Eldrin Lewis, MD, MPH new Chief, Cardiovascular Medicine

Eldrin Lewis, MD, MPH, has been appointed Professor of Medicine and Division Chief, Cardiovascular Medicine, Department of Medicine, effective March 1, 2020. Dr. Lewis succeeds Drs. Tom Quertermous and Alan Yeung who have successfully led the division as a collaborative partnership over the last 20 years.

Dr. Lewis received his BS at Penn State, his MD from the University of Pennsylvania, and an MPH from the Harvard School of Public Health. He did his internal medicine residency and fellowships in cardiovascular medicine and advance heart failure and transplant cardiology at the Brigham and Women's Hospital in Boston. After, Dr. Lewis joined the faculty of Harvard Medical Center and the Brigham and Women’s, becoming an Associate Professor of Medicine in 2015. In addition. Dr. Lewis has served in a number of leadership roles, both at Brigham and Women’s and nationally though the American Heart Association, serving as Chair of Heart Failure and Transplant and Vice Chair of the Council in Clinical Cardiology Leadership Committee.

Dr. Lewis is a clinician-scientist who specializes in the care of patients with advanced heart failure. He has extensive expertise in conducting clinical trials that examine diagnostic and therapeutic approaches to heart failure. He has also done innovative work to create systems that incorporate quality of life measures for cardiovascular patients in electronic health records. His work has been supported by NIH, private industry, and foundations, and has been published in top tier medical and cardiovascular journals. Dr. Lewis also has a long record of successful mentorship, and has been recognized as an outstanding teacher and mentor.

Dr. Lewis will make an outstanding Professor of Medicine and Chief of the Division of Cardiovascular Medicine.


Jayakumar Rajadas, PhD, appointed Assistant Professor of Medicine

Jayakumar Rajadas, PhD, was appointed Assistant Professor of Medicine (Pulmonary and Critical Care Medicine and Cardiovascular Research Center) on December 1, 2020. Dr. Rajadas is the Director of Biomaterials and Advanced Drug Delivery Laboratory (BioADD) at Stanford. This center has been involved in bringing biophysical ideas into biomaterial and drug delivery technologies.

Joseph C. Wu, MD, PhD, inducted into the National Academy of Medicine

Joseph Wu, MD, PhD, Director of the Stanford Cardiovascular Institute, and Simon H. Stertzer, MD, Professor of Medicine and Radiology, was inducted into the National Academy of Medicine (NAM).

Election to the Academy is considered to be one of the highest honors in the fields of health and medicine, recognizing individuals who have demonstrated outstanding professional achievement and commitment to service. Dr. Wu was elected for his seminal contributions and pioneer breakthroughs in the areas of cardiovascular medicine and imaging.

https://nam.edu/national-academy-of-medicine-elects-100-new-members/

The 5th annual Stanford Drug Discovery Symposium features an exciting line-up of speakers. Save the date for April 21-22, 2020.

Drs. John Schiller and Douglas Lowy will be presented with the Lifetime Achievement Award. See page 2 for more details. Registration opens in January.

https://tinyurl.com/SDDS2020
PARTICIPANTS INCLUDE:

Elizabeth Blackburn, PhD
Professor Emeritus, UCSF
Nobel Prize Laureate 2009

Stanley Crooke, MD, PhD
Founder, Chairman, CEO
Ionis Pharmaceuticals

Anthony Fauci, MD
NIAID Director

Christine Grady, RN, PhD
Chief of Bioethics, NIH

Thomas Hudson, MD
CSO
AbbVie

Cynthia Kenyon, PhD
Vice President of Aging Research
Calico

Paula Kiberstis, PhD
Senior Editor
Science

Stephen Knight, MD, MBA
President and Managing Partner
F-Prime Capital

Dean Li, MD, PhD
Senior Vice President, Discovery
Sciences and Translational Research
Merck

Douglas Lowy, MD
Acting Director
National Cancer Institute

Fady Malik, MD, PhD
Executive Vice President, R&D
Cytokinetics

Mathai Mammen, MD, PhD
Global Head of R&D, Janssen
Pharmaceutical Company of J&J

Joan Mannick, MD
Co-Founder and CMO
resTORbio

Michael Nedelman
Producer, Health & Medicine
CNN

Menelas Pangalos, FR SB, FMedSci
Executive Vice President
BioPharmaceuticals R&D
AstraZeneca

William Rutter, PhD
Chairman and CEO
Synergenics

John Schiller, PhD
Deputy Chief, Laboratory of Cellular Oncology
National Cancer Institute

Lucy Shapiro, PhD
Director, Beckman Center for Molecular and Genetic Medicine
Stanford

Eric Topol, MD
Executive Vice President
Scripps Research Institute

Roy Vagelos, MD
Retired Chairman and CEO, Merck
Chairman of the Board, Regeneron Pharmaceuticals

Wendy Young, PhD
Senior Vice President, Small Molecule Drug Discovery
Genentech

Elias Zerhouni, MD
Former President for Global R&D, Sanofi
Former Director, NIH
Former US Presidential Science Envoy

Questions: Contact Amanda Chase, PhD, at chaseama@stanford.edu
Through Apple Heart Study, Stanford Medicine researchers show wearable technology can help detect atrial fibrillation by Stanford Medicine News Center

Wearable technology can safely identify heart rate irregularities that subsequent clinical evaluations confirmed to be atrial fibrillation, reports a study from the Stanford University School of Medicine and Apple now published in the New England Journal of Medicine (NEJM).

Atrial fibrillation, a type of irregular heart rhythm, is a leading cause of stroke and hospitalization in the United States, but due to its elusive and often sporadic symptoms, the condition often goes undetected. With more than 400,000 participants enrolled in eight months, the Apple Heart Study is the largest virtual study to date. “The study’s findings will help patients and clinicians understand how devices like Apple Watch can play a role in identifying atrial fibrillation, a deadly and often undiagnosed disease,” said Mintu Turakhia, MD, Associate Professor of Cardiovascular Medicine. “Additionally, these important findings lay the foundation for further research into the use of emerging wearable technologies in clinical practice and demonstrate the unique potential of large-scale app-based studies.”

Turakhia and Manisha Desai, PhD, Professor of Medicine and of Biomedical Data Science, are the senior authors of the study. Marco Perez, MD, associate professor of cardiovascular medicine, is the lead author. The study chair is Kenneth Mahaffey, MD, Professor of Cardiovascular Medicine. The study was launched through a research sponsorship by Apple, Inc., in November 2017 to determine whether software on the Apple Watch could use data from the Watch’s heart-rate pulse sensor to identify atrial fibrillation, which is one of the most commonly diagnosed significant cardiac arrhythmias in the United States, affecting up to 6 million people.

During the study, the researchers found that only 0.52% of participants received an irregular pulse notification, assuaging concerns about potential over-notification in healthy participants. Those who were flagged for an irregular pulse received follow-up care through a heart-monitoring technique called an electrocardiography (ECG) patch, which continuously monitors electrical impulses generated by the heart, for one week. Of those who received a notification and were monitored by the ECG patch about two weeks later, 34% were found to have atrial fibrillation. Comparison between irregular pulse-detection on Apple Watch and simultaneous ECG patch recordings showed the pulse detection algorithm has an 84% positive predictive value.

During ECG patch monitoring, participants’ Apple Watches continued to monitor pulse irregularities. If a participant had an irregular pulse detected, 84% of the time this was confirmed to be atrial fibrillation on the simultaneous ECG patch. This, said Perez, demonstrates that the algorithm in the Apple Watch can successfully identify atrial fibrillation. Information from this study could be used to inform further clinical evaluation.


Pressuring the heart to regenerate by Megan Mayerle, PhD

The human heart’s structure and function can change in response to stress. Generally, heart muscle cells do not regenerate. However, a team of scientists led by Stanford Cardiovascular Institute member Dr. Ronglih Liao have recently published a paper in the Journal of Molecular and Cellular Cardiology demonstrating that acute increases or decreases in pressure can trigger adult heart muscle cells to proliferate, and that such stimulation could be harnessed therapeutically to promote cardiac repair.

The researchers used a reversible surgical technique to increase pressure in the hearts of adult mice, and then after a week, returned pressure to normal in a subset of animals, and then used a molecular labeling technique observe heart cell proliferation. Increasing pressure stimulated cell proliferation, which interestingly was stimulated even further by releasing the pressure. The new cells had all the hallmarks of young heart cells, and tended to be found next to each other, suggesting that proliferation is a localized event.

The researchers’ hope is that by understanding how specific stimuli like changes in pressure trigger new heart cell formation, new therapeutic strategies to stimulate/augment natural cardiac regeneration and repair can be developed to help patients.

The final frontier: Studying stem cells on the International Space Station by Krista Conger

Since 2006, iPS cells (short for induced pluripotent stem cells) have been at the forefront of groundbreaking research in biology and medicine. The cells’ ability to become nearly any tissue in the body makes them an invaluable resource for physicians wishing to study the effect of drugs on specific, hard-to-obtain tissues or for researchers wanting to delve into the molecular missteps that lead to all manner of diseases.

Now iPS-derived human heart muscle cells called cardiomyocytes have found their way into space, as part of a study by cardiologist and stem cell researcher Joseph Wu, MD, PhD, graduate student Alexa Wnorowski and former Stanford graduate student Arun Sharma, PhD. With the help of NASA astronaut Kate Rubins, PhD, (also a former Stanford graduate student!), Wnorowski and Sharma studied the effect of the low gravity of the International Space Station on the heart cells’ structure and function. They published their findings in Stem Cell Reports.

Sharma, Wnorowski, and Wu found that the cardiomyocytes cultured on the space station exhibited different patterns of gene expression than did their counterparts grown back here on Earth. They also displayed changes in the way they handled calcium -- an important regulator of contraction rate and strength. Interestingly (and perhaps reassuringly for astronauts like Rubins), the cells appeared to return to normal when their five-and-a-half week jaunt into low Earth orbit ended.

"Working with the cells that launched to and returned from the International Space Station was an incredible opportunity," Wnorowski said. "Our study was the first conducted on the station that used human iPS technology, and demonstrated that it is possible to conduct long-term, human cell-based experiments in space." All in all, the researchers were interested to see how nimbly the cells adjusted to their new, free floating life.

"We were surprised by how quickly human heart cells adapted to microgravity," Sharma said. "These results parallel known organ-level adaptations that happen to the heart during spaceflight."


Understanding Hypertrophic Cardiomyopathy by Amanda Chase, PhD

Hypertrophic cardiomyopathy (HCM) is a cardiovascular disease characterized by the heart muscle (myocardium) becoming abnormally thick. The thickened heart muscle makes it harder for the heart to pump blood. HCM is usually diagnosed in late adolescence or young adulthood, and is the leading cause of sudden cardiac death in those under age 35. Current treatment is only symptomatic relief, including heart muscle reduction surgery, defibrillator placement, or heart transplant. A new therapeutic approach to treat the disease is urgently needed, but rational drug discovery has been hampered by a lack of understanding of the molecular basis of the disease.

HCM patients display hypercontractility, although the mechanism generating hypercontractility is not understood. It is known that HCM is most often caused by gene mutations, specifically in genes encoding β-cardiac myosin, a motor protein that drives heart muscle contractions. How mutations in the cardiac motor protein leads to altered power output of the protein, thus affecting heart muscle contractility, is not known. Recently, a team of researchers from Stanford University Cardiovascular Institute, led by Kathleen Ruppel, MD, James Spudich, PhD, and first author Arjun Adhikari, PhD, sought to address this question. They generated myosin proteins with four HCM-causing mutations, all known to be clinically pathogenic, and investigated how those HCM-causing mutations alter myosin activity. Their results were recently published in Nature Communications. The researchers were able to show that the specific mutations tested led to an increase in the percentage of myosin motors available to interact with actin; myosin binding to actin results in the power stroke of the myosin motor that drives muscle contraction. Thus, the HCM-causing mutations led to increased cardiac muscle contractility, as seen in HCM patients. Together, the authors were able show that HCM mutations in β-cardiac myosin lead to hypercontractility. These results shed light on a fundamental concept of HCM development, and pushes forward the understanding of the molecular basis of HCM.

Grants and Awards

Erik Ingelsson, MD, PhD, was awarded an R01 for "Characterization of novel insulin resistance genes by gene editing, high-throughput phenotyping, and in vivo studies".

Alison Marsden, PhD, received an R01 for "Virtual surgery simulator to accelerate medical training in cardiovascular disease" and a second R01 for "Automated data curation to ensure model credibility in vascular model repository".

Michael Ma, MD, received a KL2 Career Development Award.

Nicholas Leeper, MD, PhD, received the 2019 Special Recognition Award in Vascular Biology from AHA and ATVB (Arteriosclerosis, Thrombosis and Vascular Biology).

Sean M. Wu, MD, PhD, received a Sanofi iAward grant.

Kyle Loh, PhD, was named a Packard Fellow for Science and Engineering.

Michelle Kaplinski, MD, received a Maternal & Child Health Research Institute (MCHRI) Clinical Education Grant.

Joseph Woo, MD, received the Surgery Mentoring Award from the Council on Cardiovascular Surgery and Anesthesia (CVSA).

Owais Khan, PhD, received an AHA postdoctoral fellowship.

Ke Yuan, PhD, was promoted to Assistant Professor of Pediatrics, tenure track, at Boston Children's Hospital. She was formerly an Instructor of Medicine - Pulmonary & Critical Care Medicine at Stanford.

David Paik, PhD, was promoted to Instructor.

Kevin Moulin, PhD, received an AHA postdoctoral fellowship for "Joint diffusion and displacement encoded MRI for measuring 'myofiber' strain in diabetic cardiomyopathy".

Katharina Schimmel, PhD, received a Vevo Travel Award from VisualSonics for the cardiology track.

Tina Baykaner, MD, MPH, was awarded an NIH K23 for "Personalizing Atrial Fibrillation Treatment".

Myriam Amsallem, MD, PhD, was appointed Instructor in the Department of Cardiovascular Medicine.

Jennifer Attam Arthur, PhD, received an AHA postdoctoral fellowship award.

Donate to the Stanford Cardiovascular Institute

The Institute currently consists of over 240 faculty members representing physicians, surgeons, engineers, basic and clinical researchers. The Institute's mission is integrating fundamental research across disciplines and applying technology to prevent and treat cardiovascular disease.

To support cardiovascular research and education at CVI, please contact: Joseph C. Wu, MD, PhD, CVI Director at joewu@stanford.edu or Cathy Hutton, Senior Associate Director, Medical Center Development at cathy.hutton@stanford.edu.

For more: [http://med.stanford.edu/cvi/support-our-research.html](http://med.stanford.edu/cvi/support-our-research.html) and [http://cvi.stanford.edu](http://cvi.stanford.edu)
Recruitment for T32 Fellowships

Multi-Disciplinary Training Program in Cardiovascular Imaging T32 Training Grant
The Multi-Disciplinary Training Program in Cardiovascular Imaging at Stanford is funded by the National Institute of Biomedical Imaging and Bioengineering of the National Institutes of Health. With the impact of cardiovascular disease on U.S. and world health, and the rapid advances in imaging technologies and cardiovascular biology, it is critical that fellows be provided a broad, multi-disciplinary, and collaborative training program to foster their ability to translate CV imaging research into clinical applications. The program is designed to train the next generation of CV imaging investigators by exposing them to three complementary areas—clinical, engineering, and molecular imaging.

http://med.stanford.edu/cvi/education/cardiovascular-imaging-t32.html

Mechanisms and Innovations in Cardiovascular Disease T32 Training Grant
This program provides training in the following areas of vascular medicine and research: Vascular Reactivity and Thrombosis, Vascular Regeneration and Development, Metabolic or Lifestyle Influences on Vascular Outcomes, Proteomic Markers & Genetic Determinants of Vascular Disease, Gender and Ethnicity Differences in Vascular Disease, and Vascular Bioengineering. Twenty-nine faculty mentors from eighteen different departments within the School of Medicine and the University provide a variety of angles from which to address fundamental questions about vascular disease.

http://med.stanford.edu/cvi/education/mechanisms-and-innovations-t32.html

Research Training in Myocardial Biology T32 Training Grant - 2 Openings
The Multi-Disciplinary Research Training Program in Myocardial Biology is funded by the National Institutes of Health to bring together post-doctoral fellows and faculty from six complementary areas—genetics and genomics, cellular signaling, molecular imaging, physiology and phenotyping, cardiac development and regeneration and outcomes research and population science. Although many possible divisions exist in the spectrum of cardiovascular investigators, one of the most discrete is the division between those researchers interested in blood vessels and those primarily interested in the biology of the heart muscle itself. Myocardial biologists at Stanford are found in diverse departments and divisions within the wider Stanford community and this provides a natural vehicle for multidisciplinary training.

http://med.stanford.edu/cvmedicine/education/timbs.html

CVI hosts Stanford - UPenn Cardiovascular Research Symposium in November

The Stanford-Penn Cardiovascular Symposium was held over two days, November 4-5, 2019, highlighting ongoing cardiovascular research at both institutions. The symposium was attended by over 300 people, from basic scientists to industry representatives to clinicians. The conference was hosted by the Stanford Cardiovascular Institute, in conjunction with the University of Pennsylvania Cardiovascular Institute, with the mission of fostering productive collaborations. The event opened with a keynote address by Peter Fitzgerald, MD, PhD, Professor Emeritus of Cardiovascular Medicine and Medicine & Engineering, who spoke about “Future in Health: Drugs, Devices, and Data”. The second day kicked off with a keynote address by Daniel Rader, MD, Seymour Gray Professor of Molecular Medicine at the University of Pennsylvania, entitled: “A Genome-Frist Approach to Cardiometabolic Disease”. In addition, twenty-four Stanford and Penn cardiovascular researchers presented their research, and there were eleven rapid fire talks from junior scientists. The conference ended with an engaging poster session, where over forty posters were presented and discussed. We look forward next year’s CVI Retreat, a joint conference with Cornell University on October 15-16.
ENLIGHTEN-ing a population by Damon Williams

In a paper recently published in the Journal of Community Health, a team of researchers outlined the effectiveness of a monthly lifestyle education program on increasing the cardiovascular health of pre-hypertensive adults in a low-income urban setting. This study was led by first author Julieta Gabilola, MD, clinical professor of medicine at Stanford and senior author Latha Palaniappan, MD, MS, professor of medicine at Stanford.

The ENLIGHTEN study (the EffectiveNess of Lifestyle with diet and physical education proGram among prehypertensives and stage 1 HyperTENsives in an urban community setting) is an intervention study that compares select health metrics of a group of individuals that was assigned to either an intervention or attention-control group. The intervention group was exposed to lectures on cardiovascular disease, as well as organized lectures on diet and exercise. The attention-control group, however, only received lectures on non-cardiovascular topics, only receiving the advice that a healthy diet and exercise are important. The aim was to determine if educational programs alone could be used as a resource for improving hypertension levels and, ultimately, cardiovascular health.

To test their question, the researchers had 156 participants in Manila, Philippines, who were assigned to either the attention-control group or the intervention group, and who participated for the full 6 months. The primary outcome for the study was looking for blood pressure reduction, with secondary outcomes including waist circumference, total cholesterol, and fasting glucose, all measures associated with cardiovascular health. The researchers found that the monthly education sessions (intervention group) had profound positive effects on the health of the selected individuals. They noticed a statistically significant decrease in systolic blood pressure, BMI, waist circumference, total cholesterol, and glucose levels. Importantly, these findings show the feasibility of implementing lifestyle interventions and education programs in the Philippines and other developing countries with limited health care resources in improving cardiovascular health.

The Stanford Cardiovascular Institute has provided over $2.7 million in seed funding to support research in cardiovascular research and innovation since 2004. Our goal is to ignite and support new ideas that will change how we diagnosis and treat cardiovascular diseases. Together with Stanford Maternal and Children’s Health Research Institute (MCHRI) and the Gootter Foundation, the CVI is excited to support research for 11 outstanding projects in 2020.

## CVI Seed Grants 2019-2020 (FY 2020)

### Seed Grants funded by the Maternal & Child Health Research Institute

- **PIs:** Francois Haddad, MD; Myriam Amsallem, MD, PhD; Jeffrey Feinstein, MD, MPH
- **Co-Investigators:** Alison Marsden, PhD; Roham T. Samanian, MD; David Ouyang, MD
- **Project:** Developing Novel Computational Methods for the Early Detection of Right Heart Failure and Pulmonary Hypertension in the Pediatric and Adult Populations

- **PI:** Sushma Reddy, MD
- **Co-Investigators:** Daniel Bernstein, MD; Jingjing Li, PhD
- **Project:** A Non-invasive Signature of Myocardial Signaling in Children with Single Ventricle Heart Failure

- **PIs:** Ioannis Karakikes, MD; Kevin Wang, MD, PhD
- **Project:** CRISPR-mediated Therapy for Cardiac Laminopathies

- **PIs:** Nicholas Leeper, MD; Ying Wang, PhD
- **Project:** Identify 'Atherogenic' Somatic Mutations/Epigenetic Modifications in Vascular Smooth Muscle Cells

- **PIs:** David Paik, PhD; Kari Nadeau, MD, PhD
- **Co-Investigator:** Lei Tian, PhD
- **Project:** Single-cell Sequencing to Identify Air Pollution-Induced Cardiac Risks

- **PI:** Marlene Rabinovitch, MD
- **Co-Investigators:** Michael Snyder, PhD; David Marciano, PhD; Jan-Renier Moonen, MD, PhD
- **Project:** Exploring Genomic Mosaicism in Pulmonary Arterial Hypertension Patient Lungs

- **PI:** Elsie Ross, MD
- **Co-Investigators:** Nigam Shah, MBBS, PhD; Nicholas Leeper, MD; Erik Ingelsson, MD, PhD; Philip Tsao, PhD
- **Project:** Development of a Precision Screening Platform for Peripheral Artery Disease Using Electronic Health Records and Polygenic Risk Scores

- **PIs:** Jennifer Tremmel, MD; Patricia Nguyen, MD
- **Co-Investigators:** Vedant Pargaonkar, MD; Thomas Quertermous, MD
- **Project:** Whole Exome Sequencing Study of Coronary Microvascular Dysfunction in Patients with Angina in the Absence of Obstructive Coronary Artery Disease

- **PI:** Phillip Yang, MD
- **Co-Investigators:** Utkan Demirci, PhD; Katrin Svensson, PhD
- **Project:** Proteomic Analysis of iPSC-derived Extracellular Vesicles for Mitochondrial Biogenesis

### Seed Grant Funded by the Steven M. Gootter Foundation

- **PI:** Paul Wang, MD
- **Co-Investigators:** Duy Nguyen, MD; Anson Lee, MD; Mohan Viswanathan, MD; Nitish Badhwar, MD; Sanjiv Narayan, MD; Oscar Abilez, MD, PhD; Phillip Yang, MD; Meghedi Babakhanian, PhD; Terrance Pong, MD; Paul Chang, MD
- **Project:** Experimental Heart Models of Ventricular Tachycardia: Porcine and Explanted Human Heart
A method to shed light on the genetic underpinnings of complex human traits by Megan Mayerle, PhD

Human genetic studies have been highly instrumental in ushering in the current precision medicine era. Such initiatives have been profoundly successful at identifying genomic regions that cause or contribute to many diseases. However, there have been significant challenges in actually using such information to treat patients. Such challenges are often due to pleiotropy, or when one gene can have multiple, disparate effects, and to the fact that many complex diseases do not have simple underlying genetic causes, and instead arise from a constellation of genetic and environmental factors.

In an article published in *Nature Communications*, a team of researchers led by CVI member Dr. Erik Ingelsson and Dr. Manuel Rivas has developed and applied a new methodology to address this problem. Building on a mathematical technique known as Singular Value Decomposition, the authors developed DeGAs, or decomposition of genetic associations, and a freely available web app for using their methodology. The technique allows researchers to combine information from a wide variety of sources while preserving data interpretability.

Next, using data from the UK Biobank, the researchers applied DeGAs to try to understand body mass index (BMI), myocardial infarction (MI), and gallstones, all of which are complex human traits and diseases that can arise from a complex combination of genetic and environmental factors. The researchers identified loss-of-function variants in two genes that contribute to obesity, and followed that up with functional experiments in adipocytes to demonstrate a role for these genes in fat cell differentiation, presumably underlying their role in obesity development.

DeGAs provides a starting point that enables scientists to investigate genetic components, their functional relevance, and potential therapeutic targets and is an approach that can be applied to a wide variety of human diseases.


2019 AHA Scientific Sessions

The 2019 AHA Scientific Sessions was held November 16-18 in Philadelphia, Pennsylvania. This annual meeting brings together basic, translational, and clinician scientists and physicians to discuss and present innovative findings. Stanford CVI was well represented, with fellows, faculty, and staff in attendance. Several presented posters or concurrent session presentations. Dr. Robert Harrington, Chair of the Department of Medicine and AHA president, presented the Presidential Address. He spoke about the exciting time it is to be in cardiovascular health, and in science, and that evidence matters in all aspects of treating CV disease and should be the basis for decision making.

Michael Fischbein, MD, moderated a series of debates regarding the optimal treatment plans for difficult cases.

AHA President, and Chair of Department of Medicine at Stanford, Robert Harrington, MD, giving the Presidential Address.

Ngan Huang, PhD, spoke on biomaterials for endothelial to mesenchymal transition for vascular regeneration. She also moderated a session and her group presented 2 posters.

Drs. Joseph Wu and Ronglih Liao

cvi.stanford.edu

Drs. Joseph Wu and Ronglih Liao

cvi.stanford.edu

Faddy Grady with Dr. Joseph Wu. Faddy was awarded the Minority Travel Grants from the Council on Basic Cardiovascular Science.

Joseph Woo, MD, presented two talks on the commando procedure as well as intraoperative tips on ventricular rupture after mitral surgery. His group presented 5 posters. Dr. Woo also received the Surgery Mentoring Award from the council of Cardiovascular Surgery and Anesthesia (CVSA).

Finalists for the Louis N. and Arnold M. Katz Basic Research Prize for Early Career Investigators
Inflammation may trigger silent mutation causing sudden onset of pulmonary hypertension by Tracie White

Researchers at the Stanford University School of Medicine have found that inflammation in the lungs of rats, triggered by something as simple as the flu, may wake up a silent genetic defect that causes sudden onset cases of pulmonary hypertension, a deadly form of high blood pressure in the lungs.

“It’s a kind of one-two punch,” said Amy Tian, PhD, senior research scientist in pulmonary and critical care. “Basically, the first hit is the mutation, and the second hit is inflammation in the arteries of the lungs. You can be healthy and carrying this mutation, and all of the sudden you get a bacterial or viral infection, and it leads to this terrible disease.”

Tian is the lead author of the study, which was published Aug. 29 in Circulation. Mark Nicolls, MD, Professor and Chief of Pulmonary and Critical Care Medicine, is the senior author.

There is no known cause of pulmonary hypertension, a debilitating disease that causes difficulty breathing, fatigue and chest pain. It can leave patients too weakened to perform simple daily activities, such as climbing a flight of stairs. About 200,000 people a year are hospitalized with the disease in the United States, according to the Pulmonary Hypertension Association of America. The only available cure for severe forms of the disease is lung transplantation, but it has only a 30% survival rate.

Treatment is limited to vasodilators, drugs that cause the smooth muscle cells of the diseased blood vessels in the lungs to relax, permitting more blood to flow through. These drugs help to extend survival and relieve some symptoms, but they are not a cure. Thus, scientists have been searching for other therapies.

Past research has shown that the majority of patients with the inherited form of pulmonary hypertension, which is also the most lethal, carry a mutation in the gene BMPR2. Whether the mutation plays a role in causing the disease has been unclear. Surprisingly, 80% of people with the mutation don’t get the disease and remain perfectly healthy, Nicolls said.

Based on previous research into inflammation in the lungs, the Stanford researchers hypothesized that an inflammation-producing pathway may provide the second “hit” that triggers the mutation to cause the disease in certain patients. Based on previous research into inflammation in the lungs, the Stanford researchers hypothesized that an inflammation-producing pathway may provide the second “hit” that triggers the mutation to cause the disease in certain patients. Indeed, their results indicate that limiting potential environmental causes of lung inflammation in patients with a genetic risk for pulmonary hypertension may help prevent the development of the disease.


Unconscious bias: The double-edged sword by Damon Williams

In her recent publication in the Thoracic Surgery Clinics Journal, Associate Professor of Cardiothoracic Surgery Dr. Leah Backhus comprehensively explores the complex topic of unconscious bias (UB) and discusses the positive and negative effects that it has on surgical education with a spotlight on cardiothoracic surgery. She details how the “hidden brain” can be beneficial by hastening decision-making in time-sensitive situations, such as during a thoracic surgery operation. However, it can also have negative effects on trainees, such as contributing to feelings of alienation, negatively impacting their performance, damaging their mental health, and at times playing a role in which specialty they choose or how well they excel in their chosen field. These effects are especially prevalent in female and African American surgical trainees.

Backhus provides striking statistics from the American Board of Surgery In-Training Examination surveys showing that African American surgical residents are less likely to believe they can count on their peers for help. Other survey data report that male surgical trainees have a 12.7% higher rate of milestone attainment throughout residency programs compared to their female counterparts. Importantly, this is in spite of evidence demonstrating equal surgical board pass rates.

As the medical (and pre-medical) education student body continues to become more diverse and inclusive to individuals of all backgrounds, it is important to shed light on these issues with the added (and equally important) benefits towards reducing disparities in healthcare delivery and health outcomes for our patients. Dr. Backhus is helping leading medical education in the right direction by both addressing and providing solutions to these issues in a healthy and positive way.

The science and art of grant writing

As you sit down to write a grant proposal, remember one thing — you’re telling a story. You want it to be a page-turner. Your primary audience will be a few busy senior scientists sitting in front of a tall stack of applications. You should strive to make yours interesting. The specific aims page should spark their curiosity. A new solution to an old problem. Connections that have never been made before. Then you’ll get your grant. This was the main message delivered at a half-day grant writing symposium held on July 25, organized by Stanford’s Biosciences Grant Writing Academy.

“The Science and Art Grant Writing Symposium” featured 11 distinguished Stanford scientists, all experienced grant writers, who offered up their collective wisdom on how to write an amazing proposal. Stanford has a wealth of resources to hone your grant writing skills. These include articles, online courses, hands-on assistance, and video tutorials.

https://med.stanford.edu/researchofficebulletin/topics/The-science-and-art-of-grant-writing.html

MED223 | Cardiopulmonary Research & Medicine

The focus of MED223 is to fine-tune critical thinking skills by analyzing original publications and understanding the current complexities of the cardiovascular system. MED223 is part of the Scholarly Concentration: Cardiovascular-Pulmonary Sciences.

For more information, contact MED223 Directors: Ngan Huang, PhD, Ioannis Karakikes, PhD, Edda Spiekerkoetter, MD, and Vinicio de Jesus Perez, MD. MED223 website: https://med.stanford.edu/cvi/education/cvi-courses/med223.html
Funding Opportunities

DECEMBER 2019

JANUARY 2020

ISHLT/Enduring Hearts Transplant Longevity Research Award. Deadline: January 13, 2020

ISHLT/O.H. Frazier Award in MCS Translational Research (Sponsored by Medtronic). For junior faculty dedicated to a career in the use of MCS as a treatment option for heart failure. Deadline: January 13, 2020


2020 Stanford Clinical and Translational Science Award (CTSA) SPADA Pilot Grants: Request for Proposals. Application Due: Friday, January 10, 2020 at 6 pm


Tobacco-Related Disease Research Program of California (TRDRP) Rapid Response Research to Accelerate Policy Award. Stanford PI Eligibility: Faculty with PI eligibility and CE faculty (with an approved CE Faculty PI waiver obtained 1-2 weeks prior to the LOI submission). Full application: January 23, 2020

Stanford Seed Funding CARE Seed Grant. (Sponsored by Center for Asian Health Research and Education) Deadline: January 27, 2020

NHLBI Program Project Applications (P01 - Clinical Trial Optional). The proposed programs may address scientific areas relevant to the NHLBI mission including the biology and diseases of the heart, blood vessels, lung, and blood; blood resources; and sleep disorders. Due Date: January 25, 2020

NHLBI T32 Training Program for Institutions That Promote Diversity (T32 – Clinical Trial Not Allowed). Due Date: January 25, 2020

FEBRUARY 2020
NIH Research Project Grant (Parent R01 Clinical Trial Not Allowed). New application Deadline: February 5, 2020. PA-19-056

NIH Research Project Grant (Parent R01 Clinical Trial Required). New application Deadline: February 5, 2020. PA-19-055

NIH Single-Site Investigator-Initiated Clinical Trials (R61/R33 Clinical Trial Required) Deadline: February 11, 2020. PAR-19-328

NIH Mentored Career Development Award to Promote Faculty Diversity in Biomedical Research (K01 Independent Clinical Trial Required). Deadline: February 12, 2020. RFA-HL-19-025

NIH Mentored Career Development Award to Promote Faculty Diversity in Biomedical Research (K01 Independent Clinical Trial Not Allowed). Deadline: February 12, 2020. RFA-HL-19-026

NHLBI Outstanding Investigator Award (OIA) (R35 Clinical Trial Optional). Due Date: February 14, 2020. RFA-HL-20-011

NIH Exploratory/Developmental Research Grant Program (Parent R21 Clinical Trial Not Allowed). Due Date: February 16, 2020. PA-19-053

NIH Exploratory/Developmental Research Grant Program (Parent R21 Clinical Trial Required). Due Date: February 16, 2020. PA-19-054

NIDDK Small Grants for New Investigators to Promote Diversity in Health-Related Research (R21 Clinical Trial Optional). Due Date: February 16, 2020. PAR-19-222

MARCH 2020
Tobacco-Related Disease Research Program of California (TRDRP) Community-Partnered Participatory Research Award. Stanford PI Eligibility: Faculty with PI eligibility and CE faculty (with an approved CE Faculty PI waiver obtained 1-2 weeks prior to the LOI submission). Full application: March 5, 2020

NIH Research Project Grant (Parent R01 Clinical Trial Not Allowed). Renewal, Revision, Resubmission Deadline: March 5, 2020. PA-19-056

NIH Research Project Grant (Parent R01 Clinical Trial Required). Renewal, Revision, Resubmission Deadline: March 5, 2020. PA-19-055

NIH Pathway to Independence Award (Parent K99/R00 - Independent Clinical Trial Required). Renewal, Revision, Resubmission Deadline: March 12, 2020. PA-19-129

NIH Pathway to Independence Award (Parent K99/R00 Independent Basic Experimental Studies with Humans Required). Renewal, Revision, Resubmission Deadline: March 12, 2020. PA-19-090

NIH Mentored Patient-Oriented Research Career Development Award (Parent K23 Independent Clinical Trial Required). Renewal, Revision, Resubmission Deadline: March 12, 2020. PA-19-118

NIH Mentored Patient-Oriented Research Career Development Award (Parent K23 – Independent Clinical Trial Not Allowed). Renewal, Revision, Resubmission Deadline: March 12, 2020. PA-19-119

NIH Mentored Clinical Scientist Research Career Development Award (Parent K08 Independent Clinical Trial Not Allowed). Renewal, Revision, Resubmission Deadline: March 12, 2020. PA-19-117

NIH Mentored Clinical Scientist Research Career Development Award (Parent K08 Independent Clinical Trial Required). Renewal, Revision, Resubmission Deadline: March 12, 2020. PA-19-116

NIH Exploratory/Developmental Research Grant Program (Parent R21 Clinical Trial Not Allowed). Renewal/Revision Due Date: March 16, 2020. PA-19-053

NIH Exploratory/Developmental Research Grant Program (Parent R21 Clinical Trial Required). Renewal/Revision Due Date: March 16, 2020. PA-19-054

ROLLING DEADLINE
Mackay California-Pacific Rim Tobacco Policy Scholar Award. $250K/yr x 3 yrs. Build leadership among mid-career researchers to foster evidence-based tobacco control policy with relevance to California and the Pacific Rim (Asia, Pacific Islands and Latin America). Eligibility: mid-career faculty with PI eligibility and mid-career CE faculty (with an approved CE Faculty PI waiver >>). Applicants must be 5 years post completion of his/her terminal degree or 5 years post-completion of his/her medical residency at the start of the award. Note: Stanford visiting scholars are not eligible to be PIs. Awardees are required to commit at least 35% of their effort each year. No citizenship requirement.
National and Global Cardiovascular Conferences

**JANUARY 2020**

**Mayo Clinic Cardiology Update at Puerto Vallarta: A Focus on Prevention.** January 6-10, 2020. Marriott CasaMagna, Puerto Vallarta, Mexico

**Mayo Clinic Hawaii Echo with Multimodality Imaging.** January 18-23, 2020. Ritz Carlton Kapalua, Kapalua, Maui, HI


**Keystone Symposia Beyond a Million Genomes: From Discovery to Precision Health (A4).** January 21-25, 2020. Beaver Run Resort, Breckenridge, CO, USA

**Mayo Clinic Arrhythmias and the Heart: A Cardiovascular Update.** January 27-31, 2020. Fairmont Orchid, Kohala Coast, HI, USA


**FEBRUARY 2020**

**Keystone Symposia Antibodies as Drugs: From B Cell Biology to New Treatments (B1).** February 2-6, 2020. Eldorado Hotel & Spa, Santa Fe, NM, USA

**Mayo Clinic Cardiovacular Conference at Snowbird.** February 5-8, 2020. Cliff Lodge, Snowbird, UT, USA


**Keystone Symposia Cerebral Fluid Flow and Function: Lymphatics, Glymphatics and the Choroid Plexus (Q4).** February 16-19, 2020. Eldorado Hotel & Spa, Santa Fe, NM, USA

**Keystone Symposia Fibrosis and Tissue Repair: From Molecules and Mechanics to Therapeutic Approaches (Q6).** February 19-23, 2020. Fairmont Empress Victoria, Victoria, BC, Canada

**Mayo Clinic. Cardiology at Cancun: Topics in Clinical Cardiology.** February 24-28, 2020. Marriott Cancun Resort, Cancun, Mexico

**MARCH 2020**

**Mayo Clinic Ski the Summit @ Copper: Echo Imaging in Colorado.** March 1-5, 2020. Copper Mountain Resort, Copper Mountain, CO, USA


**Keystone Symposia Charting a New Course for Heart Failure: From Discovery to Data (Q8).** March 1-5, 2020. Keystone Resort, Keystone, CO, USA


**Mayo Clinic Cardiac Rehabilitation Workshop: The Mayo Clinic Model.** March 24-26, 2020. Rochester, MN, USA


**Mayo Clinic Heart Failure Management for NP, PA, and Primary Care Providers.** March 26-28, 2020. Disney’s Grand Floridian Resort. Lake Buena Vista, FL, USA

**Mayo Clinic Extracorporeal Membrane Oxygenation (ECMO) Symposium 2020.** March 27-28, 2020. Scottsdale, AZ USA
Clinical Biomarker & Phenotyping Core Lab (BPCL)

BPCL provides quantitative assessment of clinical cardiovascular phenotypes for translational research and clinical trials. These cardiovascular phenotypes include evaluating cardiac structure and function, measuring carotid intimal thickness and arterial stiffness, and testing endothelial function and cardiopulmonary exercise testing.

In collaboration with the Human Immune Monitoring Center at Stanford and members of the Cardiovascular Institute, we also offer central blood processing and banking capabilities. In addition, we develop new biomarker platforms and imaging modalities.

Contact: Francois Haddad, MD / fhaddad@stanford.edu

CVI Clinical Trials Core

The CVI Clinical Trials Core provides full spectrum of support to CVI members and their clinical trials. The coordinators have extensive clinical research experience in both industry and academia. The team provides services and support to principal investigators and sponsors, including:

- Consultation
- Data management
- Study start-up management, including IRB applications, budget development
- Regulatory compliance and documentation
- Subject recruitment, site visits, and follow-ups (AE reporting and queries)
- Closeout
- Closeout

Contact: Ed Finn, Clinical Trials Manager at efin@stanford.edu


Leadership

Joseph C. Wu, MD, PhD
Director, Stanford Cardiovascular Institute
Simon H. Stertzer, MD, Professor of Medicine and Radiology

Robert A. Harrington, MD
Arthur L. Bloomfield Professor of Medicine
Chair, Dept. of Medicine

Ronald L. Dalman, MD
Walter C. and Elsa R. Chidester Professor of Surgery
Chief, Division of Vascular Surgery

Stephen J. Roth, MD, MPH
Professor and Chief, Pediatric Cardiology
Director, Children’s Heart Center

Dominik Fleischmann, MD
Professor, Dept. of Radiology
Chief, Cardiovascular Imaging

Michael Snyder, PhD
Professor and Chair, Dept. of Genetics
Director, Stanford Center for Genomics and Personalized Medicine

Kenneth Mahaffey, MD
Professor, Dept. of Medicine
Vice Chair of Medicine for Clinical Research

Y. Joseph Woo, MD
Norman E. Shumway Professor in Cardiothoracic Surgery
Chair, Dept. of Cardiothoracic Surgery

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The Stanford Professor of Pulmonary and Critical Care Medicine, Dept. of Medicine, Chief, Pulmonary and Critical Care Medicine

Alan Yeung, MD
Li Ka Shing Professor of Medicine
Co-Chief (Clinical), Division of Cardiovascular Medicine

Tom Quertermous, MD
William G. Irwin Professor of Medicine
Co-Chief (Research), Division of Cardiovascular Medicine

Paul Yock, MD
Martha Meier Weiland Professor, Bioengineering and Medicine; and Professor, by courtesy, of Mechanical Engineering, Director, Byers Center for Biodesign

Marlene Rabinovitch, MD
Dwight and Vera Dunlevie Professor in Pediatric Cardiology