Gregg Fonarow, M.D., Director of the Ahmanson-UCLA Cardiomyopathy Center, Co-Chief of the UCLA Division of Cardiology, the Eliot Corday Chair in Cardiovascular Medicine and Science, and a longtime American Heart Association (AHA) and American Stroke Association volunteer, was honored with the AHA 2017 Chairman’s Award. The AHA award recognizes excellence in volunteer service and, specifically, Dr. Fonarow’s “invaluable contributions to the Association’s strategic goals and programs while significantly advancing the science and practice of cardiology.”

James J. Postl, Chairman of the Association’s national Board of Directors, presented the award during the opening of the AHA Scientific Sessions 2017 in November 2017. “Dr. Fonarow has provided exemplary leadership to the American Heart Association in numerous national and local roles,” said Postl. “The personable Dr. Fonarow is recognized for being able to see ‘the wide vision’ or the ‘big picture’ and verbalize important details and their likely challenges. He has also been essential to suggesting strategies to overcome these challenges and finding ways to address quality-of-care issues of cardiology today.”

Dr. Fonarow currently chairs the AHA/American College of Cardiology Task Force on Performance Measures, AHA Workplace Health Steering Committee, and AHA Get with the Guidelines Quality Improvement Subcommittee. He developed an evidence-based program for managing coronary artery disease that serves as a prototype for the AHA’s “Get with the Guidelines” program, now practiced in more than 2,500 hospitals, benefiting more than seven-million patients. Dr. Fonarow’s research has contributed to the health and well-being of many Americans and his efforts have helped create best practices that improve care for heart disease and stroke patients.

In addition, Dr. Fonarow was named a 2017 Highly Cited Researcher in Clinical Medicine by Clarivate Analytics. This annual list recognizes leading researchers in the sciences and social sciences from around the world. The 2017 list focuses on contemporary research achievements using only Highly Cited Papers in science and social sciences journals.

The UCLA Cardiovascular Research Laboratory was established in 1957 with a gift from the American Heart Association (AHA). Since then, UCLA physician-scientists have been at the forefront of groundbreaking, collaborative investigations, accelerating discoveries that have altered the course of cardiovascular research and treatments. On September 26, 2017, UCLA celebrated this six-decade partnership with the AHA at UCLA. The event spotlighted two outstanding cardiovascular researchers who have made a significant impact on the fight against heart disease and stroke. Gregg Fonarow, M.D., Director of the Ahmanson-UCLA Cardiovascular Research Laboratory (continued on p.2)
Cardiomyopathy Center, Co-Chief of the UCLA Division of Cardiology, the Elliot Corday Chair in Cardiovascular Medicine and Science, and a longtime AHA/American Stroke Association volunteer, was honored with the AHA Los Angeles Volunteer of the Year Award for his efforts to create best practices that improve care for heart disease and stroke patients, and for his research. James N. Weiss, M.D., Director of the UCLA Cardiovascular Research Laboratory, Chief of the UCLA Division of Cardiology, Chizuko and Nobuyuki Kawata Chair in Cardiology, and Co-Chair of the UCLA Cardiovascular Research Theme, received the inaugural UCLA Cardiovascular Research Leadership Award.

In 1957, the UCLA Cardiovascular Research Lab was the country’s first local, privately-supported research laboratory. Some of its milestones over six decades of excellence include:

- The development of an effective solution to protect the heart during open heart surgery
- Wide-ranging contributions to the understanding of cardiac arrhythmias by a UCLA team led by Dr. James Weiss, including the use of mathematical biology to unravel basic aspects of cardiac function, which have clinical implications
- Performance of the first heart-lung transplant by a UCLA team
- Discovery by UCLA researchers of how to stop scars from producing arrhythmias
- Development of an evidence-based program by Dr. Gregg Fonarow for managing coronary artery disease that served as the prototype for the AHA’s “Get with the Guidelines” program, now practiced in more than 2,500 hospitals, benefiting more than seven-million patients.
- Performance of the UCLA Heart Transplant Program’s 2,000th heart transplant in 2012—making UCLA the first program in the Western United States and only the second in the world to achieve this.

Cardiovascular investigators at UCLA continue to design therapies and interventions that prevent and effectively treat heart disease. Supporting their efforts are cross-campus collaborations facilitated by the Cardiovascular Research Theme, one of six unified research strategies established by the David Geffen School of Medicine at UCLA.

“Few places have the ability to transcend the different levels of innovation, from devices to surgical procedures, molecular diagnostics to new therapies,” said Yibin Wang, Ph.D., UCLA Professor of Anesthesiology, Medicine, and Physiology, Vice Chair for Research in Anesthesiology, Director of the Division of Molecular Medicine in the Department of Anesthesiology and Perioperative Medicine, and Chair of the UCLA Cardiovascular Research Theme, David Geffen School of Medicine at UCLA. “UCLA is already a leader in the field and with the Cardiovascular Research Theme collaborations, our progress has accelerated.”

---

**UCLA CARDIOVASCULAR SYMPOSIUM**

The second annual UCLA Cardiovascular Symposium took place September 25-26, 2017, in the De Neve Plaza Auditorium on the UCLA campus. Attended by nearly 300 UCLA students, trainees, and faculty, the symposium brought leaders in the field of cardiovascular medicine and research to the campus for scientific exchange.

In addition to presentations by UCLA cardiovascular physician-scientists Tzung Hsiai, M.D., Ph.D.; Marmar Vaseghi, M.D., Ph.D.; and Kristina Bostrom, M.D., Ph.D. (who was appointed Chief of Cardiology at the West Los Angeles VA Medical Center in January 2018), the symposium featured preeminent leaders in cardiovascular research from across the country. Guest speakers included Jeffery Molkentin, Ph.D., from Cincinnati Children’s Hospital and the Howard Hughes Medical Institute; Christine Albert, M.D., M.P.H., Brigham and Women’s Hospital and Harvard Medical School; Aruni Bhatnagar, Ph.D., University of Louisville; Xander Wehrens, M.D., Ph.D., Baylor College of Medicine; Robert Gerszten, M.D., Beth Israel Deaconess Medical Center and Harvard Medical School; John Rogers, Ph.D., Northwestern University; and Steven Houser, Ph.D., Temple University School of Medicine. Symposium lectures covered a wide range of topics, including heart and vascular disease; innovative engineering tools and strategies to dissect molecular cell processes, as well as tools and methods to monitor cardiovascular health in patients, which represent the leading-edge of precision medicine; environmental impacts on human health—particularly cardiovascular health—and the latest insights from translational research into conditions like atherosclerosis, cardiac arrhythmias, heart failure, fibrosis, and calcification and inflammation.

Lectures were augmented by poster sessions reporting the latest discoveries and clinical research carried out by UCLA medical students, fellows, and medical residents, who in turn competed for presentation awards. The poster presentations provided an opportunity for discussions among UCLA faculty and trainees and showcased the interdepartmental focus on cardiovascular excellence at UCLA.
UCLA RESIDENTS AND FELLOWS GARNER AWARDS AT WARC

Residents and fellows from the UCLA Department of Anesthesiology and Perioperative Medicine traveled to Portland in April 2017, to attend the Western Anesthesia Residents’ Conference (WARC), hosted by the Oregon Health & Science University’s Department of Anesthesiology & Perioperative Medicine. UCLA attendees presented four lectures and 16 posters at the event, several of which garnered noteworthy recognition: first place for oral presentation was awarded to Marvin Chang, M.D., Ph.D., for his lecture, “A Novel Paradigm for a New Class of Anti-Arrhythmic Drugs Based on Targeting Calcium Channel Gating Properties” (mentored by Riccardo Olcese, Ph.D.); second place for oral presentation was awarded to Caitlin Sherman, M.D., for her discourse on “Investigating Bupivacaine-Induced Cardiotoxicity and Intralipid Rescue in Pregnant Rats” (mentored by Mansoureh Eghbali, Ph.D., and Soban Umar M.D., Ph.D.); and second place for poster presentation was awarded to Vivek Chellappa, M.D., for his work, “Bilateral Lung Transplantation in a 34-Year-Old Female with Idiopathic Pulmonary Arterial Hypertension” (mentored by Soban Umar, M.D., Ph.D., and Reed Harvey, M.D.).

TELEMEDICINE ADVANCES CARE IN PEDIATRIC CARDIOLOGY

The American Heart Association (AHA), which supports cardiovascular research and advocates for cardiovascular health and well-being, published the Scientific Statement, “Telemedicine in Pediatric Cardiology,” authored by a multi-institutional team of physicians and scientists from across the country, chaired by Gary Satou, M.D., Director of Pediatric Echocardiography at UCLA Mattel Children’s Hospital, and Co-Director of the UCLA Fetal Cardiology Program. Telemedicine, which enables the remote diagnosis and treatment of patients through the use of telecommunications technology, is becoming popular in many areas of medicine. The statement published by the AHA was a timely appraisal of how various electronic devices (including telephones and other contemporary electronic devices connected to the Internet) are being used to diagnose abnormalities. For example, physicians can now listen to a child’s heartbeat over the phone or Internet and doctors can use live video to consult with healthcare technicians to evaluate other cardiovascular parameters, such as blood pressure, electrocardiogram readings, and even imaging results, including X-rays or echocardiography (an ultrasound of the beating heart). These technological advances help physicians monitor, with greater frequency and precision, the cardiovascular health of patients without patients having to come into the doctor’s office. The article also discussed regulatory, insurance, legal, privacy, licensing and training issues, all of which impact the extent to which telemedicine can be deployed and the types of procedures, tests, diagnoses, and advice that can be executed or dispensed via such remote doctor-patient interfacing.

INTEGRATING LIGHT SHEET IMAGING WITH VIRTUAL REALITY

Light sheet microscopy, pioneered for the investigation of the cardiovascular system by Professor Tzung Hsiai, M.D. (UCLA Medicine/Cardiology and Bioengineering), and his colleagues at UCLA, is a high-resolution imaging technique that allows the user to visualize subcellular, molecular processes in exquisite detail. One of the most advanced and highly sensitive imaging technologies, light sheet microscopy illuminates a single plane at a time. As the molecular process moves through the light sheet, 3D images can be recorded. In their article, “Integrating light sheet imaging with virtual reality to recapitulate developmental cardiac mechanics,” Yicheng Ding, Ph.D., and colleagues in the lab of Dr. Hsiai reported an exciting and potentially transformative development in the area of biomedical imaging. In the recent past, high-resolution imaging techniques have been applied to study the cardiovascular system. However, a critical barrier has been the inability to realistically capture the dynamics of biological systems that are changing on the scale of fractions of a second. Dr. Ding and his colleagues have made a substantive advance to overcome this barrier by marshaling virtual reality tools to recreate, based on light sheet microscopy, a computer model of heart and vascular development and physiological function. Even more fascinating and impactful, the investigators have engineered technologies that enable the creation of a tailored microenvironment in the lab dish, which can be informed by novel experiments recreating features of human developmental abnormalities and disease conditions. These new technologies will support new training in advanced cardiac function, as well as virtual experimentation and treatment design.
For decades, newborns with congenital heart disease (CHD) have been the focus of pediatric/congenital heart programs. Early identification and management at specialized centers have helped infants with CHD achieve optimal outcomes. Care requires a multidisciplinary approach among a wide variety of subspecialists, including pediatric cardiologists, congenital heart surgeons, cardiac intensivists, neonatologists, radiologists, anesthesiologists, nurses, social workers, and psychologists. Now, as prenatal detection of CHD has become increasingly available, the focus of pediatric congenital heart programs has shifted to the prenatal patient with CHD, using an expanded team of experts to include the obstetrician and maternal-fetal medicine subspecialist.

Prenatal detection improves the specialist’s ability to discover associated extracardiac structural abnormalities, as well as associated genetic syndromes that may otherwise have gone undetected until after delivery. The UCLA Fetal Cardiology Program, under the direction of Mark S. Sklansky, M.D., Chief of the Division of Pediatric Cardiology, James H. Nicholson Chair in Pediatric Cardiology, David Geffen School of Medicine at UCLA; Medical Director, UCLA Children’s Heart Center, and Co-Director, Fetal Cardiology Program, UCLA Mattel Children’s Hospital, provides state-of-the-art diagnostic capabilities as early as 12-13 weeks gestation, as well as complete diagnostic and counseling services throughout the second and third trimesters. The UCLA team can deliver newborns with the most severe congenital diseases at Ronald Reagan UCLA Medical Center, where immediate interventions can be provided without the need for transport. The program also:

- Provides training for subspecialists in pediatric/adult cardiology, obstetrics, and maternal-fetal medicine
- Advances the field with new techniques for the evaluation of the fetal heart and with new approaches to improve prenatal diagnosis
- Presents an annual fetal echocardiography symposium that educates clinicians involved with prenatal evaluation of the fetal heart
- Serves as a vital resource for practitioners worldwide

**PATH TO PRECISION CARDIOVASCULAR MEDICINE FOR CHILDREN**

The UCLA Congenital Heart Defect-Bio Specimen Resources Core (CHD-BioCore) is a biobanking resource core for “stories from the heart,” where patients and families have released their genetic information, donated blood or tissue and DNA samples to support congenital heart research, and have shared their stories. The CHD-BioCore mission is to implement a path to precision cardiovascular medicine for children by generating a platform for scientific discovery and clinical translation. The CHD-BioCore will enable the examination of novel genetic variants, therapeutic targets and disease mechanisms. Ultimately, the CHD-BioCore will allow the translation of discoveries into advanced diagnostics, prevention methods, and therapies for newborn infants with congenital heart defects.
UCLA RECOGNIZES INNOVATION AND TEAMWORK

Recipients of the Innovation Award from UCLA

Reza Ardehali, M.D., Ph.D., Associate Professor of Medicine, UCLA Division of Cardiology, is a practicing cardiologist with a clinical interest in heart failure and a scientist whose research interests are in cardiovascular regeneration and the signaling events that regulate developmental decisions. Studies have suggested that young plasma may partially reverse age-related loss of cognitive function, restore muscle dysfunction, and improve strength and endurance exercise capacity. In this project, his lab aims to determine whether circulating factors in young plasma have the ability to protect the myocardium after an injury. He and his team will study the effect of young plasma on scar formation, cardiomyocyte viability, and neovascularization after an experimental heart attack.

Jau-nian Chen, Ph.D., Professor, UCLA Department of Molecular, Cell, and Developmental Biology, studies how the genetic pathways underlying cardiac development and disease intersect. One major focus of her lab is to understand the contribution of transcription regulation and epigenetics to cardiogenesis and heart failure. Using a chemical genetics approach, her lab identified a potent antiarrhythmic compound and established a critical link between mitochondria calcium uptake and heart rhythms. Dr. Chen and her team anticipate that this project will expand the understanding of the co-transcriptional regulatory mechanisms that direct cardiac gene programs.

Gentian Lluri, M.D., Ph.D., is Assistant Professor of Medicine and a member of the Ahmanson/UCLA Adult Congenital Heart Disease Center. Dr. Lluri has a long-standing interest in molecular biological pathways that guide cardiac development and the disturbances of these pathways that can lead to cardiac malformations, as well as calcification and fibrosis. Patients with bicuspid aortic valves have progressive calcification and valve dysfunction. Once calcification occurs, there are no therapies to delay or reverse it and surgery is the only option. His project will investigate whether the enzyme ENPP1 can serve as a target for retarding calcification in bicuspid aortic valve disease.

Marlin Touma, M.D., Ph.D., Director of the UCLA Congenital Heart Defect-Bio Specimen Resources Core, has an overall research goal to address unmet needs in precision child healthcare in cardiovascular medicine. In this project, she will investigate a previously unrecognized role of the Wnt11 molecule in chamber-specific development of the heart. Using comprehensive experimental tools of molecular biology, genomics, and scientific models, the project aims to contribute novel knowledge in gene regulation of perinatal heart development under pathological stressors and improve chamber-specific medical care to infants with congenital heart defects.

Soban Umar, M.D., Ph.D., Assistant Professor in the UCLA Department of Anesthesiology and Perioperative Medicine, will study the role sex chromosomes play, in the absence of sex hormones, in pulmonary arterial hypertension (PAH), which has a strong female preponderance. Dr. Umar and his team will investigate their role in the development of hypoxia-induced pulmonary hypertension using the unique and powerful FCG and XY* scientific models. In this translational research proposal, they also aim to cut out the role of each of the candidate protective Y chromosome gene (s) in PAH using state-of-the-art in vivo and in vitro techniques.

Jessica Wang, M.D., Ph.D., is a physician-scientist who specializes in cardiovascular genetics. Her research program aims to understand how genetic variation contributes to cardiovascular health. Inherited cardiomyopathies—diseases of the heart muscle—are unique opportunities to study the development of cardiac disease. Dr. Wang and her team have identified a family with left dominant arrhythmogenic cardiomyopathy. Using family segregation and exome sequencing, they narrowed the candidate variants down to specific genes in which they will examine molecular and cellular changes to gain insights into the underlying causes of the disease and new therapies.
Chen Gao, Ph.D., found inspiration in many areas on her way to earning her Ph.D. degree in Molecular Biology at UCLA. Dr. Gao’s parents, both college professors, cared not only about her education, but also about the pursuit of her dreams. She was inspired when she visited her mother’s lab and watched the students perform detailed experiments, and she became interested in biology in high school. While attending Nankai University, she lost her grandmother to whom she was very close to lung cancer, which ignited a passion in her to save people. She worked diligently in a cancer research lab as an undergraduate researcher and then had the opportunity to work with her mentor, Dr. Yibin Wang, as a graduate student.

“Dr. Wang taught me how to be creative which, along with remembering my passion, helped pave my path,” she said. “My Ph.D. project was also fun. Throughout the project, I learned how to troubleshoot, how to interpret my results, how to communicate my ideas, and how to think out of the box to chase bigger questions. I felt very fortunate as both a graduate student and postdoctoral fellow to study at UCLA, as it has a large number of cardiovascular research facilities where you can meet many experts in cardiovascular diseases. There is such a willingness to collaborate with different labs, and it’s clear the principal investigators care so much for the success of young scientists.”

Dr. Gao is the recipient of the 2011 American Heart Association Basic Cardiovascular Sciences Young Investigator Travel Award, and the 2013 International Society for Heart Research Richard J. Bing Award for Young Investigators.

SELECT AWARDS AND RECOGNITION

Luisa Iruela-Arispe, Ph.D., Professor and Vice Chair of the Department of Molecular, Cell, and Developmental Biology, and Professor of Orthopaedic Surgery, David Geffen School of Medicine at UCLA, was appointed to the National Heart Lung and Blood Advisory Council.
For Kelly Tarantello, born with a single ventricle, congenital heart disease never held her back. At the age of seven, she underwent Fontan surgery, which redirects blood flow through the lungs without being pumped by the heart. Although she was told that she might need a heart transplant in about 20 years, it had little meaning to a young child and Kelly was able to live a fairly normal life; she went away to college and traveled extensively.

She became a patient of Jamil A. Aboulhosn, M.D., Director of the Ahmanson/UCLA Adult Congenital Heart Center and Streisand Chair in Cardiology, as an adult. When she was 29, her heart began to fail and she was faced with additional health challenges. Her doctors advised her that her liver was not removing toxins and she would need both a liver transplant and a heart transplant. In September 2016, she underwent a dual heart-liver transplant at UCLA. Following the dual transplant, Kelly had to learn everything again, including how to eat, breathe, swallow, chew, talk, and walk. After eight or nine months, she started to feel better.

“It’s not easy,” Kelly said. “Once you get the transplant, that is the beginning of you having to fight, and you have to fight hard.” She kept going through the support and love of her parents and sister and the encouragement of others.

At the time that Kelly had the Fontan procedure, it was relatively new. Although doctors knew that a heart transplant might be needed later on, they didn’t realize that the procedure placed pressure on the liver. Now, physicians are seeing that 30 years later, many Fontan patients are experiencing heart and liver failure—a connection that was not being made five years ago.

UCLA has done 12 heart-liver transplants in the last two years, including Kelly’s. Due to the complexity of the dual transplant, several specialists are involved and every complication requires assembling a team of 15 doctors for consultation. Kelly’s mother Delphine Lee, a member of the UCLA Adult Congenital Heart Disease Center board, stayed by her daughter’s side every step of the way. She recognized the need for a patient coordinator to schedule regular case meetings for all the doctors to discuss cases, as well as to arrange emergency meetings. Seeing the benefit of the group meetings firsthand and the need for a coordinator to set up those meetings, Delphine made a contribution to establish the UCLA Heart and Liver Disease Program.

“Patients born with complex congenital heart disease eventually suffer from both heart and liver dysfunction and may require multi-organ transplantation,” said Dr. Aboulhosn. “In order to best care for this highly complex and growing population we sought to create a unique program focused on those patients. This generous gift will support the establishment of this program, which is the first of its kind, and will streamline clinical evaluation and care, and further clinical and translational research investigations and education in this unique space. UCLA has long been a world leader in liver transplantation, heart transplantation, and congenital heart disease and is in a unique position to provide leading-edge care to this population through the creation of this highly specialized multidisciplinary program.”

Thanks to Delphine’s generosity, the program will advance the understanding of why both organs failed, educate cardiologists and families with children who have had Fontan about possible liver failure in these patients, and develop a protocol for preventive care.

“I have the utmost respect for the physicians who took care of Kelly,” Delphine said. “They were extremely on top of things and caring and good about explaining things in a way we could understand, and were respectful of the family’s opinions.”

One of Kelly’s physicians, Fady M. Kaldas, M.D., Associate Professor of Surgery, Associate Director of the UCLA Multi-Organ Transplantation and Hepatobiliary Surgery Fellowship Program, and Director of the UCLA Liver Transplantation Service, said of Delphine’s contribution, “It is a very insightful gift by a wonderful family to meet an underrecognized need. Doctors and coordinators will be able to take a unified approach to the person being evaluated for a combined heart-liver transplant. This also will allow UCLA to develop a niche, to be known as one of the few centers that provides therapy for this type of patient, reaching patients that have no other recourse. It will establish a more academic environment to study this patient population to arrive at better methods of care with improved outcomes.”

Despite the enormous difficulties Kelly faced after the transplant, she would do it again. “If someone is afraid about it, the outcome is worth it,” she said. “I realized after a while that I was responsible for my donors’ organs and I couldn’t be selfish, I had to think about them—I was responsible for another life now. Each day I want to do something that would make the donor happy, or go places they had never been, do things that would make them proud.”
We encourage your feedback and inquiries about cardiovascular research, medicine, and education at UCLA.

FOR MORE INFORMATION ABOUT THE UCLA CARDIOVASCULAR RESEARCH THEME, PLEASE CONTACT:
Yibin Wang, Ph.D., Chair, UCLA Cardiovascular Research Theme
(310) 206-5197  yibinwang@mednet.ucla.edu

TO FIND OUT HOW YOU CAN SUPPORT UCLA CARDIOVASCULAR THEME RESEARCH AND TRAINING, PLEASE CONTACT:
Gina Weitzel, Senior Executive Director, Health Sciences Development
(310) 267-2112  gweitzel@support.ucla.edu

Visit us at medschool.ucla.edu/cardiovascular