Toga named first Ghada Irani Chair in Neuroscience

By Melissa Masatani

In recognition of his contributions to the field of neuroscience and understanding the workings of the human brain, Arthur Toga, PhD, has been established as the inaugural holder of the Ghada Irani Chair in Neuroscience. Toga, Provost Professor of Ophthamalology and director of the USC Mark and Mary Stevens Neuroimaging and Informatics Institute, was installed as chair at a ceremony held Nov. 17 in conjunction with the opening of the USC Stevens Hall for Neuroimaging on the Health Sciences Campus.

The Ghada Irani Chair expresses a straighter path for the pursuit of world-class, world-changing scholarship in neuroscience,” said USC President C. L. Max Nikias, PhD. “It allows USC to work at the level beyond conventional notions of excellence. Indeed, the Ghada Irani Chair further strengthens the foundation of all scholarly excellence at USC, but its most visionary aspect involves its investment in an era of unpassed importance.

Ribbon-cutting marks debut of USC Stevens Hall

By Mary Dacuma

The USC Stevens Hall for Neuroimaging, a modern, sleek, glass-enclosed building on the southern edge of USC’s Health Sciences Campus, opened its doors with a ceremonial ribbon-cutting Nov. 17. USC Stevens Hall will be home to the USC Mark and Mary Stevens Neuroimaging and Informatics Institute. Immediately prior to the ribbon-cutting ceremony, Arthur Toga, PhD, director of the USC Stevens Neuroimaging and Informatics Institute, was installed as the Ghada Irani Chair in Neuroscience.

The intimate event was bookended with performances from the Trojan Marching Band and included remarks from C. L. Max Nikias, PhD, president of USC, who stressed how the opening of USC Stevens Hall was yet another important step toward fighting the most debilitating neurologic disorders of our time.

“Here we can hope to understand autism and Alzheimer’s and a host of other challenges,” Nikias said. “We have an environment in which an electric sense of possibility is ever-present. We can expect to be surprised, as insight and solutions will burst forth in ways we cannot yet imagine.”

Mark and Mary Stevens, USC trustees and named benefactors of USC Stevens Hall, were in attendance to see the results of their strong commitment to multidisciplinary efforts in scientific innovation.

Karen Van Hulzen, MD, MPH, newly appointed dean of the Keck School of Medicine of USC and director of the USC Gayle and Edward Rooki Eye Institute, was also in attendance to celebrate the grand opening and the advancements that would arise thereof.

“The research from Dr. Toga and his colleagues at the USC Stevens Neuroimaging and Informatics Institute is exactly the type of forward-thinking, translational research that will drive the Keck School of Medicine’s success,” Varma said. “I am looking forward to the transformative science that will be conducted in this building in the coming years.”

USC Stevens Hall is wholly optimized for Keck Medicine, where Toga leads the USC Stevens Hall for Neuroimaging, bringing with him a transformative and multidisciplinary approach to advancing neuroimaging research and its applications.

Medical, dentistry professors among five named AAAS fellows

By L. Alexis Young

Five USC scientists have been elected fellows of the American Association for the Advancement of Science, an honor bestowed upon AAAS members by their academic peers. AAAS, the world’s largest general scientific society and publisher of the journal Science, began the AAAS Fellow program in 1874. The nonprofit organization was founded in 1848. This year 391 AAAS members will be made fellows because of their scientifically or socially distinguished efforts to advance science or its applications.

The USC fellows are:

- Wendy Cozen, DO, MPH, a professor of preventive medicine and pathology at the Keck School of Medicine of USC, for contributions to the understanding of the epidemiology, etiology and immunology of Hodgkin’s disease and non-Hodgkin’s lymphoma.
- Cozen also is co-director of the Translational Pathology Core at the USC Norris Comprehensive Cancer Center.
- Roger Ghannem, PhD, the Gordon S. Marshall Professor of Engineering Technology and a professor of civil and environmental engineering at the USC.
Meet the Alumnus: Michael Pham

By Janet Schmidt and Larissa Puro

A fter graduating from USC, Michael Pham, MPH, traded the urban Los Angeles jungle for lush Southeast Asia, where he spent weeks training Cambodian officials in emergency response practices. A paramedic, the 2015 graduate of the online master of public health program at the Keck School of Medicine of USC hoped to help standardize pre-hospital emergency care in the country, which lacks medical services, infrastructure and emergency transport. As of 2012, Cambodia had 0.17 physicians and 0.7 hospital beds for every thousand people, according to the CIA World Factbook.

“With simple emergency response skills like resuscitation, rescue breathing and first-aid, anyone can save a life,” Pham said. “And in places where you can’t get medical help, trained first responders can prevent thousands of deaths and injuries.”

Cambodia’s Ministry of Health gave him the green light to implement a public health project he had adapted from his studies at USC.

After almost a year of preparation, Pham and his team arrived and began assessing needs, touring facilities and shadowing medical professionals. They trained government guards and police officials with a U.S. first responder course designed for the population and introduced U.S. guidelines and evidence-based medical protocol.

In addition they certified more than 80 first responders and provided free health services to approximately 300 villagers.

Pham’s work was formally recognized by the government and covered by local media. Looking back, Pham said his favorite memories included meeting Cambodia’s Deputy Prime Minister, experiencing the bustling night market and watching the sun set over Cambodia’s ancient and iconic Angkor Wat temple.

The feeling of bliss and enlightenment and joy that came from completing our work and making a positive impact is indescribable,” he said.

He returns in December to follow up on the project and again this summer to begin a new program with the Ministry of Health. Pham credits his success in Cambodia in part to his education and faculty mentorship at USC.

As a full-time health educator and director of his company, CPR Hero Healthcare Training Center, Pham had chosen the online MPH program to supplement his career.

His professors in the Department of Preventive Medicine and USC Institute for Global Health provided him the connections and access he needed to bring the project to fruition in Cambodia, he said.

“I was able to use my skills to organize health personnel, create an action plan and lead my team in achieving our goals,” he said.

In addition to training government officials and providing free health checks for villagers, Michael Pham, front center, and his team certified more than 80 first responders in Cambodia.

FELLOWS: AAAS members nominated for ongoing efforts to advance science

Continued from page 1

Viterbi School of Engineering, for outstanding contributions to practical, mathematical and computational aspects of uncertainty quantification. His research spans a wide spectrum of applications across science and engineering.

Robert Guralnick, PhD, a professor of mathematics at USC Dornsife College of Letters, Arts and Sciences, for being one of the central figures at the moment in the very broad domain of group theory.

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Grants to support prostate cancer diagnostics research

By Mary Dacuma

The USC Institute of Urology, recently ranked in the top 15 Best Hospitals nationwide for urology by U.S. News and World Report, has received two grants from the National Institutes of Health to advance the field of prostate cancer diagnostics. A $2 million research grant will examine the effectiveness of using magnetic resonance (MR)-ultrasound image fusion technology to diagnose clinically significant prostate cancer in African-American versus Caucasian men. This is the first prospective, randomized comparison of standard biopsies versus targeted biopsies in these two ethnic groups.

MR-ultrasound image fusion combines magnetic resonance and ultrasound imaging to identify potentially aggressive lesions prior to biopsy. Physicians could then select two or three targets for a needle biopsy, or perhaps rule out the need for a biopsy altogether.

The method is being incorporated slowly in prostate cancer diagnostics, primarily at centers of excellence like the USC Institute of Urology. However, the current widespread practice involves 12-14 random needle biopsies, which may cause patients negative side effects. Moreover, the randomness of this procedure may lead to inaccurate results — cancerous lesions are localized uniformly within each prostate and more aggressive lesions might not be biopsied.

"Because of the side effects associated with diagnosing and treating prostate cancer, there is a fine line between vigilance and overtreatment," said Inderbir Gill, MD, MCh, founding executive director of the USC Institute of Urology, and professor of urology at the Keck School of Medicine of USC and a principal investigator of the study. "If this method proves successful, physicians can walk that line more precisely, decreasing patient risk while improving accuracy."

The research effort focuses specifically on African-American men because of their increased risk for the disease. According to the American Cancer Society, prostate cancer occurs more often in African-American men than in other ethnicities. Prostate cancer is also more aggressive among African-Americans, who are twice as likely to die of the disease than Caucasian men.

"Too many men are getting biopsies, and few are choosing active surveillance, in particular African-American men because they are more at risk for prostate cancer and having clinically significant disease missed at the time of biopsy," said Mariana Stern, PhD, associate professor of research preventive medicine and urology and a co-principal investigator of the study. "Developing a targeted method for diagnosis would give men more confidence in making treatment decisions and potentially decrease the number of prostate biopsies."

A second exploratory grant will assess whether or not DNA methylation in prostate cancer biopsy tissue can accurately determine if a prostate cancer lesion is aggressive. DNA methylation creates detectable marks that are altered when tumors develop. Aggressive cancer cells typically cause more alterations. If successful, this practice could provide clinicians and patients additional insight as to the best course of prostate cancer treatment.

"Although prostate cancer treatment can sometimes negatively impact patients' quality of life, many patients have non-aggressive cancers that do not require initial treatment," said Gangning Liang, MD, PhD, professor of research urology at the Keck School. Liang is a principal investigator of this study alongside Gill. "This initiative takes research beyond the bedside, using correlations in basic science to provide patients the best standard of care."

The USC Institute of Urology will begin recruitment for the studies this fall. They aim to recruit 400 participants in collaboration with five other prestigious research centers: Memorial Sloan Kettering Institute of Cancer Research; University of Maryland, Baltimore; Johns Hopkins University; Henry Ford Health System; and University of Texas Southwestern Medical Center.

HALL: Toga designed building renovations

Continued from page 1

for the advanced science for which Toga is known. This is because Toga himself designed the building alongside architecture firm SmithGroupJRW. The 35,227-square-foot building, renovated and rehabilitated from the original 1932 concrete frame, is naturally bright with plenty of California sunshine streaming through glass walls. The main entrance has biometric access control with the ability to read one's identification badge, fingerprint or iris pattern.

The interior design features few straight lines, an intentional choice from Toga. "Straight lines rarely occur in nature," he said.

The walls are lined with monitors displaying rotating images of, example, brightly colored brain maps. But the most fascinating features of USC Stevens Hall are the ones that will facilitate the USC Stevens Neuroimaging and Informatics Institute's world-class research:

• The largest brain data repository in the world, currently holding about three terabytes of information from every continent except Antarctica.

• A Siemens 3T Prisma magnetic resonance imaging (MRI) machine, with the world's first and only Siemens 3T MRI coming early next year. To accommodate the machines, the imaging rooms were built with a removable roof hatch so they are accessible by crane.

• The DATA Immersive Visualization Environment (DIVE) presents a large theater, where researchers can project massive data sets and highly magnified images on a 12-by-15-foot screen with 1.5 mm pixel display in Ultrahigh Definition 4K resolution.

• An on-site, high-performance computing (HPC) cluster with 4,096 processor cores.

• "I designed every facet of USC Stevens Hall bearing in mind the challenges we face in neuroimaging and the tools my team needs to overcome those challenges," Toga said. "Through the generosity of Mark and Mary Stevens, we have the ideal environment to enable our research; and you can expect the Institute to chip away even further at the perplexing neurological issues plaguing us today."
HSC Newsmakers

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

Leaders discuss future of health care technology

In a sold-out event, USC Digital Health Lab’s (D-Health) Fall Innovation Series featured a conversation between Tom Jackiewicz, MPH, senior vice president and CEO of Keck Medicine, and Rohit Gupta, managing director of Big Sur Ventures. They discussed the nuances of investing in health care technology compared to traditional tech investments and how academic medical centers can drive health care innovation in today’s world.

FDA approves treatment tested at USC Roski Eye Institute

Millions of glaucoma patients whose previous surgical treatment failed to reduce their eye pressure have new hope. Following several years of pivotal clinical trials conducted in refractory glaucoma patients, including work done at the USC Gayle and Edward Roski Eye Institute, Allergan announces the XEN® Glaucoma Treatment System has been approved by the U.S. Food and Drug Administration (FDA). Rohit Varma, MD, MPH, director of the USC Roski Eye Institute and dean of the Keck School of Medicine of USC, who led the work at USC, has called the XEN implantable device “a game changer,” especially for those patients where refractory surgery treatments have failed to reduce intraocular pressure (IOP). Allergan has said the XEN stent will be available in the U.S. in early 2017. — Sherril Smelting

Heart Fellow studies how stem cells respond to infection

By Cristy Lytal

Few researchers have studied how hematopoietic stem cells respond to infection — even though these are the stem cells that give rise to the full battery of specialized immune cells, such as T cells and B cells. Postdoctoral scholar Adnan Chowdhury, PhD, is venturing into this uncharted territory as the winner of the Heart Fellowship, which will launch his early scientific career with a generous startup package including salary and benefits for a full year.

“None of the immunologists think about the hematopoietic stem cells, and none of the hematopoietic stem cell people think about the immunology,” Chowdhury said. “They’re kind of separated, even though they’re very related, because the hematopoietic stem cells give rise to the immune system.”

It was Chowdhury’s burgeoning interest in gene therapy that prompted him to learn more about viruses, which can be used as vehicles for delivering new genetic material to cells. As a PhD candidate at the Saint Louis University School of Medicine, he studied how the HIV virus cannot effectively replicate in patients who also are infected with GB Virus C (hepatitis G virus), a pathogen that causes no deleterious symptoms.

“There’s no negative effect of having a co-infection,” Chowdhury said. “You’re better off in every measure. You have better white cell counts, lower HIV titters, lower transmission rates.”

He dedicated his PhD to his grandfather, who was a biology professor and textbook author in Bangladesh.

As Chowdhury transitioned into his postdoctoral studies, he wanted to learn more about the cells that might receive gene therapy: the “hematopoietic” stem cells that form the blood and immune systems. These are the stem cells that he currently studies in the lab of Rong Lu, PhD, assistant professor of stem cell and regenerative medicine, at the Eli and Edythe Broad Center for Regenerative Medicine and Stem Cell Research at USC. For his Heart Fellowship project, he will examine the response of individual hematopoietic stem cells (HSCs) during acute and chronic viral infections in mice. He will use the Lu lab’s combination of sophisticated technologies to tag and track individual HSCs, and then evaluate the molecular mechanisms that enable certain HSCs to promote a quick and/or robust immune response. His research could offer clues about how to supplement or stimulate a patient’s HSCs to produce more immune cells faster during a hard-to-treat infection, such as influenza in the elderly or HIV.

“I would like to thank the Heart Foundations for the opportunity to continue my research,” said Chowdhury, who eventually hopes to run his own laboratory as a principal investigator. “I think this is an idea that no one is looking at, and I really want to blow this field open. It’s very exciting to me.”

ROYAL VISIT: The Tournament of Roses 2017 Royal Court visited the USC Norris Cancer Hospital for the 22nd year on Nov. 22. The Rose Queen and princesses spread cheer and hand out rose stickers to patients and employees, as well as learn about cancer research and cutting-edge treatments available at the hospital. USC Norris volunteer sunset. From left to right: Princess Shannon Laranjula, Princess Natalie Petrosian, Princess Maya Khan, Queen Victoria Castellanos, Princess Audrey Cameron, Princess Autumn Lundy, Princess Lauren “Emi” Powers.

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