A FEW WORDS FROM LEADERSHIP

Welcome to the inaugural edition of Heart to Heart, the newsletter representing UCLA’s new cardiovascular research initiative. The David Geffen School of Medicine at UCLA has identified six research priorities, including cardiovascular medicine, cancer, regeneration and repair, immunology, metabolism, and neuroscience. These themes are the building blocks of a new era in UCLA Health Sciences.

The new Cardiovascular Theme has a foundation deeply rooted in the long and proud history of research excellence at UCLA. Energized by The Centennial Campaign for UCLA and the exciting opportunities provided by substantial state-of-the-art new research space in the renovated South Tower of the Center for Health Sciences, the Cardiovascular Theme will leverage UCLA’s collective strengths in cardiovascular medicine, fostering new synergies and supporting team-based clinical care and science. Working together will yield more breakthroughs in science and accelerate their translation into lifesaving therapies. Our goal in cardiovascular medicine is to achieve transformative discoveries, such as understanding the genetic basis of heart failure and developing procedures and treatments to rebuild healthy blood vessels, nerves, and tissues. Our mission focuses on:

- **Clinical Care**: Holistic and precision healing, one patient at a time
- **Discovery Science**: Pushing the boundaries of knowledge to improve health and discover cures for diseases
- **Education and Training**: Creating world leaders in healthcare and scientific research
- **Community Engagement**: Maximizing the impact of our breakthroughs through community outreach

UCLA is home to top-ranked medical facilities, world renowned physicians, and leading-edge research and innovation in cardiovascular medicine. More than 200 of UCLA’s physicians are listed among the “Best Doctors in America,” while UCLA’s hospitals have been ranked “Best in the West” every year since 1990 and are currently ranked #1 in Los Angeles, #1 in California, and #5 in the nation by U.S. News & World Report. UCLA’s primary purpose as a public research university is the creation, dissemination, and application of knowledge for the betterment of our global society. The David Geffen School of Medicine at UCLA aspires to define the next frontier of research and translate the findings into clinical innovations that benefit humanity, both in Los Angeles and around the globe.

We encourage your feedback and inquiries as you get to know the Cardiovascular Theme through this inaugural edition of Heart to Heart. We invite you to be part of the UCLA mission to transform cardiovascular health.

Yibin Wang, Ph.D.
Cardiovascular Theme Chair
Professor of Anesthesiology, Physiology, and Medicine

James N. Weiss, M.D.
Cardiovascular Theme Co-Chair
Chizuko and Nobuyuki Kawata Chair in Cardiology

The mission of the Cardiovascular Theme at UCLA is to pioneer discoveries to prevent, detect, and cure cardiovascular disease.
Amanda Daniels, a UCLA patient who has turned heartache into advocacy, shares her story.

At the age of 18, my senior year of high school, I went in for routine surgery to remove my wisdom teeth. I was put under anesthesia and—for the first time—was hooked up to an electrocardiogram, a machine that reads the electrical rhythms of the heart. As I emerged from the anesthesia, the doctors were concerned. “Get her mother in here now,” they said.

An hour later, with frozen peas icing my swollen cheeks, I landed in my grandmother’s cardiologist’s office. While there, I went through all the routine cardiac tests. My initial diagnosis was premature ventricular contractions—extra, abnormal heartbeats. I was shocked as I joined the ranks of millions worldwide living with heart disease.

Ever since then, I have visited the cardiologist annually for routine checkups. While I dread these appointments, because they are constant reminders that I live with heart disease, I know of their importance.

At 25 years old, I was diagnosed with idiopathic dilated cardiomyopathy—a weakening of the heart muscle—which turned into heart failure. One month before my wedding, I had a cardiac ablation where they burned five sections of my heart. I was told that due to my weakened heart and the medications I was taking I could never have children.

Thanks to the amazing team of cardiologists and OBGYNs at Ronald Reagan UCLA Medical Center, I now have two healthy daughters. I learned how to honor my physical heart through proper diet and exercise, and, on my own healing journey, I learned how to de-stress and honor my spiritual heart through a daily practice of mindfulness and meditation.

Today, I am a heart warrior and intuitive healer. I still take medication and practice meditation daily.

Amanda Daniels, along with Alisa Beckett, founded WomenHeart West Los Angeles, a peer-led support group for women survivors of heart disease that meets at UCLA and is part of WomenHeart, a national coalition for women with heart disease. To learn more about how you can honor your spiritual heart, check out Amanda’s website at www.FlightoftheHeart.com.

UCLA’s global outreach helps advance clinician education in Malawi.

Malawi, Africa, is one of the poorest countries in the world and has been hit hard by many medical epidemics. Since 2007, the UCLA Department of Medicine has collaborated with Partners in Hope Medical Center in the capital city of Lilongwe by establishing a research laboratory there and sending more than a dozen UCLA internal medicine residents for elective rotations to treat patients in the clinic. In addition, the UCLA Department of Medicine provides funds to train a Malawian clinical officer alongside the UCLA residents. Looking for ways to expand its global outreach, UCLA Health reviewed the growing global health interest in the use of ultrasound in low resource countries, such as Malawi. Research has shown that ultrasound findings can change the initial patient management plan. Based on ultrasound results, surgical procedures can be performed or cancelled, medications adjusted, or patients can be referred to a specialty clinic. However, due to limited resources, the availability of ultrasound technology is extremely limited in underdeveloped parts of the world.

Recognizing the need for and the advantages of ultrasound tests, members of the UCLA Division of Cardiology, fellows Timothy Canan, M.D. (pictured above left), and Zachary Boas, M.D., sought to develop the use of ultrasound in Malawi. They helped secure funding for three new Philips ultrasound machines for Partners in Hope and two other rural district hospitals in Madisi and Kasungu. Drs. Canan and Boas travelled to Malawi and over a four-week period trained 20 clinicians and radiology technicians in cardiac and abdominal ultrasound examinations. The project will continue to gather data on how the machines are being used, the prevalence of abnormal findings, and the comfort level of the clinicians in using their new diagnostic skills.
The rapid growth in medical device technology and the expansion of molecular medicine have propelled healthcare into the digital era. A single patient echocardiogram can amount to more than 200 megabytes of data, and a patient’s whole genome sequence analysis may lead to 100 gigabytes of data, leaving physicians to manage patient information that is increasingly challenging in complexity, volume, and scale. Through computational analysis, these extremely large data sets—called “big data”—can reveal patterns, trends, and associations.

Karol Watson, M.D., Ph.D., Director of the UCLA Barbra Streisand Women’s Heart Health Program and Peipei Ping, Ph.D., UCLA Professor of Physiology, Medicine, and Cardiology are leading the efforts to address big data analytics and biomedical computing with a particular focus on cardiovascular medicine. The National Institutes of Health (NIH) awarded UCLA with a prestigious data science grant of $11 million, which Drs. Ping and Watson are using to build software tools to analyze data and leverage crowdsourcing to synthesize new cardiovascular knowledge. With the NIH funding, UCLA has formed a Center of Excellence for Big Data Computing. “Data is stored in diverse formats, making it difficult to compare and analyze,” said Dr. Ping. “Researchers need a way to easily access and make sense of these gold mines of information to benefit patients.”

Collaboration is key BD2K at UCLA: Big Data to Knowledge

physicians, basic scientists, and clinical scientists will ultimately empower the broader cardiovascular community to advance precision medicine and improve patient outcomes.

Clinician-Scientist Tamer Sallam, M.D., Ph.D.

Tamer Sallam, M.D., Ph.D., who joined the UCLA faculty in 2014, investigates novel molecular factors that regulate genes in cardiometabolic disease. He also conducts research to better understand how noncoding genes work and how they contribute to common cardiovascular problems, such as high cholesterol and atherosclerosis. Dr. Sallam was named the Lauren B. Leichtman and Arthur E. Levine Cardiovascular Discovery Fund Investigator for his study of “Defining the function of LeXis in physiology and metabolism.” He is the recipient of an NIH K Award, American College of Cardiology Presidential Career Development Award, and American Heart Association Early Career Investigator recognition.

In addition, Dr. Sallam is the first UCLA recipient of The American Society for Clinical Investigation Council Young Physician-Scientist Awards, which recognizes physician-scientists who are supported by NIH K awards, are early in their first faculty appointment, and have made notable achievements in their research.

Dr. Sallam is a clinical cardiologist at Ronald Reagan UCLA Medical Center and an investigator in the Atherosclerosis Research Unit at UCLA. A graduate of the University of California, Irvine School of Medicine, he completed his residency and chief residency training in Internal Medicine at Yale, followed by Cardiology fellowship training at UCLA. Dr. Sallam graduated from the STAR program at UCLA, where he earned a Ph.D. in Molecular, Cellular, and Integrative Physiology.

His work on “Feedback modulation of cholesterol metabolism by the lipid-responsive noncoding RNA LeXis” was featured in the May 11, 2016 issue of the journal, Nature.
In the normal heart, a contraction generating the force that pumps blood is created by a wave of electrical activation. However, in ventricular fibrillation (v-fib), the electrical activation wave becomes fragmented and disordered, resulting in uncoordinated activity of the heart, making it incapable of pumping blood. UCLA researchers are investigating the mechanisms of this condition, which is the leading cause of sudden cardiac death, while also working to develop novel therapies for v-fib.

*Left* A simulation of cardiac dysfunction using UCLA’s Virtual Heart, a 50-million variable supercomputer model of cardiac conduction.

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**ACCELERATING SCIENCE THROUGH CLINICAL TRIALS**  
Pioneering a New Class of Cholesterol-lowering Drugs

Eric H. Yang, M.D., F.A.C.C., Assistant Clinical Professor of Medicine, and Associate Program Director, Cardiovascular Diseases Fellowship, Division of Cardiology, David Geffen School of Medicine at UCLA, leads the UCLA multicenter clinical trial, “ODYSSEY Outcomes: Evaluation of Cardiovascular Outcomes After an Acute Coronary Syndrome During Treatment with Alirocumab.” The ODYSSEY clinical trial examines the role of PCSK9 inhibitors in patients who have recently been hospitalized for acute coronary syndrome (ACS). PCSK9 inhibitors, a type of biologic drug, have been shown to dramatically lower LDL cholesterol levels and represent a significant advancement in drug therapy to lower cholesterol.

This is the first major PCSK9 study to evaluate its effectiveness in preventing a second episode in a post-ACS population who experienced their event within the past year and have suboptimal lipid levels, despite traditional intensive statin therapy. ODYSSEY is an international multicenter, randomized trial of more than 18,000 patients. Randomized participants receive either the biopharmaceutical drug, alirocumab, or placebo injections every two weeks, in addition to the standard of care (i.e., high intensity statins). The goal is to determine if alirocumab is effective in decreasing recurrent cardiovascular event rates—which may potentially broaden its indications beyond LDL-lowering and add to the arsenal of tools that can reduce cardiovascular events in high risk populations. To read more about this clinical trial visit: https://clinicaltrials.gov/ct2/show/study/NCT01663402

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**CLINICAL RESEARCH AND INNOVATION**  
The Future Is Here: Transcatheter Valve Replacement and Repair Options at UCLA

The Ahmanson/UCLA Adult Congenital Heart Disease Center continues to accelerate discoveries in the field of congenital valve replacement, via both surgical and newer, less invasive transcatheter techniques. Since the Center’s first implants of the Melody Transcatheter Pulmonary Valve in October of 2010, the UCLA Cardiac Catheterization Laboratory has become the busiest congenital valve implantation program in the United States, with more than 160 successful implants of all four cardiac valves (tricuspid, pulmonary, mitral, and aortic). In addition to the Melody valve, the team utilizes the Edwards SAPIEN Transcatheter Heart Valves. Due to their larger size, the Edwards SAPIEN valves allow patients who would have previously required open heart surgery to undergo a less invasive form of heart valve replacement.
Cardiovascular physicians and scientists at UCLA leverage philanthropic gifts to obtain state and federal funding to establish new programs and explore challenging areas of research and clinical innovation. As one example, Arjun Deb, M.D., received a seed grant from UCLA for $50,000—which includes matching funds from the UCLA Clinical and Translational Science Institute—enabling him to obtain a California Institute for Regenerative Medicine Discovery Inception grant for $230,000 to pursue innovative strategies to heal the damaged heart.

Recent seed grantees in cardiovascular medicine include:

- Mansoureh Eghbali, Ph.D., for studies into the role of oxidized lipids in pulmonary hypertension
- Thomas Vondriska, Ph.D., for epigenomic prediction of post-operative outcomes in cardiac surgery
- Yibin Wang, Ph.D., to advance investigations into precision medicine for heart failure

**THE UCLA STAR PROGRAM**

**Coordinating Clinical Specialty Training with Advanced Research**

Young clinician-scientists starting in today’s competitive environment need rigorous scientific training. The Specialty Training and Advanced Research (STAR) Program at the David Geffen School of Medicine at UCLA is a unique curriculum designed for the optimal training of physician-scientists. The program is the brainchild of STAR Program Executive Director Linda L. Demer, M.D., Ph.D., Professor of Medicine (Cardiology), Physiology, and Bioengineering; and Executive Vice Chair, Department of Medicine, in the David Geffen School of Medicine at UCLA. Dr. Demer initiated the program in 1993, together with Alan Fogelman, M.D.; Executive Chair, UCLA Department of Medicine; Castera Chair in Cardiology; Director, Atherosclerosis Research Unit; and Professor of Medicine.

The program offers physician-scientists the opportunity to combine clinical fellowship or residency training with formal, advanced research training, leading to a graduate degree.

Fellows/residents admitted to the STAR Program complete clinical training toward board certification in internal medicine, its subspecialties, one of the surgical disciplines, or in other departments. Following approximately 12-24 months of clinical training, participants receive two to four years of research training, usually in one of four research career tracks:

- Basic Science
- Clinical Research
- Health Services/Outcomes
- Postdoctoral Research Training

“The STAR Program is designed for physicians interested in an investigative career,” said Dr. Demer. “Since inception, 80 percent of graduates have continued in research positions; 49 percent have obtained an NIH K or other type of career development award; 19 percent have received an NIH R01 or equivalent grant; and several graduates hold leadership positions, including Department Chair/Vice Chair, and Assistant Vice Chancellor for Research.”

The clinical fellowship director, the STAR Program Director, and the research mentor in the graduate department work together to coordinate and facilitate the trainee’s schedule, ensuring that STAR awardees have the support they need to excel, both during the program and upon graduation.

A UCLA team—Mitchell Wong, M.D.; Lourdes R. Guerrero, Ed.D.; Joy S. Frank, Ph.D.; and Drs. Sallam, Fogelman, and Demer—authored a paper on this vital program, “Outcomes of a Novel Training Program for Physician-Scientists: Integrating Graduate Degree Training With Specialty Fellowship,” which was recently published in the *Journal of Graduate Medical Education*. To find out more about the UCLA STAR Program visit: medschool.ucla.edu/star

**ADVANCES IN CARDIAC SURGERY**

Cardiac Surgery has been a vibrant field since the early pioneering procedures attempted in 1938 became successful and, eventually, reproducible. The development of myocardial procedures with techniques that protect the heart allowed for the preservation of the myocardial structure and its function for periods of several hours. This pioneering advance initiated the era of safe and prolonged open heart operations with positive outcomes and laid the foundation of all modern cardiac surgery. The breakthrough also gave physicians the ability to remove and actually transport the heart from one geographic location to another, enabling the field of cardiac transplantation. (Continued on page 6)
The current science and clinical practice of cardiac surgery is building on the crucial step forward that occurred with the introduction of clinical trials and subsequent approval of the transcatheter aortic valve replacement procedure for aortic stenosis, which occurs when the heart’s aortic valve narrows and obstructs blood flow from the heart into the aorta and on to the rest of the body. The expansion of transcatheter device implantation techniques for the mitral valve has been under active development and in clinical trials, representing a significant growth area for the future.

One of the most exciting and positive impacts of the transcatheter valve trials in the United States has been the development of “heart teams,” now a standard in clinical practice. Clinical and interventional cardiologists and cardiac surgeons evaluate all high risk patients together in a joint clinic and make a single combined recommendation, after consideration of the individual needs of the patient, about whether the patient should continue medical therapy or consider a surgical procedure.

A similar clinical “heart team” approach exists in cardiac transplantation and the use of mechanical circulatory support.

Cardiac transplantation innovations on the horizon include the continued improvement in control of immunosuppression, reduction of infections, monitoring for rejection without the need for endomyocardial biopsy, and advances in organ preservation and transport.

“The future is bright for the development of groundbreaking treatments of cardiac diseases,” said Richard Shemin, M.D., Vice Chairman of the UCLA Department of Surgery, Chief of the Division of Cardiothoracic Surgery, Co-Director of the UCLA Cardiovascular Center, Professor of Surgery, and Robert and Kelly Day Chair in Cardiothoracic Surgery at the David Geffen School of Medicine at UCLA. “The cardiac surgeon is evolving into an ‘interventional’ cardiac surgeon and the patient-focused ‘heart team’ allows the expertise of all the relevant cardiovascular specialists to consult and recommend the best evidence-based treatment plan for each patient. Efforts to explore new ways to combine interventional and less invasive surgical techniques continue to be studied and translated into treatment options.”

INNAUGURAL UCLA CARDIOVASCULAR THEME SYMPOSIUM

On September 2, 2016, UCLA welcomes world leaders in cardiovascular medicine and science for an intensive, one-day symposium at the UCLA Meyer and Renee Luskin Conference Center from 8 a.m. to 5 p.m. The inaugural, free symposium is the first scientific conference sponsored by the faculty of the UCLA Cardiovascular Theme, a research priority established by university leadership as part of The Centennial Campaign for UCLA. The initiative will enable UCLA physician-scientists to foster cross-campus collaborations and breakthrough discoveries that will be translated into innovative therapies and treatments to transform cardiovascular health.

In addition to an overview of UCLA cardiovascular medicine and research, the symposium includes presentations covering leading-edge scientific discoveries by nine global leaders in the field and poster presentations to showcase the accomplishments of UCLA physicians and scientists.

UCLA event organizers:
Luisa Iruela-Arispe, Ph.D., and Reza Ardehali, M.D., Ph.D.

Abstract Review and Awards Committee:
Arjun Deb, M.D.; Mansoureh Eghbali, Ph.D.; Tzung Hsiai, M.D., Ph.D.; Gentian Lluri, M.D.; Riccardo Olcese, Ph.D.; Atsushi Nakano, M.D., Ph.D.; Srinivasa Reddy, Ph.D.; Tamer Sallam, M.D., Ph.D.; Mark Sklansky, M.D.; and Thomas Vondriska, Ph.D.

Speakers:
- Donald Heistad, M.D., University of Iowa Carver College of Medicine
- Joseph Hill, M.D., Ph.D., University of Texas Southwestern Medical Center
- Jake Lusis, Ph.D., UCLA
- Hanna Mikkola, M.D., Ph.D., UCLA
- Eric Olson, Ph.D., University of Texas Southwestern Medical Center
- Marlene Rabinovitch, M.D., Stanford University School of Medicine
- Gordon Tomaselli, M.D., Johns Hopkins School of Medicine
- Douglas Vaughan, M.D., Northwestern University Feinberg School of Medicine
- Karol Watson, M.D., Ph.D., UCLA

medschool.ucla.edu/cardiovascular
UCLA’s commitment to advancing knowledge is reflected in the numerous symposia featuring distinguished cardiovascular lecturers held on campus this year. The lecturers and the topics presented include:

**March 28**
Maria Kontaridis, Ph.D.
Harvard Medical School
*Inherited Cardiomyopathies*

**April 11**
Åsa Gustafsson, Ph.D.
San Diego State University
*Protecting Against Cell Death*

**April 12**
Christopher Hughes, Ph.D.
University of California, Irvine
*Formation of New Blood Vessels*

**May 2**
Burns C. Blaxall, Ph.D., Cincinnati Children’s Hospital Medical Center
*New Therapies for Heart Failure*

**May 9**
Nikolaos G. Frangogiannis, M.D.
Albert Einstein College of Medicine
*Inflammation and Heart Disease*

**May 20**
Mark Anderson, M.D., Ph.D.
Johns Hopkins University
School of Medicine
*Calcium Signaling in Heart Failure*

**May 23**
Loren Field, Ph.D., Indiana University
*Cardiac Regeneration*

**May 2**
Thomas G. Di Salvo, M.D., Medical University of South Carolina
*New Therapies for Heart Failure*

**June 6**
Thomas G. Di Salvo, M.D., Medical University of South Carolina
*Novel RNAs in the Heart*

**June 9**
James F. Martin, M.D., Ph.D.
Baylor College of Medicine
*Cardiac Development and Congenital Disease*

**June 13**
Burns C. Blaxall, Ph.D., Cincinnati Children’s Hospital Medical Center
*New Therapies for Heart Failure*

**September 30**
Bruce L. Wilkoff, M.D., Cleveland Clinic
*Cardiac Arrhythmias*

UCLA also held its Fifth Annual UCLA Heart Failure Symposium on May 14, which featured state-of-the-art updates and therapies for advanced heart failure.

To learn more, visit: https://www.cme.ucla.edu/courses/event-description?registration_id=112447

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**DISTINGUISHED LECTURESHIPS AT UCLA**

- Jake Lusis, Ph.D., received the Anitschkow Prize (2015) from the European Atherosclerosis Society
- Reza Ardehali, M.D., Ph.D., won the Douglas P. Zipes Distinguished Young Scientist Award (2015)
- Gregg C. Fonarow, M.D., was selected as one of the world’s most influential scientific minds for Thomson Reuters’ Highly Cited Researchers (2015)
- Arjun Deb, M.D., won the Bernard and Joan Marshall Research Excellence Prize for 2016, awarded by the British Society for Cardiovascular Research
- Yibin Wang, Ph.D., was selected to deliver the Thomas W. Smith Memorial Lecture at the American Heart Association’s Scientific Sessions in 2016
- The following physicians were named Super Doctors for California in 2016: Jamil Aboulhosn, Noel G. Boyle, Eric F. Buch, Donald Chang, Ravi H. Dave, Gregg Fonarow, Tamara B. Horwich, Freney Mody, Kalyanam Shivkumar, Gabriel Vorobiof, Karol Watson, and James Weiss
- The cardiovascular team at Ronald Reagan UCLA Medical Center received the American Heart Association’s “Get with the Guidelines” Heart Failure Gold Plus Quality Award in May 2016
- The UCLA cardiovascular community is delighted to congratulate Stephen Young, M.D., Professor of Medicine/Cardiology, on his prestigious election to the National Academy of Sciences. Read more about Dr. Young’s accomplishments in this UCLA press release: newsroom.ucla.edu/releases/ucla-cardiologist-elected-to-the-national-academy-of-sciences

**IN THE NEWS: AWARDS AND RECOGNITION**


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**PUBLICATION HIGHLIGHTS BY CARDIOVASCULAR THEME INVESTIGATORS**


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**HEART-HEALTHY TIPS**

"Even if you don’t smoke, daily exercise and other heart-healthy habits are important for good cardiovascular health."

—Tamara B. Horwich, M.D., M.S., Ahmanson-UCLA Cardiomyopathy Center