment to the county and private patients, and our USC doctors really are the best doctors in Los Angeles."

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Rohit Varma, MD, MPH, interim dean of Keck School of Medicine of USC and director of the USC Roski Eve Institute, described Puliafito as an exceptionally creative physician who has changed the world of vision science for the better for millions of patients. Puliafito is recognized as coinventor of the technology of optical coherence tomography (OCT), and was the first ophthalmologist to use this technology to study the human macula in health and disease.

"Not only has he led our school, he has contributed enormously to our clinical research and education mission," Varma said. "He has been a truly loyal shepherd of our school and we are deeply indebted to him."

Study: Dose of transplanted blood-forming stem cells affects behavior

By Cristy Lytal

Tnlike aspirin, bone marrow doesn't come with a neatly printed label with dosage instructions. However, a new study published in Cell Reports provides clues about how the dose of transplanted bone marrow might affect patients undergoing this risky procedure, frequently used to treat cancer and blood diseases.

In the study, USC Stem Cell researcher Casey Brewer, PhD, and colleagues in the laboratory of Rong Lu, PhD, found that transplantation dose affects the behavior of blood-forming stem cells in bone marrow - called hematopoietic stem cells, or HSCs.

To track these cells' behavior, the researchers "barcoded" individual mouse HSCs with a genetic marker and observed their contributions to forming blood. Every HSC is capable of acting

as a generalist, producing all of the specialized types of blood cells following bone marrow transplantation. However, the researchers observed that only 20 to 30 percent of HSCs took on this generalist role, contributing all of the most abundant types of white blood cells - called granulocytes, B cells and T cells. This relatively small group of generalist HSCs produced a disproportionately large amount of blood.

The remaining 70 percent to 80 percent of HSCs were more strategic. When facing a scarcity of transplanted bone marrow at the lowest dose, these HSCs prioritized T cell production. At higher transplantation doses, these HSCs opted to differentiate early. producing a balanced array of T cells and B cells.

"The dose of transplanted bone marrow has strong and lasting effects on how HSCs specialize and coordinate their behavior," said Lu, senior author and assistant professor of stem cell biology and regenerative medicine at the Keck School of Medicine of USC. "This suggests that altering transplantation dose could be a tool for improving outcomes for patients - promoting bone marrow engraftment, reducing the risk of infection and ultimately saving lives."

Additional co-authors include Elizabeth Chu and Mike Chin, MS.



Clockwise from top left, Casey Brewer, Elizabeth Chu, Rong Lu and Mike Chin.

Calendar of Events

Wednesday, June 29

11:30 a.m.-4 p.m. USC Norris Comprehensive Cancer Center Meeting. "Satellite Cancer Moonshot Summit at the USC Norris Comprehensive Cancer Center," Stephen Gruber, USC. Aresty Auditorium. Info and RSVP: http://esvp.usc.edu, Code: MOONSHOT

Thursday, July 14 1:30 p.m. Keck Medicine of USC Stroke Support Group Meeting. "Staying Active After Stroke," Clarisa Martinez, PT, DPT. Keck Hospital, 3 North, Day Room (3261A). Snacks provided and parking is validated. Info: Melody Sharifi, (323) 442-0049,

Liver transplant program marks 20 years By Hope Hamashige

n 1996, rather than taking long walks, Lor watching her kids play sports, Beni Carrillo started spending much of her days sleeping. The exhaustion wasn't a complete surprise because Carrillo had a liver disease, and her lack of energy was a sign that she needed a transplant.

'I felt lost at the time and didn't

and the lowest probability of survival, making the survival rates even more impressive.

"Our outcomes speak to the quality of the program," said Yuri Genyk, MD, surgical director of the Liver Transplant Program.

During the past two decades, the Liver Transplant Program at Keck Medicine has pioneered new solutions for patients, including living donor transplants, a procedure in which a healthy person donates a portion of his or her liver to a patient whose liver is failing.

Noon. The Saban Research Institute. "Research Seminar: Are There Stem Cells in the Adult Pancreas?" H. Teresa Ku, PhD, City of Hope. Auditorium, Saban Research Building, 4661 Sunset Blvd. Info: Ritu Gill, (323) 361-8715, http://chla.org/tecpad

Tuesday, July 5

Noon. Gehr Family Center for Implementation Science Seminar. "The New Science of Implementation," Steven Asch, MD, MPH, Stanford University. NRT LG 503/504 - Harlyne Tower. Info: Rachel Lim, (323) 226-6720, rachel.lim@med.usc. edu, http://gehrcenter.usc.edu

msharifi@med.usc.edu

Wednesday-Friday, Aug. 17-19

All day. Keck School of Medicine of USC division of pain medicine, Department of Anesthesiology, division of nursing education and the USC Office of Continuing Medical Education. "7th Annual Pain Management Symposium: From Evidence to Clinical Practice," Keynote Speakers: Scott M. Fishman, MD. Linda Watkins. PhD, and Steven Richeimer, MD. Hilton Los Angeles/Universal City. Info: Teresa Ball, (323) 442-2555, usccme@usc.edu, https://cmetracker. net/KECKUSC/Catalog

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.

where to go," Carrillo said.

One physician cautioned against having the procedure at Keck Medicine of USC because the program was new and she would be its first liver transplant patient. Preferring not to close any doors, she met Rick Selby, MD, professor of surgery and division chief of hepatobiliary, pancreas, and abdominal organ transplantation, anyway.

Ultimately, Carrillo put her faith in USC's young program.

As USC celebrates the 20th anniversary of the liver transplant program, Carrillo is clocking four miles a day on her feet and has lived to see her kids' kids play sports. She still sees her surgeon, but now it's for dinner as friends.

Two decades later, the program boasts the best patient survival rate in Southern California and is among the top three in the United States, according to the Scientific Registry of Transplant Recipients.

The program also treats the sickest patients with the most complex problems

Oscar Rosales is one of those patients who chose a living donor transplant.

He was on the transplant list at an area hospital. But, because his quality of life had become so poor, his brother, Erick, volunteered to donate a portion of his liver and they had the procedure performed at Keck Medicine, which has the only active living donor liver transplant program in Los Angeles County.

Two years later, both brothers are living full, healthy lives.

"Organ transplantation is magical," Selby said. "Those fortunate recipients realize an energy state that they have not possessed in 20 years. Their recovery is a moving spectacle for all of us who participate in transplantation and further inspires us to expand transplant science and organ availability."

USC Norris represented at ASCO meeting

By Mary Dacuma

Physicians and researchers from the USC Norris Comprehensive Cancer Center presented multiple abstracts at the 2016 American Society of Clinical Oncology (ASCO) Annual Meeting, held June 3-7 in Chicago.

USC Norris' presence at the meeting included 22 poster sessions four poster discussion sessions, one oral presentation and an educational symposium. USC Norris also was involved in numerous other studies completed in collaboration with other institutions, including academic medical centers, pharmaceutical companies and private-sector research organizations.

"As one of the 69 National Cancer Institute-designated cancer centers, our research comprehensively touches every aspect of oncology,' said Stephen Gruber, MD, PhD, MPH, director of USC Norris. "From epidemiology, prevention, targeted therapies and even patient care, our faculty works tirelessly to better understand and treat this disease."

Abstracts presented by USC Norris covered lung, gastrointestinal, prostate and breast cancer, tumor biology,



U.S. Vice President Joseph Biden gives the keynote address June 6 at the 2016 American Society of Clinical Oncology Annual Meeting in Chicago.

genomics and genetic testing and epidemiology.

Three researchers earned an ASCO MERIT award, which is given for high-quality abstracts of strong scientific merit: Martin D. Berger, MD, postdoctoral scholar visiting fellow from Switzerland; Marta Schirripa, MD, postdoctoral scholar visiting fellow from Italy; and Mitsukuni

Suenaga, MD, postdoctoral scholar visiting fellow from Japan.

As a testament to the quality of their research, all three MERIT award winners, who work under Heinz-Josef Lenz, MD, PhD, associate director of clinical research and section head of Gastrointestinal (GI) Oncology at USC Norris, had a second poster presentation at ASCO in addition to the abstract that earned a MERIT award.

"I am very proud of our international postdocs who are representing cutting edge translational research from the USC GI Oncology program at ASCO this year, and particularly proud that our research is recognized by three merit award for postdocs from my laboratory," Lenz said. "Our laboratory has global collaborations, which allows us to make a global impact in gastrointestinal oncology."

The ASCO annual meeting, one of the largest cancer-related scientific meetings worldwide, brings together oncology professionals from all over the world to share new findings on cutting-edge treatments, clinical trials, patient care and many other areas in order to define treatment guidelines and continue the progression toward curing and eradicating cancer.

This year, more than 35,000 people attended, setting a new record for conference attendance. Among them was U.S. Vice President Joseph Biden, who gave the keynote address about the National Cancer Moonshot Initiative, which aims to increase cancer prevention, detection and research.



Jae Jung speaks June 9 during the Zika Virus Awareness Symposium.

Caution urged at Zika symposium

By Amanda Busick

Ccientists and public officials Owarned residents of health risks and provided mosquito-abatement tips during the Zika Virus Awareness Symposium, held June 9 at the Aresty Auditorium on the Health Sciences Campus.

Lecture topics ranged from the control, diagnosis and treatment of the Zika virus and how this epidemic may affect the Los Angeles area as well as the entire world, to an in-depth look at the way Zika acts in the body to cause hydrocephaly in babies and the neurological disorder Guillain-Barré syndrome, provided by speakers from the Keck School of Medicine of USC, as well as from UCLA and the Los Angeles County and state departments of public health. Distinguished Professor Jae Jung, PhD, chair of the Department of Molecular Microbiology and Immunology and the director of the USC Institute for Emerging Pathogens and Immune Diseases at the Keck School, said that Los Angeles' position as a travel hub in the United States is a cause for concern. "Los Angeles is a gateway for germs," he began, citing the vast numbers of people who enter Los Angeles through airports, ports, and by train and car. "There is an extensive potential for this infectious disease."

be less likely in Southern California. While detailing the occurrences of Zika in the United States, Jung pointed out that so far no cases in California have been locally transmitted.

Rachel Civen, MD, MPH, medical epidemiologist with the Los Angeles County Department of Public Health, spoke about the challenges with diagnosing Zika virus.

"Eighty percent of people with Zika are asymptomatic," she said. "So most people don't even have

Flu-like symptoms in pregnant women tied to abnormalities in babies' brain, nervous system

By Zen Vuong

Babies born to mothers whose immune systems had to grapple with a viral assault — even a mild one - have increased risk of brain and central nervous system abnormalities, according to a new study.

A USC-led team of researchers examined how the immune systems of pregnant mice (roughly equivalent to human mothers in their first trimester) reacted to a chemical that mimics a viral infection akin to the flu. Levels of tryptophan, an amino acid that activates the immune system, increased, causing the placenta to produce more serotonin, which led to higher concentrations of serotonin in the fetal brain.

Previous studies have linked viral-based inflammation during pregnancy and the risk for developmental disorders such as autism, cognitive delay and schizophrenia in offspring, according to the study.

"Serotonin is very important for fetal brain development and can modulate the way the fetal brain is wired," said Alexandre Bonnin, PhD, senior author and an assistant professor of cell and neurobiology at the Keck School of Medicine of USC. "In response to boosted

serotonin levels coming from the placenta, the fetal brain stunted its own genesis of serotonin neurons, probably because receptors sensed there was too much serotonin in there. That can be a problem, especially when it leads to the front of the brain being not developed as much as it should be.³

The study was published in The Journal of Neuroscience on June 1.

The study provides a new molecular pathway to understanding how prenatal insults could program a baby to eventually develop mental diseases.

Viral infections and inflammation during pregnancy do not guarantee central nervous system malfunctions in children, Bonnin said. Many times, the health of babies is not impacted. Bonnin referenced another study to explain.

"In the first trimester of pregnancy, if the mom gets an infection such as the flu, the risk of the baby developing schizophrenia 15 years later is increased by approximately threefold," he said. "It doesn't mean that if the mom has the flu, the kid will systematically have schizophrenia, but the risk is increased by threefold."

However, he went on to say that local transmission of the virus might symptoms.'

Civen went on to say that even among the people who do have symptoms such as rash, fever, joint pain and conjunctivitis, the symptoms are mild and can last as little as one week. To further complicate matters, the symptoms of Zika are similar to two other flaviviruses, dengue fever and Chikungunya.

Several speakers reiterated the important steps everyone can take to reduce the spread of Zika virus in Southern California. These preventive measures include using screens on all open windows, wearing effective bug repellant when outside, and most importantly removing all standing water both inside and outdoors, and scrubbing any containers that have contained standing water in order to remove mosquito eggs left behind. It was also stated that since there is occurrence of sexually transmitted Zika, condoms should be used by at-risk people.



Nick Goeden, PhD candidate in the Bonnin lab, performs an ex vivo perfusion of the mouse placenta to measure the effects of maternal inflammation on placental serotonin production

Key mutations may worsen hearing loss from chemo drug

By Cristy Lytal

The chemotherapy drug cisplatin can kill cancer, but it can also kill the sensory cells of the inner ear — causing permanent hearing loss. This hearing loss is likely to be more severe in individuals with Cockayne syndrome, according to a new study on the cover of *The Journal* of *Neuroscience*.

In the study, USC Stem Cell researchers Robert N. Rainey, PhD, and Sum-yan Ng, PhD, from the laboratory of Neil Segil, PhD, demonstrated that cisplatin causes more acute hearing loss in mice with the equivalent of Cockayne syndrome.

In humans, Cockayne syndrome can cause hearing loss as well as eye abnormalities, shortness, skeletal deformities, microcephaly, nervous system underdevelopment, an appearance of premature aging and sun sensitivity.

In another study published in *The Journal of Neuroscience* last year, the researchers established a new strain of mouse that models Cockyane syndrome-associated hearing loss.

The disorder results from muta-

tions in one of two genes — called Csa and Csb — involved in repairing DNA damage. Cells can sustain DNA damage from environmental stresses ranging from the sun's ultraviolet radiation to toxic chemicals such as chemotherapy drugs.

Like similar chemotherapy drugs, cisplatin damages the DNA in cells, interfering with their ability to proliferate. This interference is expected to have the most pronounced effect on the most proliferative cells, such as cancer cells, and the least effect on non-dividing cells, such as the sensory cells of the inner ear.

However, in practice, cisplatin causes significant death of both quickly dividing cancer cells and the non-dividing sensory cells of the inner ear — making it an effective chemotherapy drug with a common side effect, severe hearing loss. Young children undergoing cisplatin chemotherapy appear to be particularly vulnerable, and consequently experience developmental delays as a result of early hearing loss.

Like humans with Cockayne syndrome, mice with mutations in

Csa and Csb can't efficiently repair DNA damage, leaving them particularly vulnerable to permanent hearing loss from cisplatin. In the study, mice with the Csa mutation fared somewhat worse than mice with the Csb mutation.

Both mutations interfere with what is known as transcription-coupled DNA repair, or TCR. While there are many different ways that cells can repair DNA damage, TCR appears to play a particularly important role in protecting the sensory cells of the inner ear from cisplatin. Variation between individuals in the effectiveness of TCR may help explain the differing susceptibility to hearing loss due to environmental stress and aging.

"Our cells have several biochemical pathways that they use to repair DNA. Our findings suggest that one particular pathway, transcriptioncoupled DNA repair, is a major force for protecting the cells of the inner ear from cisplatin," said Segil. "This leaves patients with Cockayne syndrome particularly vulnerable to severe hearing loss as a side



Image courtesy of the

After treatments with cisplatin, the sensory hearing cells (green) of a one-dayold mouse show damaged DNA (red).

effect of taking this chemotherapy drug."

Additional authors include Juan Llamas from USC and Gijsbertus T.J. van der Horst, PhD, from the Erasmus University Medical Center in the Netherlands.

Choi Family gift inspires stem cell scientists to 'Return to the Beginning'

By Cristy Lytal

wenty-five years ago, philanthropists Kin-Chung and Amy Choi marked the occasion of their 25th wedding anniversary by purchasing the sculpture "Return to the Beginning," by renowned Taiwanese artist Yuyu Yang. Now in honor of their 50th wedding anniversary, they have donated the sculpture to grace the lobby of the Eli and Edythe Broad Center for Regenerative Medicine and Stem Cell Research at USC.

"With the establishment of USC Stem Cell, I am inspired by your goal to reduce patient suffering and enhance quality of life," Kin-Chung Choi said. "Amy and I would like to pass along this beautiful sculpture to USC Stem Cell in hopes that it inspires creativity in your medical pursuits."

At a dinner reception on June 10, USC's stem cell research center director Andy



From left, philanthropists Kin-Chung Choi, Amy Choi and USC's stem cell research center director Andy McMahon stand with a sculpture donated by the Choi Family Foundation.

improve their understanding of diseases and to accelerate the discovery of potential therapeutic drugs. During the dinner reception, Justin Ichida, PhD, director of the Choi Family Therapeutic Screening Facility, shared how the facility has already identified drug leads for amyotrophic lateral sclerosis (ALS), also known as Lou Gehrig's disease, and brought significant new funding to USC though an academicpharmaceutical company partnership between the Ichida laboratory and Sanofi. More recently, the Choi family made visionary gifts to support the research and education mission of USC's stem cell research center, and to bring the 2019 International Society for Stem Cell Research (ISSCR) Conference to Los Angeles. The family has also commissioned a new art work to be displayed in USC's stem cell research center.

the artist described as a "newborn phoenix or as a swirling stream of light and air particles at the very beginning of the universe." Ying observed how both the sculpture and stem cells represent a "Return to the Beginning," and how art can inspire scientific creativity.

Before unveiling the sculpture, Kin-Chung Choi described his motivation for giving it a new home in USC's stem cell research center: "One thing that Professor Qi-Long Ying said that was very inspiring was that science and philosophy are very similar. Professor Andy McMahon said that stem cells look very artistic, very pretty, very colorful — like art, almost. It's very admirable: these scientists not only know about science; they also appreciate science, art and philosophy. And so I'm very happy to have this opportunity to donate this sculpture to the stem cell center. If you ever need a break or run into a roadblock, hopefully you can come down here and feel the qi of the sculpture, and it will give you a little inspiration for your research."

Keck Medicine takes AIM at operational alignment

By Mary Dacuma

USC was selected by the Association of Academic Health Centers International (AAHCI) to participate in the Aligned Institutional Mission (AIM) program.

The multi-year program is designed to better align clinical care, education, and research at academic health centers with guidance and support from the AAHCI's planning tools and peer consultants. In the fall, Keck Medicine will host a team of emeriti leaders from academic health centers like University of Pennsylvania and Washington University.

"We are looking forward to hosting these leaders and receiving their advice," said Randolph Hall, PhD, vice president of research at the USC. "In preparation we are developing strategies toward advancing interprofessional education, mission alignment, population health, knowledge sharing and impact on patients, students, faculty and alumni, seeking input from key stakeholders from throughout USC in the process."

Professor leads push to craft stroke rehabilitation guidelines

By Breanne Grady

E very year, approximately 800,000 Americans suffer a stroke, with more than 80 percent surviving and living for decades with some degree of disability.

For the first time ever, the

the survivors' quality of life, so the time is right to review the evidence in this complex field and highlight effective and important aspects of rehabilitation."

Winstein served as the chair of an expert writing team that put together these guidelines, which was published May 4 in the journal Stroke. The associations recommend that stroke patients seek treatment in an in-patient rehabilitation facility (IRF) as opposed to a skilled nursing facility, when possible. "There is considerable evidence that patients benefit from the team approach in a facility that understands the importance of rehabilitation during the early period after a stroke," said Winstein, who also holds a joint appointment in the Department of Neurology, Keck School of Medicine of USC and is the director of the Motor Behavior and Neurorehabilitation Lab.

McMahon, PhD, welcomed friends, family and faculty and thanked the Chois for their leadership in supporting stem cell research and many other transformative endeavors at USC.

"It's very special that the Choi family would celebrate their 50th wedding anniversary by coming and visiting the center and donating a beautiful piece of art," McMahon said. "I'm exceptionally grateful to the Choi family for all the support that they've given to this center that's been truly transformative since I came here four years ago."

In 2014, the Choi family gave a generous gift to establish the Choi Family Therapeutic Screening Facility, which enables investigators from USC and beyond to Qi-Long Ying, PhD, associate professor of stem cell biology and regenerative medicine, and cell and neurobiology, focused his remarks on Yuyu Yang's stunning sculpture, which American Heart Association/ American Stroke Association (AHA/ASA) has issued evidence-based strategies to help improve outcomes for adult stroke survivors.

This "how-to" manual recommends a comprehensive post-acute care strategy in the aftermath of a stroke.

"Previous guidelines have focused on the medical issues involved in the initial management of stroke, but many people survive a stroke with some level of disability," said Carolee Winstein, PhD, PT, professor at the USC Division of Biokinesiology and Physical Therapy and lead author of the guidelines. "There is increasing evidence that rehabilitation can have a big impact on

Keck Medical Center to comply with End of Life Option Act

By Douglas Morino

Keck Medical Center of USC will comply with a new state law that permits terminally ill patients to request and administer medication to end their life.

The End of Life Option Act allows physicians to prescribe the powerful medication under a set of strict guidelines that must be followed by health care professionals and the patient.

Keck Medical Center physicians will have the option to opt out of prescribing the medication to a patient and instead refer them to another physician, said palliative medicine physician Sunita Puri, MD, assistant professor of clinical medicine at the Keck School of Medicine of USC.

"Our medical center seeks to respond to this issue in a compassionate way, not only for our patients and families, but for our colleagues and staff," Puri said during a Town Hall on June 6 at Aresty Auditorium, where the End of Life Option Act was discussed with physicians.

California's End of Life Option Act took effect on June 9. California follows other states with so-called Death with Dignity laws, including Oregon, Washington and Vermont. Oregon in 1997 became the first state to enact a physician-assisted dying law. Since the law took effect, 1,545 patients have been prescribed the medication and 991 have died from ingesting the medications, according the data published in February by the Oregon Health Authority.

Any Keck Medical Center physician who chooses to opt out of a patient's request will be supported by their colleagues and hospital leadership, Puri said.

"This act raised concerns among many people and that's understandable," Puri said. "Physicians are completely protected if they decide to opt out."

The medication, secobarbital, can only be prescribed to patients under rules set by state law. In order to receive a prescription, patients must be older than 18 and diagnosed with an incurable and irreversible disease that has been medically confirmed and will, within reasonable medical judgment, result in death within six months, according to state law. The medication will only be available to established Keck Hospital and USC Norris patients per hospital policy. Patients must make two oral requests 15 days apart and a written request to the attending physician, by state law. The medication cannot be ingested by a patient on Keck Medical Center property, although the initial request can be made if the patient is hospitalized at Keck Medical Center, according to hospital policy.

The state law requires physicians, prior to prescribing the medication, to give advice to the patient on other end of life care options and refer them to a consulting physician. The consulting physician must be independent from the attending physician and not be related to the patient. A referral to a mental health specialist must also be made, if necessary.

There will be mandatory trainings for physicians willing to serve as attending or consulting physicians.



The "UV radiation Resistance Associated Gene" is a tumor suppressor for skin cancer.

'Sunscreen' gene may help protect against skin cancer



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Stan Kieffer, a cancer survivor, speaks during the USC Norris Comprehensive Cancer Center's 26th annual Festival of Life celebration, held June 4 at Pappas Quad.

FESTIVAL: Cancer survivors shared stories of diagnosis, finding right center for care

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to find the best care for her husband. At the end of her speech, she introduced Gordon to enormous applause.

Stan Kieffer shared his inspirational story with the audience, starting from his insistence to a doctor that he was certain there was something wrong with him even when the doctor said he was fine, to the discovery that he had cancer at USC Norris. Kieffer emphasized that when facing a possible cancer diagnosis, people should be their own advocate.

"You know your own body," he said. "If you know something's wrong with you, don't be afraid to discover the truth because if you figure out what's wrong with you, then you can do something about it."

Mary Yamashita, MD, assistant professor of clinical radiology at the Keck School of Medicine of USC, also spoke about research and advances into better diagnosis of breast cancer, especially among women with dense breasts, a condition that creates challenges with diagnosis through mammogram. She described a new technique that uses 3-D ultrasound to get better imaging of abnormalities that may not be detected in a mammogram.

While there were many first-time attendees at the event, there were many more who have been coming for many years. Survivor Rafael Martinez has been attending since he beat colon cancer 13 years ago. The back of his custom-made shirt said "Thank you USC Norris for 13 years strong" and this strength showed in his vitality and enthusiasm. He credits the doctors at USC Norris for his very existence.

"I've been coming here for 13 years. It means the world to me," he stated, the emotion clear in his voice. "I wouldn't be here if I hadn't had my surgery here."

CONFERENCE: Event will benefit patients and stem cell researchers, Varma says

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of Medicine of USC and director of the USC Roski Eye Institute, underscored how the conference will benefit not only stem cell researchers, but also the patients they will ultimately serve.

"We are honored to welcome the international community of leading stem cell researchers to the 2019 ISSCR Conference in Los Angeles," he said. "By bringing together these exceptional scientific minds, the conference will serve as an incubator for new ideas and research collaborations, which will eventually translate into better, more creative who helped bring the conference to Los Angeles.

"I would like to acknowledge the key role of Mayor Eric Garcetti's office and the Choi family in our successful bid to put L.A. on the major science meeting circuit," he said. "We are delighted to extend our warmest welcome to the wide range of visionaries and leaders who will be attending this event, which will be a great opportunity to highlight research at USC and our sister institutions across the region."

Eli Broad, who with his wife Edythe has funded three stem cell centers that bear their names at USC, UCLA and the University of California, San Francisco, added: "California has become the world leader in stem cell research, with some of the most promising research being conducted in Los Angeles. Edye and I look forward to the increased knowledge and scientific collaborations that will come out of the 2019 International Society for Stem Cell Research."

By Zen Vuong

A new USC-led study identified a "sunscreen" gene that may help stave off skin cancer.

The researchers found that the "UV radiation Resistance Associated Gene" is a tumor suppressor for skin cancer, which is the most common form of cancer in the United States. Melanoma is the deadliest skin cancer. In fact, melanoma rates have doubled over the last three decades, according to the Centers for Disease Control and Prevention.

"If we understand how this UV-resistant gene functions and the processes by which cells repair themselves after ultraviolet damage, then we could find targets for drugs to revert a misguided mechanism back to normal conditions," said Chengyu Liang, MD, PhD, the study's senior author and an associate professor of molecular microbiology and immunology at the Keck School of Medicine of USC. The study was published in *Molecular Cell* on May 19. More than 90 percent of melanoma skin cancers develop because of cell damage from exposure to UV radiation. Melanoma kills about 10,130 people annually, according to the American Cancer Society.

The researchers used data from 340 melanoma patients who participated in The Cancer Genome Atlas. The scientists gave a UV shot to cells carrying the normal UV-resistant gene and cells carrying defective copies of it. After 24 hours, cells carrying normal versions of the gene had repaired more than 50 percent of the UV-induced damage. In contrast, the defective samples repaired less than 20 percent of the damaged cells.

The researchers were able to show a correlation with increased cancer risk. Their study did not definitively say diminished levels or mutant copies of the UV-resistant gene were causes for skin cancer development. therapies for patients."

Hong Kong-based businessman and philanthropist Kin-Chung Choi has been a strong supporter of USC Stem Cell, and he extended his "thanks to USC for giving me this rare opportunity to support stem cell researchers from all over the world."

As chair of the executive committee of USC Stem Cell, Andy McMahon, PhD, expressed his thanks to those

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Jackiewicz emphasized Keck's position of being the preferred provider of complex care and its strategy of building networks through affiliation, partnership and acquisition.

"We are developing our network of networks," Jackiewicz said. "Affiliations with PIH Health and Hoag coupled with expansion into outlying markets of Bakersfield, Lancaster and Las Vegas will help ensure growth and sustainability of our health system."

Attendees engaged in a questionand-answer session following the presentations, with reactions ranging from appreciation for the depth of information shared to questions about school funding, recruitment and clinical growth.

In addition to full capacity at Aresty, hundreds of employees viewed the live stream of the address online.

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:



Peter Conti is director of the Molecular Imaging Center.

Molecular Imaging Center opens new PET cGMP cyclotron facility

THE USC MOLECULAR IMAGING CENTER (MIC) on the Health Sciences Campus recently installed and began operation of a GE PETrace cyclotron in a newly renovated good manufacturing practices (GMP) compliant facility. This advanced imaging technology center is now available to Keck Medicine faculty and staff as well as USC internal and external staff. The mission of the new cyclotron facility is to provide expertise in the design, synthesis, and production of radioactive and stable agents for imaging of various disease and research applications. The MIC has a comprehensive radiopharmacy, chemistry, and translational imaging program focused on the development of new radiotracers and other molecular imaging probes for use in interdisciplinary biomedical research and clinical imaging. - Amanda Busick



Inderbir Gill speaks during a live surgery symposium.

USC Institute of Urology hosts live surgery symposium

IN ADVANCE OF THE AMERICAN UROLOGIC ASSOCIATION'S (AUA) annual meeting, the USC Institute of Urology hosted a live surgery symposium recently. Titled "L.A. Live," the event featured eight live surgery transmissions from Keck Hospital into Aresty Auditorium and an adjacent meeting room on the Health Sciences Campus, both filled to capacity with more than 200 surgeons from 23 countries, including 60 from China. Surgeons came to learn cutting-edge surgical and robotic techniques, many of which have been pioneered by USC urologic surgeons. Speakers included surgeons from the world's elite medical institutions, including editor-in-chiefs of some of the world's top urologic journals. — Mary Dacuma

Physicians, staff sign new Keck Commitment pledge

By Douglas Morino

Physicians, staff and nurses from across Keck Medicine of USC paused recently to sign and adopt the Keck Commitment, a set of standards that will guide professional behavior across the academic medical enterprise.

The Keck Commitment is based on three pillars: excellence, judgment and respect. Respect is the cornerstone of the commitment and guides the pursuit of excellence in the workplace. These pillars will define the workplace culture of Keck Medicine for years to come.

"The Keck Commitment is an unwavering belief in the collective empowerment that comes when civility is fostered across our health care organization, said Tom Jackiewicz, MPH, senior vice president and chief executive officer. Keck Medicine.

"The Keck Commitment is an institutional promise



Administrators and staff sign the Keck Commitment.

to promote professionalism in the workplace, regardless of what challenges come our way," Jackiewicz said. "This is a commitment to ourselves, each other and our patients."

The Keck Commitment was developed collaboratively by the Committee of Champions - a multidisciplinary group of professionals across Keck Medicine - and based on ideas shared by staff on the Art Wall during Professionalism Week in October.

The project to create a

set of professional standards grew out of discussions among Keck Medicine physicians and administrators regarding the benefits of strengthening a professional culture across the organization.

During signing events held at Keck Hospital of USC, USC Norris Cancer Center and USC Verdugo Hills Hospital in June, staff signed their names under the commitment, pledging to uphold the professional standards of Keck Medicine of USC.

Meet the Faculty: Joseph T. Rodgers, PhD, stem cell scientist and amateur acrobat

nside the laboratory, Joseph T. Rodgers, PhD, assistant professor of stem cell biology and regenerative medicine, uncovers the signals that instruct stem cells to build and repair tissue. Outside the laboratory, he builds his own muscle tissue through aerial and acroyoga.

"I'm also known for doing handstands and other minor acrobatic feats," he said. "I have many, many photos of me doing handstands in front of landmarks."

The Hollywood sign, Yosemite's Half Dome, Mount Rushmore and the Golden Gate Bridge have all inspired such inversions.



Joseph Rodgers performs a handstand on the beach.

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Study reveals high-calorie cravings after birth control regimen

CAN BIRTH CONTROL GIVE YOU THE MUNCHIES? USC researchers conducted the first neuroimaging study to evaluate the effect of hormonal birth control on food motivation. Participants had two brain imaging sessions - one prior to receiving Depo-Provera and one eight weeks later. At each session, they were shown random images from three categories: non-edible objects, healthy foods and high-calorie foods. "The images showed increased activity in the areas of the brain that motivate you to eat," said Katie Page, MD, chair of Maternal-Child Health, USC Diabetes and Obesity Research Institute. "Treatment with Depo-Provera for eight weeks was associated with greater activation in brain areas involved in reward processing when participants were viewing pictures of high-calorie comfort foods." These findings can help clinicians better counsel women using Depo-Provera to prevent both unwanted weight gain and unintended pregnancies. — Mary Dacuma

Joseph Rodgers holds himself horizontally on a street sign.

Get to know the faculty members on the Health Sciences Campus and beyond! Do you have a special skill or interest that nobody expects? Is there a professor whose hidden talent should be celebrated? Let us know by emailing hscnews@usc.edu with your nominations for our new Meet the Faculty feature and you might see them in a future HSC News issue.

HSC News

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