

7 faculty among most cited researchers

By Mary Dacuma

Sir Isaac Newton once referred to the process of discovery as “standing on the shoulders of giants,” meaning that revolutionary science and innovation is built on the work of previous researchers. Some researchers are more impactful than others. One measure of this impact is the number of times a particular researcher’s work is cited, thus serving as a starting point for yet another discovery.

Thomson Reuters generates an

April Armstrong was lauded for being a highly valued author in dermatology. **Read more on page 2.**

annual Highly Cited Researchers list to fully assess those who have made the most foundational contributions to their field. To do this, they first pull the most highly cited papers in each scientific field, then count the number of these papers attributed to each

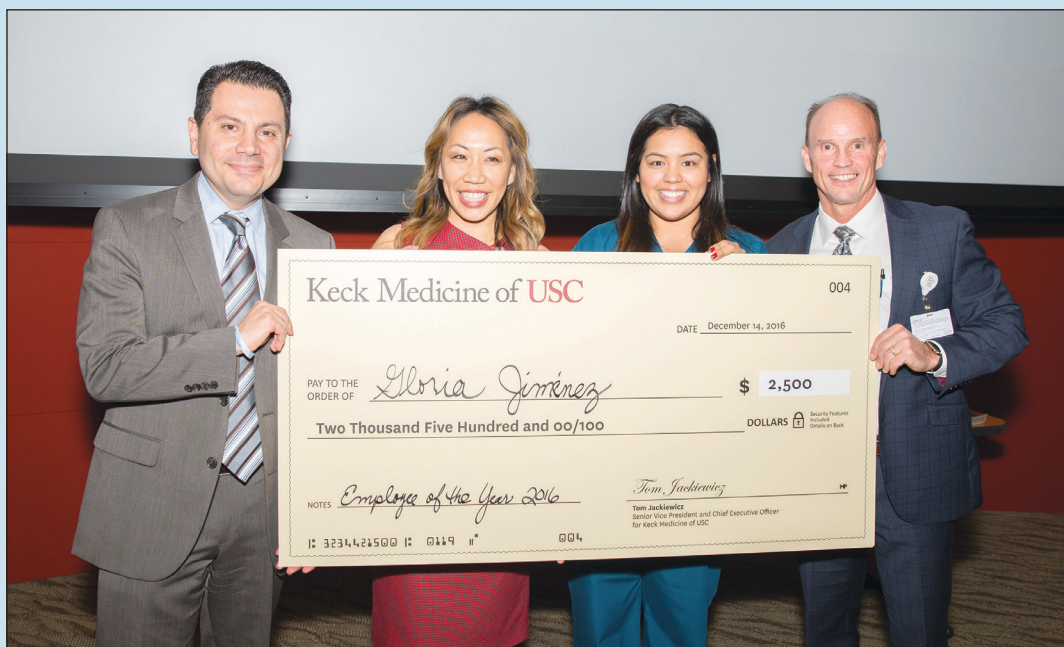
author. In total, there are 3,000 authors across 21 different scientific fields. This year, the Keck School of Medicine of USC is proud to lay claim to seven of those researchers.

“This acknowledgement of the Keck School of Medicine’s excellence in research is particularly significant as this research is vital to new disease and treatment discoveries, which ultimately give our patients — and patients around the world — hope for improved outcomes and cures for disease,” said

Rohit Varma, MD, MPH, dean of the Keck School of Medicine and director of the USC Gayle and Edward Roski Eye Institute. “It is a testament to the Keck School’s growing prominence as a research-intensive academic medical center and I am delighted for my colleagues who have made this important list.”

The list includes:
Arthur Toga, PhD, Provost Professor of Ophthalmology — Toga currently

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Ricardo Carrasco III

GREAT WORK: From left, Krist Azizian, chief pharmacy officer; Kim Le, director of pharmacy services; Gloria Jimenez, senior pharmacy tech; and Rod Hanners, COO of Keck Medicine of USC and CEO of Keck Medical Center. Jimenez was chosen as the employee of the year for Keck Medical Center and was honored Dec. 14.

USC, NASA tracking impact of fungi in space on astronauts

By Michele Keller

Could microbes found on the International Space Station affect astronauts’ health in long-term space travel?

As NASA sharpens its focus on Mars, USC School of Pharmacy researchers are working with the NASA Jet Propulsion Laboratory to provide answers to that question.

NASA’s six-part “Microbial Tracking” investigation seeks to inventory and characterize micro-organisms found in the air and on surfaces of the International Space Station. Astronauts on the station collect samples and send them back to Earth, allowing scientists to better understand how the stresses of microgravity and the enhanced radiation conditions in space affect the microbial flora on the International Space Station.

“NASA is trying to see whether we can go to Mars and beyond,” explained Jet Propulsion Laboratory senior research scientist Kasthuri “Venkat” Venkateswaran, PhD, principal investigator for the experiment. “In a closed environment, people have to inhale and exhale what they breathe. We need to know what we are dealing with, so we can come up with an appropriate countermeasure to mitigate problems. We need to know all of this because you don’t have 9-1-1 to call to get them back.”

USC has been involved in the project since 2015. Clay C. C. Wang, PhD, professor of pharmacology and pharmaceutical sciences and chemistry at the USC School of Pharmacy and the USC Dornsife College of Letters, Arts and Sciences, originally collaborated with Venkateswaran on the launch of

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Expert discusses progress in treating, preventing onset of Alzheimer’s disease

By Zen Vuong

Scientists at the Alzheimer’s Therapeutic Research Institute (ATRI) of the Keck School of Medicine of USC have enrolled more than 1,000 people in their international clinical trials and are still seeking more participants.

Staff at the San Diego-based neurological diseases hub and their partner sites are screening thousands of people for eligibility in one of six

clinical trials, and preparing to enroll individuals in two new studies.

Paul Aisen, MD, director of ATRI and a professor of neurology at the Keck School of Medicine, said his team is working to accelerate progress toward finding an effective therapy for Alzheimer’s. He shares his thoughts on a disease that affects more than 5 million Americans.



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Paul Aisen

Humayun elected as NAI fellow

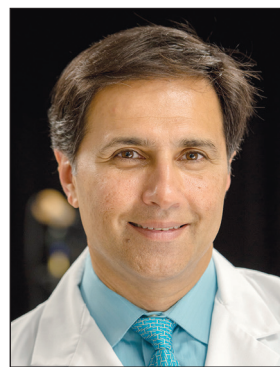
By Sherri Snelling

Mark S. Humayun, MD, PhD, co-director of the USC Gayle and Edward Roski Eye Institute and director of the USC Institute for Biomedical Therapeutics, has been elected to the National Academy of Inventors (NAI) 2016 Fellows Program, the highest professional distinction accorded solely to academic inventors. Humayun will attend the NAI Fellow induction ceremony at the John F. Kennedy Presidential Library and Museum in Boston next April.

Founded in 2010, NAI Fellows are nominated by their peers and chosen based on their prolific contribution in creating or facilitating outstanding inventions that have made a tangible impact on quality of life, economic development and the welfare of society.

Humayun merges medicine and engineering to focus

See **FELLOW**, page 2



Mark Humayun

Samet receives 2016 Fries Prize for Improving Health

Distinguished Professor Jonathan Samet, MD, MS, director of the USC Institute for Global Health, Flora L. Thornton Chair of Preventive Medicine, received the 2016 Fries Prize for Improving Health at the Centers for Disease Control and Prevention Nov. 17 for his pioneering research and decades of advocacy on the negative impacts of air pollution on health.

Trained in internal medicine, pulmonary medicine and epidemiology, Samet has applied his broad background to identify and address the effects of indoor and outdoor air pollution on the health of children and adults. He is recognized for his research on the health risks of inhaled pollutants — particles and ozone in outdoor air and indoor pollutants including secondhand smoke and radon — and his significant contributions to improve the environment.

“Dr. Samet has dedicated his career to protecting people from the dangers of air pollutants and for that we owe him

See **PRIZE**, page 3

Research from the Department of Preventive Medicine was cited in a recent Surgeon General report on e-cigarettes. **Read more on page 3.**

Keck Medicine expanding presence in Mexico

Neurological health addressed

By Hope Hamashige
Giselle Petzinger, MD, associate professor of neurology (clinical scholar) at the Keck School of Medicine of USC, recently organized Mexico's first international symposium on lifestyle and neurological disorders. The event brought together 14 USC faculty and staff members from 11 academic departments and seven Mexican researchers specializing in neurological health and drew an audience of 600 doctors and medical students from across Mexico.

The symposium was the inaugural event sponsored by the Don Roberto Gonzalez Barrera (DRGB) Foundation, which was founded by Roberto Gonzalez's daughter, Bertha Gonzalez, after her father's passing in 2012. Roberto Gonzalez was a patient of Petzinger's and a passionate supporter of her research, which focuses on non-pharmacological interventions for Parkinson's patients.

One of the foundation's goals has been to share the results of Petzinger's research, which it continues to support through the USC Roberto Gonzalez Parkinson's Research Fund, with the medical community in Mexico.

Noting that several top scholars at USC conduct research on the links between lifestyle choices and cognitive health, the symposium was expanded beyond Parkinson's disease to include discussions on many different aspects of brain health. In addition to the faculty from USC, the speakers

included scholars from the medical school at the National Autonomous University of Mexico (UNAM) and Mexico's national institutes of rehabilitation, aging and neuroscience and neurosurgery. It took place at the National Institute of Rehabilitation in Mexico City.

Petzinger said that the aim was to discuss the data that has been collected in research on lifestyle and the brain and to share how new information about lifestyle and brain health is informing the way some doctors are treating their patients in the clinic.

She noted that the symposium, which drew far more attention and attendance than the organizers had anticipated, created new opportunities for collaboration between USC's researchers and their counterparts in Mexico.

"It was a wonderful experience and I think it will open up important collaborations in the future," Petzinger said.

Angela McCracken, director of the USC Mexico office, added that the subject had broad appeal in Mexico, bringing a large crowd of the top academics from throughout the country.

"Thanks to Dr. Petzinger's passion for brain health and the DRGB Foundation's vision, USC has been able to partner with four of Mexico's most prestigious research institutions and accomplish the single largest academic event between USC and Mexico," McCracken said.



Ricardo Carrasco III

From left, Anthony Bailey, USC's vice president for strategic and global initiatives; Tom Jackiewicz, senior vice president and CEO of Keck Medicine of USC; Mexico City Mayor Miguel Angel Mancera; and José Armando Ahued, Mexico City's secretary of health, clap after signing a memorandum of understanding, Dec. 9 on the Health Sciences Campus.

New pact promotes exchanges

By Cynthia Smith
A new agreement between the Keck School of Medicine of USC and the Ministry of Health in Mexico City will facilitate research and academic exchanges.

Mexico City Mayor Miguel Ángel Mancera and José Armando Ahued, secretary of health, attended the signing ceremony with Thomas Jackiewicz, MPH, senior vice president and CEO for Keck Medicine of USC, and Rod Hanners, chief operating officer for Keck Medicine of USC and CEO for Keck Medical Center of USC.

"We look forward with great excitement to this latest chapter in

the ongoing story of USC, Mexico City and the power of collaboration," Jackiewicz said.

The number of degree-seeking students at USC from Mexico has more than doubled in the past five years, while new partnerships with leading Mexican universities have enriched academic scholarship at USC and in Mexico.

USC's broad-reaching academic partnerships with Mexican institutions have addressed several issues, including drug abuse in Mexico City, aging and health among Mexico's senior citizens and the alleviation of poverty in Yucatán.

FELLOW: Humayun known as co-creator of Argus II implant

Continued from page 1

on developing treatments for the most debilitating and challenging eye diseases and holds more than 100 issued patents and patent applications, most in the area of bioimplants for ophthalmology. He is a USC professor with joint appointments in ophthalmology, cell and neurobiology at the Keck School of Medicine of USC, and in biomedical engineering at the USC Viterbi School of Engineering and holds the inaugural Cornelius J. Pings Chair in Biomedical Sciences.

Humayun's most recognized innovation is his co-creation of the Argus II, manufactured by Second Sight Medical Products Inc., the only FDA approved retinal prosthesis system that allows those with certain blinding diseases to regain some useful vision. Earlier this year, Humayun received the prestigious National Medal of Technology and Innovation, the nation's highest award for technology achievement, from President Barack Obama.

Humayun will be one of 582 NAI Fellows who represent universities, government agencies and nonprofit research institutions. He is among eight NAI Fellows from USC, including 2016 inductee Shri Narayanan, PhD, professor of electrical engineering and computer science in the USC Viterbi School of Engineering's Ming Hsieh Department of Electrical Engineering. Narayanan also holds secondary appointments as professor of linguistics at the USC Dornsife College of Letters, Arts and Sciences and professor of pediatrics at Keck School. Humayun also joins USC President C. L. Max Nikias, PhD, who became a NAI Fellow in 2012.

"Mark Humayun is such



Ryan K. Morris, National Science & Technology Medals Foundation

Mark Humayun, MD, PhD, shakes hands with President Barack Obama after receiving the National Medal of Technology and Innovation during a ceremony held May 19, 2016, at the White House.

a deserving recipient of this fellowship from the National Academy of Inventors," Nikias said. "In advancing technology to change medicine, Professor Humayun does not see boundaries, but rather possibilities. He exemplifies American ingenuity and has dedicated his career to preventing and reversing blindness through technological innovation."

"I am honored to be selected a Fellow with the National Academy of Inventors," Humayun said. "My passion has been to merge the power of technology and engineering to create medical breakthroughs. Often these innovations, such as the Argus II which took more than 20 years from concept to FDA approval, come after long periods of research and development and through collaborating with many talented students and colleagues but the results in changing patient lives is

worth the wait and hard work. The environment at USC allows me to surround myself with very talented individuals who help make these ideas a reality."

"Mark embodies the spirit of innovation and dedication at the USC Roski Eye Institute by pushing the envelope to create biomedical solutions that will make a transformative difference in people's lives and we congratulate him on this latest honor," said Rohit Varma, MD, MPH, dean of the Keck School and director of the USC Roski Eye Institute. "Restoring vision and preventing blindness is Mark's personal 'moonshot' and a mission all the physicians and scientists at USC Roski Eye Institute share. We're proud to have him conducting his research, creating his technological breakthroughs and treating patients at USC and also benefiting patients worldwide."

Professor lauded as highly valued author

By Hope Hamashige
April Armstrong, MD, MPH, has recently published several articles in journals such as *JAMA Dermatology* and the *Journal of the American Academy of Dermatology*, earning her the distinction of being one of the most highly valued authors in her field. The rankings are compiled by *JAMA Dermatology* and are based on the number of recent publications as well as the quality of the publications.

Though at first glance, Armstrong's primary research interests, which are psoriasis and telemedicine, might appear unrelated, there is a common thread.

"I am interested in improving the quality of care for psoriasis patients and in utilizing tools, like telemedicine, to improve care for all dermatology patients," said Armstrong, associate professor of clinical dermatology and associate dean for clinical research at the Keck School of Medicine of USC.

Armstrong has conducted research on the safety and efficacy of biologics, a relatively new class of drugs for treating psoriasis, a skin condition that can be both physically and psychologically challenging for millions of sufferers. She also examines overall treatment patterns for psoriasis patients with the goal of identifying gaps in patient care.

One of the gaps, she said, comes from the fact that, although the new treatments are improving the quality of life for many patients, access to them still is not equal. Gaps in patient care also are the result of patients ending treatment because it hasn't been effective or because their provider hasn't offered them the full range of treatment options.

Armstrong also has been using telemedicine since she was a resident and "saw" patients on Nantucket Island, who normally would have to take a ferry to Massachusetts to see a dermatologist. Since then, she has seen many patients who cannot easily visit a dermatologist because they live in far-flung rural areas or because they are in prison.

Since coming to Keck Medicine of USC, Armstrong has expanded her telemedicine research to include people for whom making a doctor's appointment is not as difficult, but still may require they take time off work, in an effort to understand if these patients will receive more regular care and follow-up care if it is more convenient.

Surgeon General report on e-cigarettes cites Samet

By Larissa Puro

The United States Surgeon General on Dec. 8 released a new report calling e-cigarettes “a major public health concern,” which included input from a professor at the Keck School of Medicine of USC.

“E-Cigarette Use Among Youth and Young Adults: A Report of the Surgeon General” is the first comprehensive review on this public health challenge from the nation’s highest public-health authority.

The report provides insights into youth e-cigarette use, which has more than tripled since 2011, and outlines dangers to which young people are uniquely vulnerable.

While recognizing the need for further research, the report finds that the aerosol inhaled by e-cigarette smokers may cause mood disorders, deficits in attention and cognition, and addiction to nicotine — and may also be harmful secondhand to non-users.

USC’s Jonathan Samet, MD, MS, distinguished professor and chair of preventive medicine and director of the USC Institute for Global Health, contributed to the development of the chapter on e-cigarette policy. Samet is an expert in tobacco and public health

and the Flora L. Thornton Chair of Preventive Medicine at the Keck School of Medicine of USC. He was the senior scientific editor of the 2014 surgeon general’s report “The Health Consequences of Smoking — 50 years of progress.”

The new report on e-cigarettes extensively cites research by USC faculty in the Department of Preventive Medicine. Their most recent study published in *JAMA* in November found that adolescents who regularly vape have a higher risk of more frequent and heavy smoking six months later.

Research is well underway at USC and other institutions to better understand health effects of e-cigarettes. However, it will be years before scientists can fully understand the risks because the products and patterns of usage are changing rapidly. In the meantime, Samet said he urges people not to assume that e-cigarettes are safe.

“The scientific story is still incomplete for e-cigarettes and we are living in an age of misinformation,” Samet said. “The benefits of e-cigarettes for harm reduction and smoking cessation have been exaggerated by some, and I concur with the surgeon general on the need for protecting adolescents and young adults from using tobacco products.”

PRIZE: Samet’s work led to policy changes

Continued from page 1

a debt of gratitude,” said James F. Fries, MD, professor emeritus of medicine at Stanford University and chairman of the James F. and Sarah T. Fries Foundation, which in partnership with the CDC Foundation awards the annual Fries Prize for Improving Health. “His research and policy leadership have directly contributed to the avoidance of hundreds of thousands of premature deaths and hospitalizations.”

Beyond his three decades of leadership and major contributions in the area of tobacco control, Samet and his colleagues have developed innovative approaches to quantifying the health effects of air pollution. This key evidence has already led to changes in public policy responsible for improved air quality standards that will lead to better health for millions of people around the world.

“I am deeply honored to receive the 2016 Fries Prize,” Samet said. “My work to improve health has been based on the premise that researchers and their findings can make a difference. Looking back over the four decades of my career, I am proud to say that, along with my many colleagues, our research on the risks of environmental pollution has led to enormous gains in environmental quality and health.

“I also am honored to join an incredible list of prior winners, including such

California notables as Lester Breslow and Jonathan Fielding and Surgeon General C. Everett Koop, whom I worked with on the landmark 1986 Surgeon General’s report on involuntary smoking.”

Rohit Varma, MD, MPH, dean of the Keck School of Medicine of USC and director of the USC Gayle and Edward Roski Eye Institute, added: “Jonathan Samet has spent decades working to improve the air quality standards by conducting research and developing policy standards. He has been at the forefront of the fight to reduce the risk of inhaled pollutants. This dedication has led to improvement in the health and well-being of our planet in immeasurable ways. The Keck School of Medicine of USC is very proud of him as he receives this latest honor, and I look forward to the great things that he will continue to accomplish in his already illustrious career.”

The Fries Prize for Improving Health recognizes an individual who has made major accomplishments in health improvement with emphasis on recent contributions to health in the United States, and with the general criteria of the greatest good for the greatest number. It is intended for an individual who has done the most to improve health. The Fries Prize for Improving Health award is \$60,000.

ASTRONAUTS

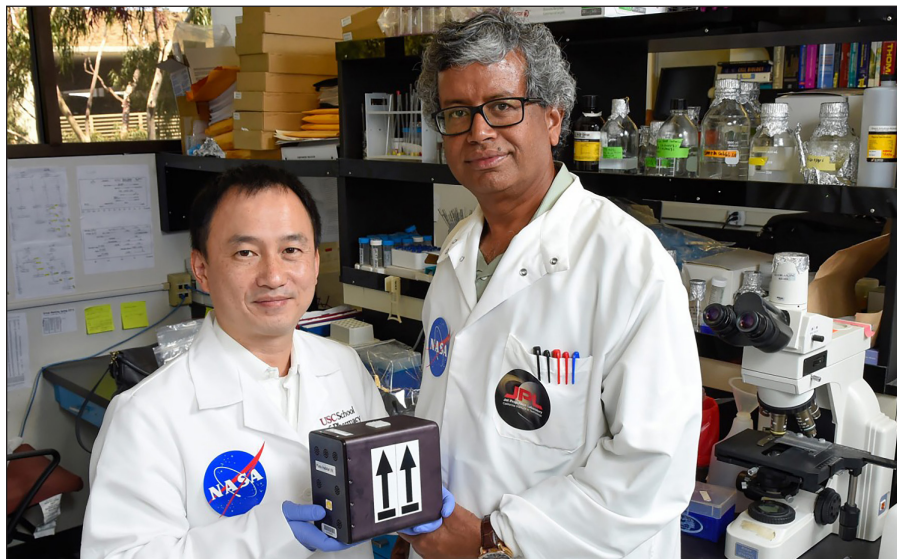
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Micro-10 and BRIC-NP, two first-of-their-kind research missions to study whether the effects of microgravity and enhanced radiation might influence fungi on the International Space Station to produce novel compounds.

That collaboration between JPL and the USC School of Pharmacy — with Wang and his team providing expertise on fungi and secondary metabolites — has evolved to include work on Microbial Tracking investigation.

Wang’s team at the USC School of Pharmacy, which includes doctoral candidate Adriana Blachowicz, a former graduate researcher at Venkateswaran’s lab, have been studying microorganisms sampled from the International Space Station’s air filter and a hard surface adjacent to the station’s Cupola window.

“Wherever there are humans, there are microbes,” Wang said. “We’re trying to understand the microbes in the International Space Station, and in doing so, possibly find new solutions that could support future long-term space travel.”



Clay Wang and Kasthuri Venkateswaran launched fungi into space to potentially develop new medicine for use both in space and on Earth.

The team describes identifying two strains of *Aspergillus fumigatus*, a common airborne fungi that can cause life-threatening infections in individuals with weakened immune systems. The findings — that the *Aspergillus fumigatus* strains sampled from the International Space Station were actually more virulent than

“control” strains found on Earth — were reported in a study published in *mSphere* on Oct. 27, and presented by Blachowicz at the 2016 annual meeting of the American Society for Gravitational & Space Research in Cleveland on Oct. 27.

NASA has already awarded the group a grant to continue the investigation.

ALZHEIMER’S

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Question: Why do you call it the “epidemic of Alzheimer’s”?

Answer: Alzheimer’s is the most feared consequence of aging; people are most frightened of losing themselves to a brain disorder.

For about 20 years, we’ve known that a molecular event, the accumulation of amyloid peptides in the brain, drives Alzheimer’s disease. Yet we have no effective anti-amyloid therapy for slowing down Alzheimer’s. The disease starts 10 to 15 years before dementia. When we try to apply anti-amyloid therapies to people suffering from dementia, the end stage of Alzheimer’s disease, there already has been drastic deterioration of brain function and it may be too late to see much benefit. So even as we’ve been finding better targets for anti-amyloid treatments, we have also reframed the disease.

Q: How has our approach to targeting Alzheimer’s disease changed over the years?

A: Thirty years ago, there were no treatments for Alzheimer’s disease and no recognition that Alzheimer’s disease would ever be treatable.

Academic investigators, however, have developed a set of tools for screening individuals for memory impairment and for measuring memory over time. Those tools, in conjunction with biostatisticians who developed analytical approaches and clinical trialists who worked out a framework for testing treatments in a new disease, led to trials that proved memory could be treated.

Q: Why are the clinical trials studying patients who do not exhibit signs of Alzheimer’s?

A: We think that to beat this disease, to control Alzheimer’s disease, we have to initiate effective therapies before the symptoms really begin. Early-stage clinical trials show promising results that our treatments for controlling the accumulation of amyloid do work. But to get the benefit of these treatments, we think we have to initiate treatment before there are symptoms.

RESEARCHERS: List includes Huaiyu Mi, Paul Thompson, Steve Kay

Continued from page 1

is the director of the USC Mark and Mary Stevens Neuroimaging and Informatics Institute. He has long been an acclaimed figure for his brain mapping and data aggregation strategies.

Berislav Zlokovic, MD, PhD, chair and professor of physiology and biophysics — Zlokovic is the director of the Zilkha Neurogenetic Institute (ZNI) and an internationally renowned leader in Alzheimer’s disease and stroke research. He has published more than 250 articles, many of them in the most high-impact journals, and received awards from national institutes for his work.

Paul Aisen, MD, professor of neurology — Aisen is the founding director of the Alzheimer’s Therapeutic Research Institute (ATRI) and a leading expert in Alzheimer’s research. He has led a number of large, multicenter clinical

trials testing therapies that may delay or prevent the disease.

Huaiyu Mi, PhD, associate professor of research preventive medicine — Mi was among the group involved in the first human genome sequencing project in 2000. He managed the development of Protein Analysis Through Evolutionary Relationships (PANTHER) Classification System, and led the development of PANTHER Pathway.

Paul Thomas, PhD, associate professor of preventive medicine — Thomas worked alongside Mi on the PANTHER project and co-authored the overview of the function and evolution of human genes. His current lab focuses on the development and application of computational methods for reconstructing gene evolution, using these techniques to understand the function of human genes and how genetic factors may impact disease risk.

Paul Thompson, PhD, professor of ophthalmology, neurology, psychiatry and the behavioral sciences, radiology, psychiatry, and engineering — Thompson works closely with Toga as the associate director of the USC Stevens Neuroimaging and Informatics Institute. He also leads the ENIGMA research consortium, which has 30 active working groups worldwide to better understand brain structure and function using imaging and genetic data.

Steve Kay, PhD, Provost Professor of Neurology, Biomedical Engineering and Biological Sciences — Kay is among the most prominent chronobiologists, having made a number of scientific breakthroughs related to gene expression and circadian rhythms. He is a member of the National Academy of Sciences and a former American Association for the Advancement of Science fellow.

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:



Research from Mario Pulido, left, and Ite Laird-Offringa, on isoaspartylation could be a key to small cell lung cancer treatment.

Study: Small cell lung cancer immunotherapy possible

A STUDY PUBLISHED IN THE *Journal of Neuroimmunology* and led by Ite Laird-Offringa, PhD, associate professor of surgery of biochemistry and molecular medicine and associate dean of graduate affairs, suggests that the human body can detect and create an immune response to small cell lung cancer, which may be helpful to develop new therapies and detection methods. The key lies in isoaspartylation, a process that damages amino acids and changes the shape of neuronal ELAVL proteins expressed in the tumors. The immune response of patients to this isoaspartylation spans the gamut from no response to such a strong immune response that patients develop severe and lethal autoimmune disease. About one-fifth of patients develop a moderate immune response to isoaspartylation and have better overall survival to small cell lung cancer. “If we can use isoaspartylated ELAVL proteins to elicit an ideal immune response that can fight small cell lung cancer, we may be able to offer a new therapy for this disease. Who knows ... one day we may even be able to prevent it in people who are most at risk, including current and former smokers,” Laird-Offringa said. — **Mary Dacuma**

Older mothers are mentally sharper in old age, study finds

A NEW STUDY HAS FOUND that women have better brainpower after menopause if they had their last baby after age 35, used hormonal contraceptives for more than 10 years or began their menstrual cycle before turning 13. This is the first study to investigate the association between age at last pregnancy, which can be a marker of a later surge of pregnancy-related hormones, and cognitive function in later life, said Roksana Karim, MD, PhD, lead author of the study and assistant professor of clinical preventive medicine at the Keck School of Medicine of USC. Postmenopausal women who had their last pregnancy after 35 had better verbal memory. Those who had their first pregnancy when they were 24 or older had significantly better executive function, which includes attention control, working memory, reasoning and problem solving. The study, published recently in the *Journal of the American Geriatrics Society*, includes 830 women who, on average, were 60 years old. The data was adjusted for age, race and ethnicity, income and education. — **Zen Vuong**

Treatment reduces childrens’ chemo-induced hearing loss

INVESTIGATORS FROM CHILDREN’S HOSPITAL Los Angeles and 37 other Children’s Oncology Group hospitals in the U.S. and Canada have determined that sodium thiosulfate prevents cisplatin-induced hearing loss in children and adolescents with cancer. Results of this randomized, controlled, phase 3 study, called ACCL0431, have been published in the early online edition of *Lancet Oncology*. “This federally-funded, cooperative group study is the first to show that cisplatin-induced hearing loss can be reduced by about half in children and adolescents being treated for cancer,” said David R. Freyer, DO, MS, professor of clinical pediatrics at the Keck School of Medicine of USC and director of the Survivorship & Supportive Care Program in the Children’s Center for Cancer and Blood Diseases at Children’s Hospital Los Angeles. “It is an important step toward developing a safe and effective strategy that will greatly improve quality of life for cancer survivors.” Freyer was lead author and chair of the study. — **Ellin Kavanagh**



David Freyer



From left, Rohit Varma, Gianluca Lazzi and Mark Humayun are seen after the Dean’s Distinguished Lecturer Series, held Dec. 12 on the Health Sciences Campus.

Speaker kicks off lecture series

By Melissa Masatani

Keck School of Medicine of USC Dean Rohit Varma, MD, MPH, welcomed Gianluca Lazzi, PhD, MBA, recently as the guest speaker for the Dean’s Distinguished Lecturer Series. Lazzi, chair of the Department of Electrical and Computer Engineering at the University of Utah, gave a lecture titled, “Bioelectromagnetics for Neuroimplants: From Wireless Power and Data Transfer to Direct Neurostimulation,” Dec. 12 on the Health Sciences Campus. The lecture covered the history of research in bioelectromagnetics and neuroimplants,

discussing the trajectory of information gathering over the past 30 years. “We need to think about where we were and where we are now, in order to understand where we might be,” Lazzi said. Creating predictive simulations, for example, was a science-fiction-type idea when scientists were looking at very low-resolution renderings decades ago. Now, Lazzi said, every two days, scientists create as much data as was created from the beginning of mankind until 2003. Lazzi also discussed advancements in liquid electronics, which are used to create wearable devices as well as adaptive neuroimplants.

USC Stem Cell duo earns Doerr grant

By Cristy Lytal

Although it’s not the type of challenge that involves an ice bucket, this year’s Doerr Stem Cell Challenge Grant has brought together two young scientists from different USC labs to tackle ALS. “These \$10,000 grants make it possible for our students and postdocs to connect and collaborate on one-year interdisciplinary projects spanning different labs,” said Andy McMahon, PhD, chair of the executive committee of USC Stem Cell; W.M. Keck Provost Professor of Stem Cell Biology and Regenerative Medicine and Biological Sciences; Chair of Stem Cell Biology and Regenerative Medicine; director, Eli and Edythe Broad Center for Regenerative Medicine and Stem Cell Research at USC. “The students and postdocs initiate and propose the projects themselves — thus developing their creativity and independence.”

The winning project was conceived on a typical Friday in the seminar room of the Eli and Edythe Broad CIRM Center for Regenerative Medicine and Stem Cell Research at USC. Haoze (Vincent) Yu, a graduate student studying hearing loss in the laboratory of Neil Segil, PhD, was delivering a talk about his latest discovery: a new technique for identifying gene regulatory regions. A lightbulb went off for Kate Galloway, PhD, a postdoctoral fellow in the laboratory of Justin Ichida, PhD, who studies motor neurons derived from ALS patients. Even though Galloway and Yu study two different organ systems in two different labs,

they now are working together. Their collaborative project will tackle a fundamental mystery surrounding ALS: although scientists have identified gene mutations that can cause ALS, more than 80 percent of patients with the disease do not actually have these known mutations. This suggests that something else underlies the disease — such as a problem not with the genes themselves, but with the section of the

genome that regulates the genes. Through their experiments, Galloway and Yu will confirm that the gene regulatory networks of the motor neurons created in the lab resemble naturally occurring motor neurons at specific stages of embryonic development. A positive finding would further validate lab-created motor neurons in neural disease modeling in the lab.

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