

Professors Eldrin Lewis, David Maron, and Paul Wang, Recognized with Endowed Chairs

Eldrin Lewis, MD, MPH, has been named the Simon H. Stertz, MD Professor of Medicine. This endowed chair will support him in his role as Chief of Division of Cardiovascular Medicine. David Maron, MD,

has been named the C.F. Rehnborg Professor of Medicine. This endowed chair will support him in his role as Chief, Stanford Prevention Research Center and Director, Preventive Cardiology. Paul Wang, MD, Professor of Medicine and of Bioengineering was awarded the John R. Singleton and Ai Giak L. Singleton Endowed Directorship. As co-director of the Stanford Center for Arrhythmia Research, the funding will support Wang's commitment to developing new solutions and inventing technologies that improve arrhythmia care.

Nazish Sayed, MD, PhD - New Assistant Professor of Surgery and the Cardiovascular Institute

Dr. Sayed recently joined the Department of Surgery in the Division of Vascular Surgery as Assistant Professor. Dr. Sayed's research focuses on the development of novel technologies that drive innovation in regenerative medicine, disease modeling, and drug testing in vascular biology. He performs translational research in vascular biology and aims to understand the role of vasculature in cardiac diseases. His lab employs human induced pluripotent stem cell technology to generate patient-specific vascular cells. By employing this unique platform, his lab also investigates the role of anti-cancer drugs on vasculature. Dr. Sayed's lab has also established an endothelial regeneration program.



Juyong Brian Kim, MD - New Assistant Professor of Cardiovascular Medicine and the Cardiovascular Institute

Dr. Kim recently joined the Department of Medicine in the Division of Cardiovascular Medicine as Assistant Professor. Dr. Kim is interested in understanding how various environmental pollutants interact with genes to affect the transcriptome, epigenome, and eventually disease phenotype of cardiovascular disease. His lab uses animal models of disease and single-cell sequencing technologies to answer some of these questions. Additionally, they collaborate with several Stanford teams to develop biomarkers that will aid with detection and prognosis of cardiovascular disease. He is passionate about the need to reduce environmental effects on health through strong advocacy and outreach.



SDDS 2021
Stanford Drug Discovery Symposium

April 19-20, 2021

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Join the Stanford Cardiovascular Institute April 19th-20th for two days of interdisciplinary exchange on the forefront of drug research. Leaders in drug development research, policy, and ventures will participate as speakers, panelists and hosts, and over 2,000 participants are registered to attend as of March 1st. See page 2 for additional details.

SDDS 2021 sessions include Biology of Disease, Investing in Discovery, Discovery Research, Disseminating Drug Discovery Findings, Drug Discovery for Infectious Diseases, COVID-19 Industry and Societal Shifts, Stanford Drug Discovery Showcase, Health Policy.

Find out more and register for free: <http://tinyurl.com/SDDS2021>

SDDS takes advantage of the collective experience of our participants to cover a wide range of policy, research, and venture topics. It provides an invaluable forum for interdisciplinary exchange at the forefront of drug research.

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Nobel Prize in 2012



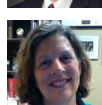
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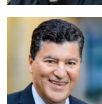
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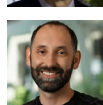
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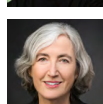
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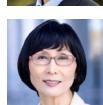
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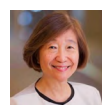
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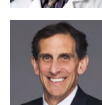
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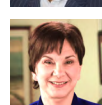
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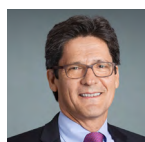
Zoom links and additional details available at <https://med.stanford.edu/cvi/mission/frontiers-in-cv-science.html>



March 9, 2021

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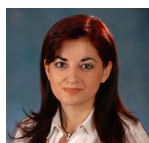
Professor of Medicine & Nora Eccles Treadwell Scholar, Division of Cardiology Research Director, Co-Chief of Heart Failure & Transplant, University of Utah



May 4, 2021

MARIO DELMAR, MD, PHD

Patricia M. and Robert H. Martinsen Professor of Cardiology, Professor of Cell Biology, New York University School of Medicine



March 16, 2021

AIKATERINI KONTROGIANNI-KONSTANTOPOULOS, PHD

Professor of Biochemistry and Molecular Biology, Director of Interdisciplinary Training Program in Muscle Biology, University of Maryland



May 11, 2021

STEPHEN Y. CHAN, MD, PHD

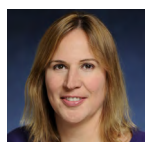
Professor of Medicine, Director of the Vascular Medicine Institute, Director of the Center for Pulmonary Vascular Biology and Disease, University of Pittsburgh



March 23, 2021

CHARLES C. HONG, MD, PHD

Dr. Melvin Sharoky Professor of Medicine and Director of Cardiology Research, University of Maryland School of Medicine



May 25, 2021

SHARON GERECHT, PHD

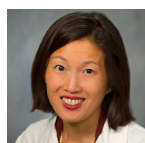
Edward J. Schaefer Professor in Engineering, Director, Institute for NanoBio Technology, Johns Hopkins University



March 30, 2021

ARJUN DEB, MD

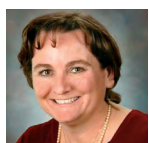
Professor of Cardiology; Molecular, Cell and Developmental Biology; and Director of the UCLA Cardiovascular Medicine Research Theme, UCLA



June 1, 2021

BONNIE KY, MD

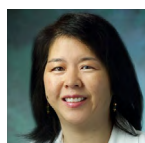
Associate Professor of Medicine and Epidemiology and Founders Associate Professor of Cardio-Oncology, Director of Cardio-Oncology Translational Center of Excellence, University of Pennsylvania



April 4, 2021

MERRY L. LINDSEY, PHD

Chair & Professor, Department of Cellular & Integrative Physiology Director, NE Center for Heart & Vascular Research, University of Nebraska Medical Center



June 8, 2021

KATHERINE WU, MD

Associate Professor of Medicine, Johns Hopkins University



April 13, 2021

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Assistant Professor of Medicine, Massachusetts General Hospital



June 15, 2021

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Associate Professor in Cardiovascular Medicine and Radiology, Harvard Medical School, Director Nuclear Cardiology, Brigham and Women's Hospital



April 27, 2021

SHAHIN RAFII, MD

Professor of Medicine and Arthur B. Belfer Professor in Genetic Medicine, Chief, Division of Regenerative Medicine, Director, Ansary Stem Cell Institute, Weill Cornell Medical College

Host: Joseph C. Wu, MD, PhD

joewu@stanford.edu

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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> and <http://cvi.stanford.edu>



Joseph C. Wu,
MD, PhD

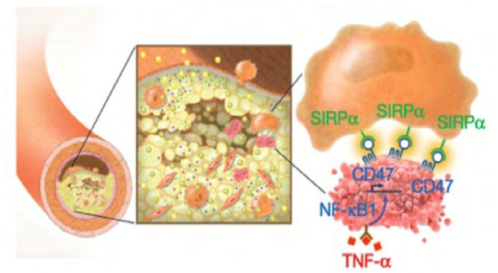


Cathy Hutton,
MBA

Harnessing the immune system to treat vascular inflammation By Amanda Chase, PhD

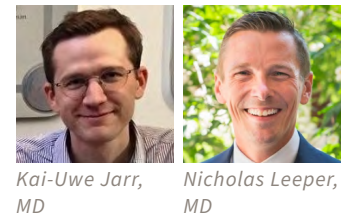


One of the major players in the immune process is a type of blood cell called a 'macrophage' that engulfs anything that is not specific to a healthy body. One of the special markers that prevents removal of intrinsic cells from the body is CD47, a so-called 'don't eat me' molecule. In theory, anything foreign lacks the CD47 marker, and is thus engulfed by macrophages and removed. Atherosclerosis, a process that leads to heart attacks and stroke, is a condition where there is defect in the removal of diseased cells by macrophages, due in part to an upregulation of the CD47 'don't eat me' signal. A team from Stanford, led by first author Kai-Uwe Jarr, MD, and senior author Nicholas Leeper, MD, Professor of Surgery, sought to leverage advances from the field of immuno-oncology, and the fact that CD47 is overexpressed in atherosclerosis, to find a treatment for patients with cardiovascular disease.



Mechanism of diseased cell removal by macrophages may be impaired at sites of atherosclerosis. Overexpression of CD47 'don't eat me' signal allows cells to evade proper clearance. The resulting plaque build-up leads to heart attacks and stroke, a leading cause of death worldwide. Figure from Kojima Y, et al. Nature. 2016 Aug 4;536(7614):86-90.

In their recent [New England Journal of Medicine](https://doi.org/10.1056/NEJL20160804) letter, the team explored the possibility of magrolimab, an anti-CD47 antibody, being used to treat cardiovascular disease. The team showed for the first time in humans that blockade of CD47 by treatment with magrolimab led to decreased vascular inflammation, potentially favorably impacting cardiovascular disease. Their initial studies suggest that using magrolimab may reactivate clearance of inflamed tissues from the plaque, potentially decreasing risk of stroke and heart attack. This critical study provides a rationale for necessary prospective cardiovascular trials to determine if therapies such as magrolimab could become a new therapy for patients with cardiovascular disease, and, for the first time, target plaque formation instead of reducing risk factors.



Kai-Uwe Jarr, MD

Nicholas Leeper, MD

http://med.stanford.edu/cvi/mission/news_center/articles_announcements/2021/harnessing-the-immune-system-to-treat-vascular-inflammation.html

Acute coronary syndrome management with antithrombotics By Kevin Kunzmann



In an era of quickly evolving guidelines and available agents to respond to post-acute coronary syndrome (ACS), clinicians could benefit from an overarching review of topline therapies and the means to tailored care through antithrombotics. Fatima Rodriguez, MD, MPH, and Robert A. Harrington, MD, of the Stanford Cardiovascular Institute, recently penned such a review for [The New England Journal of Medicine](https://doi.org/10.1056/NEJL20160804).

In their review of the rapidly progressing classes of antithrombotic therapies—and the large-scale trials which dictate the utility of such drugs—Rodriguez and Harrington aimed to provide a more comprehensive guidance to navigating antiplatelets, anticoagulants, relevant research interpretations, and individualized treatment decisions.

Additionally, they provided perspective on what recommendations cannot be currently evidenced—namely, where gaps in research still persist, and what benefit would be served from filling them. In an interview with HCPLive above, Rodriguez provides a review of her and Harrington's work, and shared her thoughts on future antithrombotic guidance in post-ACS.



Fatima Rodriguez, MD is interviewed by Kevin Kunzmann of HCPLive about acute coronary syndrome management with antithrombotics. Dr. Rodriguez and Dr. Robert A Harrington recently published a review on the subject in the New England Journal of Medicine.

<https://www.hcplive.com/view/acute-coronary-syndrome-management-antithrombotics>

CVI Virtual Tour

Explore the Stanford Cardiovascular Institute's website to learn more about its history, opportunities, and initiatives - and have the chance to win a prize!

<https://med.stanford.edu/cvi/cvi-virtual-tour.html>

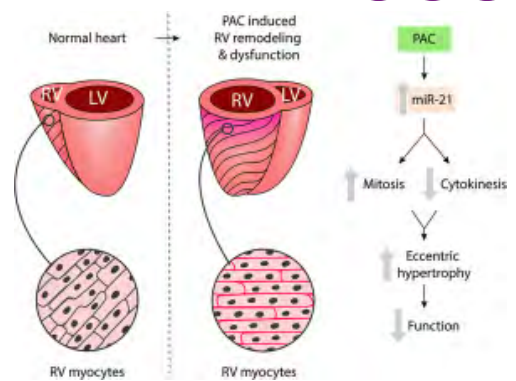


MicroRNAs may hold key to treating pulmonary arterial hypertension *By Amanda Chase, PhD*

Pulmonary arterial hypertension (PAH) is a condition caused by an obstruction of the small arteries of the lungs that leads to decreased blood flow and increased blood pressure. The right ventricle (RV) must work harder to pump blood to the lungs, which leads to structural and functional remodeling, and ultimately results in a weakened heart muscle and can result in heart failure. PAH is considered a progressive disease in that it gets worse over time, and there are about 500-1000 new cases a year in the US. Currently, there are treatments to reduce symptoms, but no cure. Understanding the molecular mechanisms, currently unknown, has the potential to provide avenues for treatment of PAH.

Ronglih Liao, PhD, sought to understand the molecular mechanisms that contribute to RV dysfunction in a recent publication in the *Journal of Molecular and Cellular Cardiology*. Her team showed that microRNA-21 (miR-21) is an important regulator of heart cell biology, especially in RV structural and functional remodeling. MicroRNAs (miRs) are small RNAs that are not expressed as proteins, but can regulate gene expression. Dr. Liao and her team were able to show that increased expression of miR-21 contributes to the observed structural remodeling and declined function of the RV seen in PAH. Further, their study was the first to demonstrate miR-21's role in PAH in a large animal model. Consequently, these results indicate miR-21 as a therapeutic target for treatment of RV dysfunction as a result of PAH.

http://med.stanford.edu/cvi/mission/news_center/articles_announcements/2021/micrnas-may-hold-key-to-treating-pulmonary-hypertension.html



miR-21 regulated changes in heart cells. After pulmonary artery constriction (PAC) miR-21 expression results in right ventricle dysfunction.



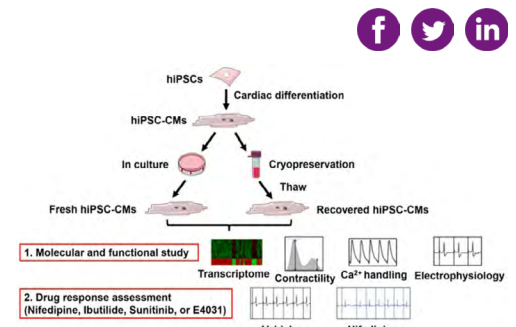
Ronglih Liao, PhD

Risks of cryopreserving cells for drug testing *By Adrienne Mueller, PhD*

Recent decades have seen the development of a fantastic new method for testing pharmaceutical treatments for heart disease without risking patients: stem cells, and specifically, human induced pluripotent stem-cell derived cardiomyocytes (hiPSC-CMs). However, the majority of these drug studies use cells that have undergone cryopreservation for storage. Because the decision to proceed with further development of a drug depends on how cells respond to a treatment, it is critical to know how the process of cryopreservation and recovery affects the function and drug response profile of patient-derived heart cells.

A study by co-first authors Joe Zhang, PhD, Nadjat Belbachir, PhD and Tiejun Zhang, PhD and senior-author Joseph C. Wu, MD, PhD was recently published in *Stem Cell Reports* and addresses this important question. The study systemically characterized the molecular and functional properties of fresh hiPSC-CMs and cryopreserved hiPSC-CMs, showing that they often express different genes, and exhibit different electro-mechanical functions. Cryopreserved hiPSC-CMs also show altered drug responses compared to fresh cells and tend to exhibit enhanced drug-induced arrhythmias. The use of fresh patient-derived heart cells or the careful use of cryopreserved patient-derived heart cells in future drug studies will improve the predictive accuracy of drug responses and drug toxicity in patients.

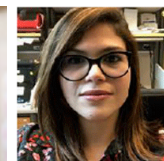
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Outline of experimental design. Patient-derived heart cells (hiPSC-CMs) were either used immediately (fresh) or subjected to cryopreservation and recovery. Both fresh and recovered cells were then exposed to a battery of 1) molecular and functional tests, and 2) drug response tests.



Joe Zhang, PhD



Nadjat Belbachir, PhD



Tiejun Zhang, PhD

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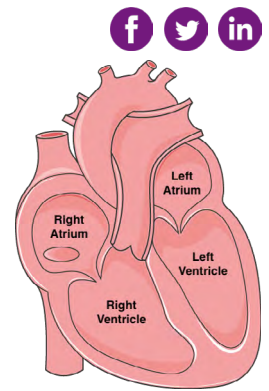
Purifying stem cells of heart muscle *By Adrienne Mueller, PhD*

Stem cells are powerful tools for understanding physiology and disease. Researchers often use induced pluripotent stem cells (iPSCs) in their studies. “Induced” means that the stem cells are created, or induced, from non-stem cells – usually fibroblasts collected by a simple blood draw. “Pluripotent” means the stem cells are able to become any different cell type: for example liver, lung, brain, or heart. By creating heart muscle cells from hiPSCs, scientists are able to investigate heart cell function and a wide variety of cardiovascular diseases and therapies.

Heart muscle cells have different morphologies and properties depending on which chamber of the heart they are a part of. The heart has four chambers: two atria and two ventricles. Usually, when stem cells are used to derive cardiomyocytes, a heterogeneous mix of atrial and ventricular cardiomyocytes is the result. However, many diseases primarily involve exclusively atrial or ventricular cells. In order to understand diseases that primarily affect one chamber type, it is important to be able to study the heart cells that comprise that chamber in isolation.

In a study recently published in *Scientific Reports* by first author Orlando Chirikian and senior author Sean M. Wu, MD, PhD, investigators developed a new method to isolate stem cell-derived atrial and ventricular heart muscle cells. By using CRISPR-Cas9 technology to insert DNA for two differently-colored reporters into atrial and ventricular cells, they were able separate fluorescent blue atrial cells from red ventricular cells. By developing novel methods to purify stem cell-derived heart muscle cells, this study has created a platform to improve our understanding of atrial- and ventricular-specific diseases and develop new therapies.

http://med.stanford.edu/cvi/mission/news_center/articles_announcements/2021/purifying-stem-cells-of-heart-muscle.html



The four chambers of the human heart.



Sean Wu, MD, PhD

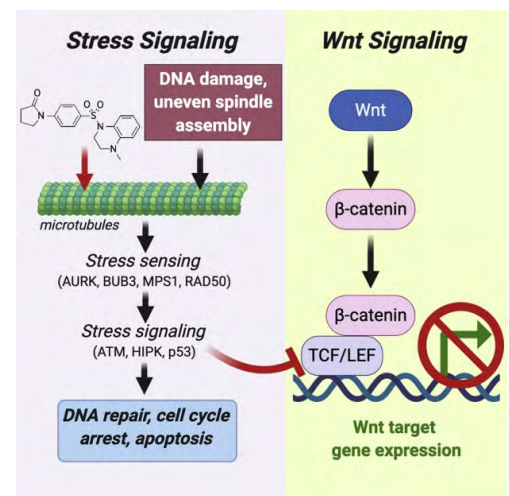
Understanding how cellular stress contributes to cell survival *By Amanda Chase, PhD*

Cancer is a result of unusual cell growth that results in abnormal cells surviving when they should not, and new cells forming when they should not. The extra cells may form tumors, or masses of tissue. One in three people will receive a cancer diagnosis in their lifetime, making this a critical area for research.

In a recent *Cell Chemical Biology* publication, researchers, led by Mark Mercola, PhD, identified a small molecule that works to simultaneously target two pathways of therapeutic interest in cancer – Wnt and p53. The new small molecule, called PAWI is both a p53 activator and Wnt inhibitor. Using the PAWI compound, the team traced a kinase signaling cascade that connects cellular stress to the control of Wnt signaling and p53. “The finding that cellular stress is linked to Wnt responsiveness is important because it explains why stressed cells do not regenerate or heal tissue damage” explains Dr. Mercola.

This finding has important implications for understanding the influence of stress signaling on cell renewal and tissue development and on small molecule anticancer therapies. Wnt promotes certain tumors, while loss of p53 causes unbridled cancer cell replication. By mimicking cellular stress, the PAWI compound potently blocks Wnt responsiveness and activates p53; thus providing two powerful anti-cancer effects. This is important because few Wnt inhibitors have progressed to clinical trials for cancer as they are suggested to lack sufficient selectivity. The discovery of PAWI’s mechanism of action should broaden the scope of candidates that can be utilized as cancer therapeutics.

http://med.stanford.edu/cvi/mission/news_center/articles_announcements/2021/understanding-how-cellular-stress-contributes-to-cell-survival.html



Graphical representation of stress signaling inhibiting Wnt signaling, and indirectly controlling cell shape and survival.



Mark Mercola, PhD

Pulmonary Hypertension Grand Rounds

11:00 AM – 12:00 PM - 2nd and 4th Tuesday of the month

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<https://med.stanford.edu/wallcenter/education/lectures.html>

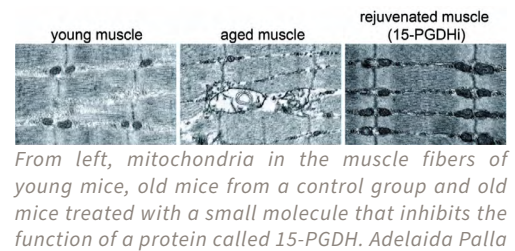


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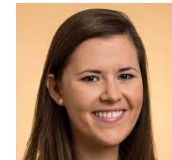
Small molecule restores muscle strength, boosts endurance in old mice *By Krista Conger*



Blocking the activity of a single protein in old mice for one month restores mass and strength to the animals' withered muscles and helps them run longer on a treadmill, according to a study by researchers at the Stanford University School of Medicine. Conversely, increasing the expression of the protein in young mice causes their muscles to atrophy and weaken. "The improvement is really quite dramatic" said Helen Blau, PhD. "The old mice are about 15% to 20% stronger after one month of treatment, and their muscle fibers look like young muscle."



In a study recently published in *Science*, the researchers show that the amount of the protein, called 15-PGDH, is elevated in old muscle and is widely expressed in other old tissues. "We knew from our previous work that prostaglandin E2 was beneficial for regeneration of young muscles," Palla said. "But its short half-life makes it difficult to translate into a therapy. When we inhibited 15-PGDH, we observed a systemic elevation of prostaglandin E2 levels leading to a bodywide muscle improvement in aged mice." Experiments they conducted in human tissue raise hopes for a future treatment for the muscle weakness that occurs as people age.



Adelaida Palla, PhD

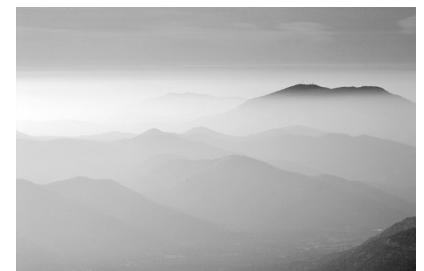


Helen Blau, PhD

<https://med.stanford.edu/news/all-news/2020/12/small-molecule-restores-muscle-strength-in-old-mice.html>

Air pollution puts children at higher risk of disease in adulthood *By Rob Jordan*

Children exposed to air pollution, such as wildfire smoke and car exhaust, for as little as one day may be doomed to higher rates of heart disease and other ailments in adulthood, according to a new Stanford-led study. The analysis, published in *Nature Scientific Reports*, is the first of its kind to investigate air pollution's effects at the single cell level and to simultaneously focus on both the cardiovascular and immune systems in children. It confirms previous research that bad air can alter gene regulation in a way that may impact long-term health – a finding that could change the way medical experts and parents think about the air children breathe, and inform clinical interventions for those exposed to chronic elevated air pollution.



View from above Fresno, California, an area with some of the country's highest air pollution levels. Image: Vadim Manuylov / Wikimedia Commons

The researchers studied a predominantly Hispanic group of children ages 6-8 in Fresno, California, a city beset with some of the country's highest air pollution levels. Among their findings: Exposure to fine particulate known as PM2.5, carbon monoxide and ozone over time is linked to an alteration of DNA molecules. This change in gene expression may be passed down to future generations. The researchers also found that air pollution exposure correlates with an increase in monocytes, white blood cells that play a key role in the buildup of plaques in arteries, and could possibly predispose children to heart disease in adulthood. Future studies are needed to verify the long-term implications.



Mary Prunicki, MD, PhD



Kari Nadeau, MD, PhD

<https://news.stanford.edu/press/view/38438>



Early Career Program Awardees



Seema Dangwal, PhD, is an Instructor in CVI. Dr. Dangwal will leverage MAVENS to reach her goal of becoming a leader in translational vascular biology with a focus on endothelial biology. Most recently, she received an SDRC 2021 Pilot and Feasibility grant and a TRAM fellowship on cardiovascular complications in COVID-19 in type 2 diabetes.



June Rhee, MD, is currently an Instructor in CVI and a physician-scientist in the field of cardio-oncology investigating cancer therapy-induced cardiotoxicity. She will use the MAVENS program as a resource to establish a wider network for career advancement to a leader in her field. Dr. Rhee is an AHA Career Development and a K08 awardee.

MAVENS provides a unique opportunity to inspire, empower, and support women in academic medicine throughout their career to create an integrated community of scientists. Junior faculty are invited and encouraged to join.

Program Directors: Cornelia Weyand, MD, PhD; Patricia Nguyen, MD; Amanda Chase, PhD

More, better, faster: A standout year for Stanford Health Care's heart transplant program *By Ruthann Richter*

In recent years, Stanford Health Care has averaged about 65 transplants a year. In 2020, the number rose in part because Stanford physicians actively reached out to heart centers in the Bay Area and beyond, resulting in more patient referrals. "I think we have gotten better at selecting patients, managing them, getting them through the transplant process and monitoring them in the post-operative period," Teuteberg said. At the same time, he said the program has been gradually shortening the amount of time that transplant candidates have to wait for a new heart, thus reducing the number of deaths among wait-listed patients.

The national Scientific Registry of Transplant Patients figures also suggest that Stanford is capitalizing on the available pool of organs, which unfortunately are still in chronically short supply. Additionally, Teuteberg said recent improvements in organ preservation also have enabled Stanford to venture farther to obtain donor hearts. Instead of storing them on ice, as was previously the case, the new technology uses below-zero temperatures to preserve them in a kind of suspended animation. That enables a donated heart to remain viable for longer periods of time.

<https://med.stanford.edu/news/all-news/2021/02/standout-year-for-stanford-health-care-heart-transplant-program.html>



Tom Pugh, a microbiologist and avid cyclist from Modesto, CA, was among 86 people to undergo heart transplants at Stanford in 2020. Photo: Susan Pugh

William Hancock, leader in electrocardiography, dies at 93 *By Tracie White*

William Hancock, MD, professor emeritus of medicine and pioneer in the use and interpretation of electrocardiograms to screen for heart disease, died Dec. 1. He was 93. "Bill made exceptional contributions to the field of cardiology during his long and prestigious career at Stanford," said Lloyd Minor, MD, dean of the School of Medicine. "He will be remembered as a dedicated teacher and mentor and for the groundbreaking techniques he developed for reading ECGs. His lasting impact shaped his field and our community, and Stanford Medicine mourns his loss."

Hancock spent decades training and mentoring young cardiologists in the use of technology and in physical exams to diagnose and treat patients. Before retiring, he was director of Stanford's ECG lab. In the 1960s, Hancock made notable contributions to the understanding of heart conditions, including mitral valve prolapse, pericardial disease and heart disease caused by cancer radiation treatments. Hancock retired in 1994 but continued teaching electrocardiography and consulting on computer-based ECG analysis. In 1997, he received the Albion Walter Hewlett Award in honor of his lifelong contributions to research and teaching at Stanford.

<http://med.stanford.edu/news/all-news/2021/02/cardiologist-william-hancock-dies-at-93.html>



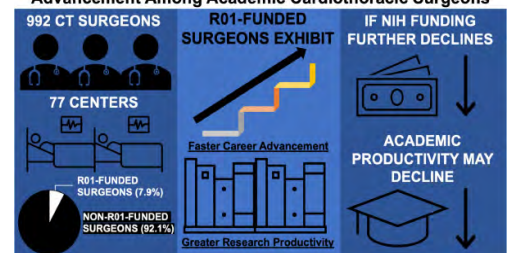
William Hancock, MD

Career Advancement for Academic Cardiothoracic Surgeons Correlates with R01 Grant Funding

Grant funding is an essential aspect of sustaining high-impact research in cardiothoracic (CT) surgery. The NIH R01 grant represents one of the most important funding mechanisms for independent scientists. In a recent study in [*Seminars in Thoracic and Cardiovascular Surgery*](#), Jack Boyd, MD, looked at the association between R01 funding and academic achievement for CT surgeons. They found that R01-funded surgeons had greater research output and career advancement than surgeons who did not have R01 funding. Interestingly, R01-funded surgeons maintained an accelerated publication rate even after the grant expired, suggesting a longer-term impact on a surgeon's career.

<https://pubmed.ncbi.nlm.nih.gov/33359763/>

National Institutes of Health R01 Grant Funding Is Associated With Enhanced Research Productivity and Career Advancement Among Academic Cardiothoracic Surgeons



CVI Peer Review Workshops

April 28 - June 2
Wednesdays from 9-10:30 am

Providing feedback and a support network to enable you to write your strongest proposal. This series of peer review workshops is targeted to CVI members submitting proposals in June.

For more information and other upcoming workshops and events, please visit:

<https://tinyurl.com/cvi-grant-writing-workshops>,
or contact: cvi_grants@stanford.edu

Smartwatch can detect early signs of illness *By Hanae Armitage*



Researchers at the Stanford University School of Medicine have developed a smartwatch app designed to alert users when their bodies show signs of fighting an infection, such as elevated heart rate. The app is powered by an algorithm that detects changes in an individual's resting heart rate and step count. A study of retrospective data found that the app was able to correctly flag signs of COVID-19 before symptoms arose, or as they arose, 63% of the time. The missed cases could be due to a few factors, said Michael Snyder, PhD, professor and chair of genetics. Some medications can cause variable heart rates, making it difficult for the algorithm to detect a stable resting heart rate. Other factors, such as extended air travel, menstrual cycles and time in a high-altitude region, can trigger alerts.

The results of the pilot study were recently published in [Nature Biomedical Engineering](#). Snyder and his team launched the study in March, recruiting participants to see whether the algorithm could identify those with an infection at or before symptom onset using just the data from a Fitbit smartwatch. Of more than 5,000 participants, 32 were confirmed to have COVID-19. In 26 of those cases, the scientists saw a spike in resting heart rates during infection — one that was long enough to rule out temporary increases due to exercise or temporary stress. Buoyed by this data and data from other studies, the team trained an algorithm to send alerts to users that would let them know if their body seemed to be infected.

“We’re determined to reach as many people as we can,” Snyder said. “There’s no single solution that will turn the tide against COVID-19, but a device that could ping you when your health seems iffy would be a huge step in curbing transmission rates and easing the burden on our health care systems.”

<https://med.stanford.edu/news/all-news/2020/12/smartwatch-can-detect-early-signs-of-illness.html>



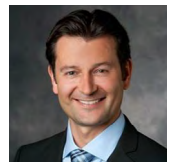
Researchers have developed a smartwatch app designed to alert users when their bodies show signs of fighting an infection. Ella Maru Studio



Michael Snyder,
PhD

Supervised Exercise Therapy for Peripheral Arterial Disease - Time for Phase II

The Society of Vascular Surgery (SVS) has completed its Phase I pilot of the SVS Supervised Exercise Therapy (SET) Program, a home-based, mobile phone delivered exercise therapy program for patients with symptomatic peripheral artery disease (PAD). Over 100 patients were enrolled in the 12-week program which combines health education, health coaching and exercise scheduling and tracking. Dr. Oliver Aalami, Clinical Associate Professor of Surgery within the Division of Vascular Surgery and Director of Biodesign for Digital Health at Stanford helped develop and implement the program with the SVS Health IT Task Force. A Phase II national RCT is scheduled to begin in April and will include over 15 sites.



Oliver Aalami,
MD

This digital health remote monitoring program addresses the gap in utilization of Supervised Exercise Therapy as part of the comprehensive medical management of patients with symptomatic PAD. Studies have shown that up to 83% of patients who participate in such programs did not require interventions at 5 years. The plan is to make the SVS SET Program available nationally by the Vascular Annual Meeting in August.

New insights into digital health and cardiovascular disease

In the field of Digital Health, the lab of Mintu Turakhia, MD has participated in several groundbreaking reports over the past few months. Digital health, encompassing telehealth, telemedicine, mobile health, and remote patient monitoring, provides an opportunity to enhance patient care and improve health outcomes. The Turakhia lab has recently helped 1) demonstrate how integrating monitoring devices with machine learning technology improves cardiovascular disease management ([Nat Rev Cardiol](#)), 2) outline the digital health information that electrophysiologists need to know to treat patients with arrhythmia ([Circ Arrhythm Electrophysiol](#)), 3) summarize the state-of-the-art of digital health among older adults ([JACC](#)), and 4) contribute to a collaborative statement involving numerous international describing the current status of mobile health technologies in arrhythmia management ([Ann Noninvasive Electrocardiol](#)). The Turakhia Lab also contributed to a report on research priorities in atrial fibrillation screening guided by the National Heart, Lung, and Blood Institute ([Circulation](#)).



Mintu Turakhia,
MD



Interested in a write-up of your publication?

Contact: cvi_communications@stanford.edu

Or visit:

<https://med.stanford.edu/cvi/translational-research/memberpubs.html>

The Problem with Pharmacogenetic Testing By Adrienne Mueller, PhD



Over the last few decades, the genetic testing industry has boomed, and currently over a dozen companies offer personal genetic reports with information about your predicted response to different classes of drugs. The companies that provide pharmacogenetic testing each look at a panel of genes and determine which version, or variant, of those genes you possess. Your report will include not just a list of your genetic variants, but also a description of your likely gene-drug interactions that then guides your doctor's therapeutic decisions. And that is where the problem lies.

In an article recently released in the *Journal of Personalized Medicine*, first author Sally Luvsantseren, MD and senior author Latha Palaniappan, MD describe the case of a 65-year-old woman seeking treatment for anxiety and depression. Her experience highlights the issues with the current state of pharmacogenetic testing. The patient received genetic reports from two different companies and although they agreed in their analysis of which genetic variants she possessed, they disagreed in their interpretation of that information. The investigators found that the companies were using different evidence to inform their interpretation of the genetic data.



Sally
Luvsantseren,
MD



Latha
Palaniappan,
MD

Unfortunately, this field is still so new that the FDA does not have strong policies on how to interpret pharmacogenetic information. However, there is an international consortium of volunteers, the Clinical Pharmacogenetics Implementation Consortium (CPIC), who have devoted themselves to providing guidelines to help inform therapeutic decisions. Pharmacogenetic information can certainly improve patient care, but the pharmacogenetics industry needs to move towards standardization of genetic variant testing and interpretation. Companies should conform to evidence-based, open-access, and internationally peer-reviewed guidelines, such as those provided by CPIC.

http://med.stanford.edu/cvi/mission/news_center/articles_announcements/2021/the-problem-with-pharmacogenetic-testing.html

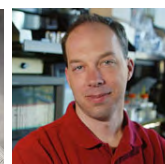
Stanford Medicine launches in-house service for whole genome sequencing By Hanae Armitage



A new Stanford Medicine service analyzes patients' entire genetic code for information that could reveal the roots of diseases. The service is based on whole genome sequencing, a test that maps all of an individual's DNA. "The test can provide valuable insights, such as someone's risk of developing a specific disease or whether a disease runs in a family, and help physicians tailor effective treatments," said Euan Ashley, MD, PhD, professor of medicine, of genetics and of biomedical data science at Stanford. Known as the Cardiovascular Genome Panel, the genome sequencing service at Stanford Medicine launched Jan. 25. It's now available to patients diagnosed with inherited cardiovascular disease. Ashley, who heads the service, plans to expand it into other specialties. The goal of integrating genome sequencing into patient care is to enhance diagnostic power. A doctor with the entire genome sequence at his or her disposal is more likely not only to make the correct diagnosis, but also find the cause of the disease.



Euan Ashley,
MD, PhD



Steve Quake,
PhD

Ashley has envisioned in-house genome sequencing since he and Steve Quake, PhD, professor of bioengineering and of applied physics and the Lee Otterson, Professor in the School of Engineering, first started sequencing patients' genomes at Stanford more than a decade ago. The primary focus of the genome sequencing service will be enhancing patient care, Ashley said, but it contributes to genetic discovery, too. As more cardiovascular patients make use of the service, more will eventually find novel answers in their genome. As doctors find more novel variants in patients, the chance of identifying new genes behind certain diseases also increases. "It's the power of numbers," Ashley said. He's hopeful that the rate of gene discovery will increase dramatically, and not just in cardiovascular care.

<https://med.stanford.edu/news/all-news/2021/02/stanford-medicine-service-for-whole-genome-sequencing.html>

CVI Staff Spotlight

Chantane Saejao will be celebrating four years with the Stanford Cardiovascular Institute in April. Her main responsibilities at CVI include 1) managing fellowships and grants, including financial reports, monthly reconciliation and budget projections, 2) handling department reimbursement and invoice payments, and 3) managing department Graduate Financial Support (GFS).



One little-known fact about Chantane is that she enjoys learning different types of dance choreography and took lessons in Jazz, Tap, Modern, Hip Hop and Ballet throughout high school and college. At CVI, she truly appreciates the team effort, support and dedication of all the CVI members. Without the team's support, it would not have been possible to reach the goals that we set out to achieve.

Successful limb salvage with the Stanford extremity preservation program (STEPP)

Case study. 74 year old Hispanic woman with history of diabetes presents with severe left leg ulceration. The damage is significant such that the tibial bone is exposed. The patient had previously been treated in Mexico without benefit and came to the US seeking healing. She was evaluated by the Stanford extremity preservation program (STEPP) in January 2020, and the program, led by Venita Chandra, MD and coordinated by Farishta Yawary, decided to take her case and try to salvage her limb. The patient then underwent a thorough treatment plan involving arterial revascularization, operative debridement and stravix application, compression and wound therapy, and skin graft. Six months later, she had made a full recovery.

The Stanford extremity preservation program (STEPP) is proud to be celebrating their 3rd year. STEPP is a multidisciplinary board comprised of vascular surgery, plastic surgery, orthopedic surgery, palliative care, wound care, infectious disease, social work, prosthetics, orthotics, podiatry, radiology and nursing specialists. The goal of the program is to formulate a plan and care for the most complex patients with limb threat. The program has seen/reviewed over 185 patients over this period. At this point we have had over 60 graduates of the program, who have healed. These are patients are truly the most complex limb threat patients who had previously failed standard of care. In addition, a recent review of the patient reported outcomes and health-related quality of life (HR-QoL) with the RAND-36 questionnaire for those who completed the program, revealed significant improvement in the patients with complex limb threat after participation in STEPP. Stanford is the only program in the nation to have an extremity preservation program with over 10 different specialists.

<https://stanfordhealthcare.org/medical-conditions/blood-heart-circulation/peripheral-vascular-disease.html>



STEPP treatment leads to successful restoration of severe left leg damage.



The sure-footed STEPP team.



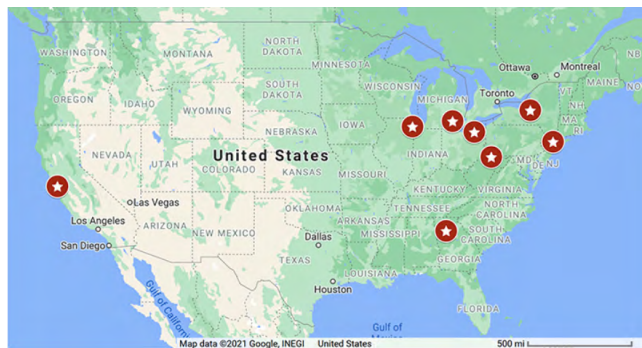
Farishta (Farah) Yawary Venita Chandra, MD

Stanford designated one of eight National Mitral Valve Repair Reference Centers

Stanford Hospital has been recongized by The American Heart Association and the Mitral Foundation for their excellence in mitral valve repair with the Mitral Valve Repair Reference Center Award. This award recognizes those hospitals with a demonstrated record of superior clinical outcomes in the surgical repair of mitral valves and a commitment to reporting quality and outcomes metrics.

The The Mitral Foundation and the American Heart Association collaborated to establish this award as part of the effort to increase adherence to clinical guidelines that recommend mitral valve reconstruction over replacement. for better patient outcomes.

<https://newsroom.heart.org/news/first-medical-centers-earn-new-recognition-for-best-practices-in-heart-valve-repair>



Stanford Hospital is one of only eight hospitals in the nation to receive the Mitral Valve Repaire Reference Center award, recognizing their high standard of treatment and commitment to patient care.

U.S. News & World Report annual survey for Best Hospitals and Best Children's Hospitals 2021-2022

The U.S. News & World Report annual survey for Best Hospitals and Best Children's Hospitals 2021-2022 is underway. Reputation is one critical component of these rankings. To measure reputation, a national sampling of adult and pediatric specialists and subspecialists will receive an initial invitation to participate via email (either Doximity or personal email for Doximity-registered members) or post. If you receive the survey, please take time to vote. Reminder invitations will be sent over the next couple of weeks.

In addition to the reputation survey, the best hospitals methodology includes many factors: clinical outcomes, efficiency and coordination of care delivery, compliance with "best practices," infection control, nurse staffing, and availability of programs tailored to particular illnesses and conditions. Among other factors, patients and their families use these best hospital rankings when looking for quality health care.



Cardiovascular Clinical Trials at Stanford

Cardiovascular research at Stanford University is diverse and spans over 240 clinical research studies in the division of Cardiovascular Medicine alone. Stanford faculty physicians and scientists, many of whom are recognized internationally for their contributions to advancing science and knowledge of cardiac disease, conduct research aimed to treat patients suffering from a wide variety of cardiovascular issues. Cardiovascular researchers have made significant progress towards the understanding of coronary and vascular disease, endothelial function, cardiac mechanics and heart failure. There are opportunities for patients to participate in studies that may change cardiovascular care for millions of patients.

Cardiovascular Medicine's Clinical Research Office and the Cardiovascular Institute's Clinical Trials Core support faculty with teams of talented Clinical Research Coordinators to move the trials and research forward in the most compliant and efficient way for the benefit of patients, and to ensure research goals are met even in the midst of COVID-19 pandemic. For more information, visit <https://med.stanford.edu/cvmedicine/research/clinicaltrials.html> and <http://med.stanford.edu/cvi/translational-research/clinical-trials.html>.

Introduction to the Stanford Arrhythmia Service: Linda K. Ottoboni, PhD, CNS founded the Atrial Fibrillation Prevention and Lifestyle Management Program to help individuals reduce their cardiovascular risk. Research has shown that reducing cardiovascular risk improves atrial fibrillation outcomes. Dr. Ottoboni is also testing strategies to help patients manage the unpredictability of arrhythmias. In collaboration with Dr. Paul Wang, Dr. Sanjiv Narayan, Dr. Mintu Turakhia, and the other members of the Stanford Arrhythmia Service, Dr. Ottoboni is pursuing several research projects including: evaluating symptom management strategies that may improve patient quality of life, a multi-center clinical trial on whether bariatric surgeries improve patient outcomes, and an assessment of whether a digital health platform targeting a patient's psychometric profile can help modify behaviors to reduce cardiovascular risk factors and thereby improve access for underrepresented populations.

Introduction to the Khush Research Team: The Research Team of Kiran Khush, MD, including Helen Luikart RN Research Manager, Kian Waddell ACRC, and Dave Morales ACRC, focuses on clinical research studies broadly related to the field of heart transplantation. They are leading the first prospective multi-center study of donor heart utilization in the United States, with a goal of developing risk models to guide donor heart utilization. They are currently collaborating with Interventional Cardiology colleagues to conduct a clinical trial to ameliorate chronic rejection after heart transplantation. They are also involved in several multi-center clinical trials of novel strategies for immunomodulation to prevent short- and long-term complications after heart transplantation.

Introduction to the Cardiovascular Regeneration and Restoration Research Program: During the last eight years, the Cardiovascular Regeneration and Restoration Program, led by Phillip Yang, MD (PI), David Lee, MD (Co-PI), Fouzia Khan CRC2, and Banu Rajaskeran ACRC, has conducted over 10 clinical trials. The NIH/NHLBI has funded over \$70M to the Cardiovascular Cell Therapy Research Network of seven leading US academic sites and completed TIME, LATE-TIME, FOCUS, PACE, SENECA, and CONCERT Trials to study acute myocardial infarction, heart failure, and peripheral vascular disease patients. Industry support completed MEMRI (FDA IND), DREAM, and CAPACITY trials to study heart failure patients. Currently, ACT, CardiAMP and DCM II trials are on-going or preparing to start.

Stanford Cardiovascular Data Integration Lab

The Stanford Cardiovascular Data Integration Lab (SCDIL) brings together cardiologists, cardiovascular surgeons, radiologists, and information technology experts to facilitate cardiovascular data science research. SCDIL aims to:

- Facilitate data integration from different data sources
- Make a data science analytic pipeline accessible for researchers
- Facilitate and prioritize clinical or data science research projects
- Facilitate imaging and clinical Artificial Intelligence research projects

The Stanford Cardiovascular Data Integration Lab is eager to form collaborations with and support cardiovascular clinicians and scientists in the Stanford community. <https://med.stanford.edu/cvdi.html>



5 Questions: Hannah Valantine on weaving diversity into the fabric of biomedical institutions

By Tracie White

Hannah Valantine, MD, professor of cardiovascular medicine, recently returned to Stanford Medicine after a six-year stint at the National Institutes of Health, where she served as the inaugural chief officer for scientific workforce diversity, as well as a senior investigator at the National Heart, Lung, and Blood Institute.



Hannah Valantine, MD

1. What was your goal when you took on the new leadership position at the NIH?

"My goal was to implement an integrated approach to enhancing diversity in the scientific workforce within that institution. I used the NIH campus as a kind of test bed to see what could be accomplished at other academic medical centers. I installed practical guidelines to create a culture of inclusivity."

2. What steps did you take to help combat implicit bias and increase diversity at the NIH?

"One thing I helped implement at the NIH was requiring that demographic data be published in a way that can be seen by peers, rather than being hidden away. This accountability piece is critical for tracking data and incentivizing behavior. The next step was setting up metrics for the institution's inclusivity efforts."

3. Can you discuss other steps you took at the NIH that could be used at other biomedical institutions?

"While at the NIH, I worked on the idea of recruiting in cohorts — hiring a group of people based on their interest in topics such as health disparities or racial representation. What we really need to succeed is tying all these metrics that I've talked about to the rewards system already established within the institution. This means tying improvements to salary increases or promotions."

4. Can you give an overview of your efforts now that you are back at Stanford. Where do we go from here?

"My role is to help Stanford Medicine implement these systemic changes of creating transparency and holding people accountable in order to improve diversity, equity and inclusivity. We're not going to accomplish this by doing just one thing but by creating an integrated approach."

5. You are also a distinguished research scientist who has, for years, conducted clinical and translational research in heart transplant rejection. Can you update us on your latest work?

"My current research is built on technology I developed at Stanford with Stephen Quake. The technology uses donor-derived, cell-free DNA in the blood to monitor organ transplant rejection. While at the NIH, I enrolled a cohort of 500 patients from the local D.C. area, 40% of whom are African American. The study has evaluated the new technology's ability to monitor organ transplant rejection. It will also help us understand the mechanisms behind how and why African Americans reject their organ transplants at higher rates than white recipients."

<https://med.stanford.edu/news/all-news/2021/02/hannah-valantine-on-diversity.html>

CVI scientists contribute to STEM education with STEMPod Leaders series

STEMPod Leaders is a weekly series of motivational podcasts and YouTube videos with today's scientific leaders. Over the past three months since its inception, three Stanford Cardiovascular Institute faculty have been interviewed for the series.

Joseph Wu, MD, PhD, Director of Stanford Cardiovascular Institute, discusses heart disease, the therapeutic potential of drugs, genome editing, stem cells, and his path to cardiovascular medicine. Topics also include: heart disease and COVID-19, the American Heart Association, genetic or environmental contributions to cardiovascular disease, CRISPR and cardiovascular medicine, 3D printing of heart valves, whether we can 3D print a human heart, why research should be emphasized, the future of cardiac medicine and his advice for students.



Michael Snyder, PhD, chair of Stanford's Department of Genetics and Director of the Stanford Center for Genomics and Personalized Medicine, discusses how wearable technology (such as Apple Watches) can provide information about our health, and indicate when sickness such as COVID-19 may be looming ahead. Topics also include: Artificial intelligence in healthcare, how he figured out that he caught Lyme Disease from his smartwatch, how wearables can change checkups, becoming a geneticist, and advice for upcoming generation of medicine.



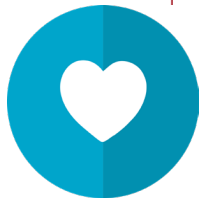
Brian Kobilka, MD, winner of the 2012 Nobel Prize in Chemistry for his contributions to studies of G protein coupled receptors (GPCRs) discusses GPCRs, his upbringing, and advice for students interested in entering STEM. Topics also include: the necessity to solve GPCR structure, GPCRs and drug discovery, the current state of drug discovery, collaboration in science, medical doctor to scientist, working at a bakery, mentors, "irrational optimism", why go into the sciences, what he looks for in a student, and the future of the field.



<https://www.youtube.com/channel/UCsuAXsEHPc80fPP5BQwp06A>

Courses in Cardiovascular Science and Medicine

MED223 | Cardiovascular and Pulmonary Sciences Seminar



The purpose of this course is to familiarize students with the spectrum of basic, clinical and translational CVP research beyond their specific area of chosen investigation. After a Tuesday seminar, students will meet informally with the seminar speaker. Examples of thematic topics that will be covered include how genetics and developmental biology address mechanisms of congenital heart disease, the rationale for new drug development in atherosclerosis and cardiac protection, principles of biomechanics and computer technology in device and biomaterial development, ion channel physiology leading to anti-arrhythmic agents and the design of clinical trials, use of epidemiological studies, evidence based medicine, and design of new treatment or diagnostic algorithms. **Fall and Winter Quarter - Tuesdays and Thursdays, 1:00 - 2:00 pm | 2 credits**

Course Directors: Ngan Huang, PhD; Vinicio de Jesus Perez, MD; Edda Spiekerkoetter, MD; Ioannis Karakikes, PhD
<https://med.stanford.edu/cvi/education/cvi-courses/med223.html>

CTS 225 | Stem Cells in Cardiovascular Regenerative Medicine



This cardiovascular course focuses on the basic principles and translational applications of stem cells for treatment of cardiovascular diseases. Topics include the genetic modification of stem cells for precision medicine, as well as the science underlying how stem cells can be applied to regenerative medicine and drug development. Students will have the opportunity to develop their scientific reasoning and presentation skills as well as expand their professional portfolios through student-led journal club presentations and the development of a research proposal. After completion of this course, students should expect to get broad exposure to basic and translational applications of stem cell research to cardiovascular medicine, a key focus of many initiatives in both academia and the biotech industry. This course is open to graduate students, medical students, and upper-division undergraduates. **Spring Quarter - Tuesdays and Thursdays, 2:00-3:00 pm | 2 credits**

Course Director: Ngan Huang, PhD
<https://med.stanford.edu/cvi/education/cvi-courses/cts225.html>

MED 225 | Drug Development: From a Concept to the Clinic



CVI is launching a new course for the 2020-2021 academic year that is designed for medical students, trainees, basic scientists, clinicians, and clinician-scientists to provide an educational and practical perspective on the essential issues in drug development. Using a blend of seminars and dynamic workshops, the curriculum is focused on educating the audience on all stages of drug development and related research and business processes—from discovery and translational science and how to launch new projects to analyzing data, communication and interpretation of results of clinical trials, regulatory issues, and commercial considerations in product development. The emphasis will be on cardiovascular applications. Proposed seminar topics include How Drugs Are Discovered and Developed, Case Studies of the Challenges in Drug Development, Cardiac Safety, and the FDA Advisory Committee Process. **Spring and Fall Quarter - Tuesdays, 4:00 - 5:30 pm | 1 credit**

Course Directors: Peter DiBattiste, MD; Jonathan Fox, MD, PhD; Alexander Gold, MD; Jayakumar Rajadas, PhD; Philip Sager, MD
<https://med.stanford.edu/cvi/education/cvi-courses/med225.html>

Cardiovascular Medicine Fellowship Program

Our mission is to train future academic leaders in Cardiovascular Medicine through a tripartite commitment to clinical care, research, and education.

"The Cardiovascular Medicine Fellowship Program at Stanford University offers a rigorous but collegial training environment for individuals with an interest in developing an academic career. Intensive, individually tailored training in invasive and noninvasive clinical cardiology as well as in basic and/or clinical cardiovascular research prepares each fellow to pursue their career at the forefront of cardiology. *Come train with us!*" — Joshua Knowles, MD, PhD, Program Director

<https://med.stanford.edu/cvmedicine/education/gen-cardiology-fellowship.html>



Recruitment for T32 Postdoctoral Training 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.

This program is directed by Joseph Wu, MD, PhD, John M. Pauly, PhD, and Koen Nieman MD, PhD.

Currently accepting applications.

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

Mechanisms and Innovations in Vascular 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.

This program is directed by Philip Tsao, PhD and Nick Leeper, MD.

Currently accepting applications.

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

Research Training in Myocardial Biology T32 Training Grant

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 multi-disciplinary training.

This program is directed by Daniel Bernstein, MD, Thomas Quertermous, MD and Euan Ashley, MRCP, DPhil.

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

Faculty Position in Cardiothoracic Surgery

The Stanford Department of Cardiothoracic Surgery seeks to recruit a scholar with an interest in studying cardiothoracic surgical diseases and their therapies.

The ideal candidate will

- possess PhD, MD/PhD, or other advanced academic degrees,
- have completed rigorous training,
- exemplify innovation,
- demonstrate the potential for a successful track record of publishing.

The applicant will be expected to

- evolve a funded research effort focused in their area of expertise,
- participate in mentorship and teaching activities in the Department of Cardiothoracic Surgery.

Appointments may be in the University Tenure Line, the Non-Tenure Research Line, or the Medical Center Line at the Assistant, Associate, or Professor rank.

Stanford is an equal employment opportunity and affirmative action employer. Stanford welcomes applications from all who would bring additional dimensions to the University's research, teaching and clinical missions.

For more information, please contact Corrine Sanchez at corrine.sanchez@stanford.edu, or visit:

<https://jobs.ctsnet.org/jobs/view/department-of-cardiothoracic-surgery/54530370/>

Grants, Awards, Appointments and Promotions

Accelerating research, improving care: Additional Ventures funds high-impact grants in single ventricle heart defects through MCHRI *By Roxanna Van Norman*

Single ventricle (SV) heart defects are rare and affect about five in 100,000 newborns each year. This type of congenital heart defect occurs during the first eight weeks of pregnancy when one of the heart ventricles - the left and right lower chambers of the heart - does not form properly and is either too small or underdeveloped. Launched in early 2020, the Stanford Maternal and Child Health Research Institute (MCHRI) Additional Ventures Innovation Fund Single Ventricle Disease Research Awards Program provides seed grants to Stanford investigators for innovative, high-impact studies to treat and develop functional cures for SV heart defects. To address the gaps and challenges in treating SV defects, Stanford scientists have banded together in several multi-disciplinary collaborations. The following are funded SV projects and their research updates during the first six months of the project:

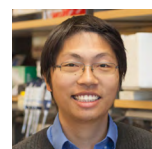
Mapping the Regulatory Wiring of Heart Development to Identify the Genetic Etiology of SV Defects

Genetic variation plays a vital role in the makeup of SV heart defects and may provide insights into heart development and defects. **Jesse Engreitz, PhD**, is leading a project to understand the genetic underpinnings that lead to SV heart defects with the collective expertise of Sean Wu, MD, PhD, William Goodyear, MD, PhD, Sharon Paige, MD, PhD, and James Priest, MD. [Learn more.](#)



Understanding Arterial, Vein and Lymphatic Circulatory Dysfunction in Single Ventricle Disease

Patients with SV heart disease often develop long-term circulatory complications after undergoing several open-heart surgeries to reroute the blood network. **Kyle Loh, PhD**, is leading a project with co-investigator Marlene Rabinovitch, MD, to understand the mechanism of the lymphatic, arterial, and venous dysfunction in SV heart disease. [Learn more.](#)



Device for Mechanically Induced Ventricular Growth in Single Ventricle Patients

Current treatment for SV patients focuses on maintaining the health and performance of the one ventricle. **Alison Marsden, PhD**, wants to redirect the focus to technologies aimed at regrowing or salvaging whatever tissue exists of the second ventricle and develop a novel device to induce tissue growth in SV patients. The co-investigators on the project are Ellen Kuhl, PhD, Mark Cutkosky, PhD, and Daniel Bernstein, MD. [Learn more.](#)



A 3D Printed Vascularized Cardiac Biopump to Assist the Fontan Circulation

Newborns born with an SV often receive a series of operating procedures within the first two to three years, resulting in a Fontan circulation to help with blood flow. However, the Fontan procedure can also lead to cardiac complications. Mark Skylar-Scott, PhD, and Frank Hanley, MD, are leading a project to create a 3D-printed vascularized cardiac biopump to assist in the Fontan circulation. [Learn more.](#)



<https://med.stanford.edu/mchri/news/additional-ventures-funds-high-impact-grants-in-single-ventricle-heart-defects-through-mchri.html>

2020 CVI Manuscript Award Winners



Modeling Secondary Iron Overload Cardiomyopathy with Human Induced Pluripotent Stem Cell-Derived Cardiomyocytes
June-Wha Rhee, MD
Read the [Cell Reports](#) article



Molecular Imaging of Infective Endocarditis With 6''-[18F]Fluoromaltotriose Positron Emission Tomography-Computed Tomography
Mirwais Wardak, PhD
Read the [Circulation](#) article



Clinical Trial in a Dish Using iPSCs Shows Lovastatin Improves Endothelial Dysfunction and Cellular Cross-talk in LMNA Cardiomyopathy
Nazish Sayed, MD, PhD
Read the [Science Translational Medicine](#) article



Intrinsically Stretchable Electrode Array Enabled In Vivo Electrophysiological Mapping of Atrial Fibrillation at Cellular Resolution
Xinyuan (Lisa) Zhang, MD
Read the [PNAS](#) article

Singleton Directorship Established

We are delighted and honored to announce that John R. Singleton and Ai Giak L. Singleton have established an Endowed Directorship in the Department of Cardiovascular Medicine. The John R. and Ai Giak L. Singleton Directorship will support the current Co-Director of the Stanford Center for Arrhythmia Research, **Paul J. Wang, MD**. We would like to take this opportunity to thank Mr. and Mrs. Singleton for their incredible generosity and support of the Center for Arrhythmia Research at Stanford Medicine.



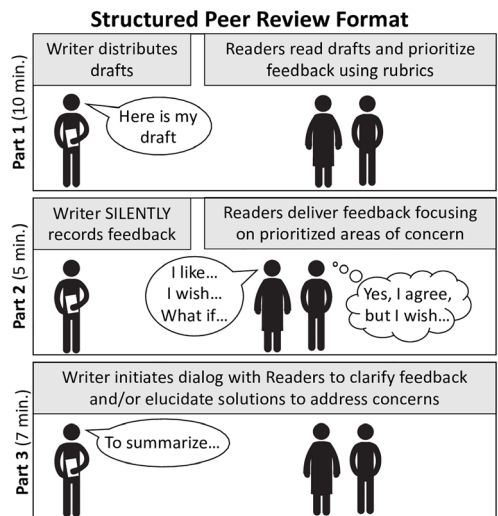
Dr. Wang is a revered innovator and an expert in the treatment of cardiac arrhythmias, including atrial fibrillation, atrial flutter, ventricular arrhythmias, supraventricular arrhythmias, and sudden cardiac death. He is dedicated to developing new solutions and inventing technologies to improve arrhythmia care. His goal has always been to help patients, focusing on those who have little or no options under current drug protocols and treatments. As a result, Dr. Wang and his team, including fellow Co-Director of the Arrhythmia Center, Dr. Sanjiv Narayan, are creating novel methods of delivering care and improving procedures to be more effective and yield better patient outcomes. The Stanford Center for Arrhythmia Research is a testament to the dedication of all the faculty and staff involved, and this Directorship will allow Dr. Wang to continue to drive the vision of the program.

Stanford Biosciences Grant Writing Academy Improves Trainees' Proposals

Grant proposal writing requires an in-depth understanding of background information, identification of critical needs in a field, evaluation of strategy and methodology, as well as identification of important or critical barriers to progress. In addition, those ideas must be presented in a well-reasoned manner that allows the reviewer to understand and appreciate the importance of the proposed work. Thus, understanding how to write a successful grant application is an important skill for postdoctoral trainees to acquire that will provide critical tools to advance their career.

In 2014, the Stanford Biosciences Grant Writing Academy was launched to support graduate students and postdocs in writing proposals. This program is a multi-week Proposal Bootcamp that provides participants with feedback and the chance to develop and refine their proposals. Since 2014, 525 graduate students and postdocs have participated in the Bootcamp. The applicant success rate for Bootcamp trainees was nearly double the rate for non-Bootcamp trainees, and, equally important, participants reported increased confidence in developing and submitting research proposals.

<https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0243973>



Keck Foundation Award to Study Duchenne Muscular Dystrophy

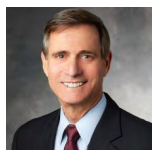
Cells are constantly receiving and responding to diverse signals from their microenvironment. Aberrant environmental cues, such as increased tissue stiffness from disease-related fibrosis, can drive disease progression. Genetic disorders that alter how cells interact with the extracellular environment make cells particularly sensitive to changes in environmental cues. One such disease, Duchenne muscular dystrophy (DMD), is caused by defective dystrophin, a protein that links the cytoskeleton and the extracellular matrix. DMD manifests as severe muscle wasting followed by dilated cardiomyopathy, leading to patient death around 20-30 years of age.



A Stanford University team has recently identified telomere shortening as a hallmark of DMD cardiomyopathy, as well as of other heritable cardiomyopathies, leading the investigators to postulate that telomere shortening plays a causal role in heart failure in many genetic diseases. However, this hypothesis is controversial, given that telomere shortening has historically been associated with cell division, and cardiomyocytes do not divide. **Helen Blau, PhD** and **Sarah Heilshorn, PhD**, were awarded a \$1,000,000 Medical Research Grant from the Keck Foundation to study this process further. The investigators will determine whether mechanical stress drives telomere shortening and subsequent pathogenic signaling, leading to cardiomyocyte death. They have developed a novel hydrogel platform that can be stiffened and softened on demand to tune mechanical load, which will be used in conjunction with human induced pluripotent stem cell derived cardiomyocytes from DMD patients and live cell imaging to answer the fundamental question: How can telomeres shorten without cell division?

<http://www.wmkeck.org/grant-programs/research/medical-research-grant-abstracts/medical-research-2020>

Grants, Awards, Appointments and Promotions



David Maron, MD, Professor of Medicine in Stanford Prevention Research, was named as a Finalist for the Clinical Research Awards by the Clinical Research Forum for his team's work on the "Ischemia Trial," to determine the effect of initial invasive or conservative strategies for treating stable coronary disease.

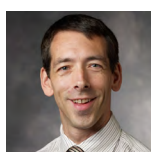


Phillip C. Yang, MD, Professor of Medicine in Cardiovascular Medicine and Co-PI **David Lee, MD**, Professor of Medicine in Cardiovascular Medicine, were recently funded for a Phase IIB randomized, placebo-controlled, multicenter study of the comparative efficacy and safety of transcatheter injection of allogeneic mesenchymal stem cells in patients with non-ischemic dilated cardiomyopathy NIDCM (DCM II Trial).

Dr. Yang was also awarded an NIH NCATS/SPARK grant for the project "Rapid Translation of iPSC-derived Extracellular Vesicles for Mitochondrial Biogenesis."



Leo Lopez, MD, Professor of Pediatrics - Cardiology and Director of Echocardiography, has been chosen as the president-elect of the Intersocietal Accreditation Commission (IAC.)



Euan Ashley, MD, PhD, Professor of Medicine and Genetics, received a contract from MyoKardia, Inc. for the project "Allele-specific silencing as therapy for inherited cardiomyopathy."



Sushma Reddy, MD, Assistant Professor of Pediatrics (Cardiology), was awarded a \$600,000 Additional Venture grant to investigate biomarkers of single ventricle heart failure.



Caitlin Bell, MD, a clinical fellow in the Division of Vascular Surgery's Leeper Lab, has been chosen as a Chan-Zuckerberg Biohub Physician-Scientist Fellow.



Rohan Shad Arora, MD, postdoctoral fellow in the lab of Dr. William Hiesinger, was nominated as a Finalist for the American Heart Association Vivien Thomas Early Career Award for a novel artificial intelligence echocardiography system.

Dr. Arora was also awarded a Stanford 2021 eWEAR grant for a myocardial drug delivery system with co-Investigator Alex Abramson of Dr. Zhenan Bao's Lab.

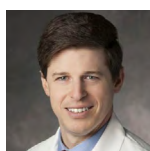


Jonathan David, MSN, RN, presented at the 35th American Association of Cardiovascular and Pulmonary Rehabilitation on "Nursing Autonomy Bridging the Gap: Improvisation of the Referral Process to Outpatient Cardiac Rehabilitation Enhancing Transitional Care."



Ngan Huang, PhD, Assistant Professor of Cardiothoracic Surgery, was awarded an Innovative Project Award from the American Heart Association for the project "Substrate Stiffness Modulates Endothelial-to-Mesenchymal Transition."

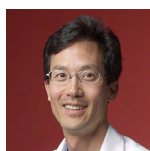
Dr. Huang was also awarded an Innovative Project Award from the American Heart Association for the project "iPSC-Derived Smooth Muscle Progenitors in Elastin Hydrogels for Treating Abdominal Aortic Aneurysm."



Ronald Witteles, MD, Professor of Medicine in Cardiovascular Medicine, received an Investigator Initiated Grant to study the use of daratumumab for desensitization for patients listed for heart transplant who have high levels of circulating antibodies.

Dr. Witteles has also been appointed as an Associate Editor for the Journal of the American College of Cardiology (JACC): CardioOncology.

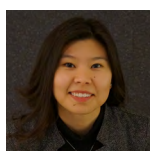
Dr. Witteles and his team at the Stanford Multidisciplinary Sarcoidosis Program have also received official recognition as a Sarcoidosis Center of Excellence by World Association for Sarcoidosis and Other Granulomatous Disorders.



Daniel Y. Sze, MD, PhD, was recently appointed Editor-in-Chief of the Journal of Vascular and Interventional Radiology. This journal, published by the Society of Interventional Radiology, has the highest impact factor in the field.



Nicholas Leeper, MD, Professor of Vascular Surgery, was the recipient of the 2020 Falk Medical Research Trust Transformational Award. The \$1M in funding from Health Resources in Action will fund Leeper's project "Precision Nanotherapies for Cardiovascular Disease."



Dulguun Amgalan, PhD, postdoc in the lab of Dr. Jesse Engreitz, was awarded an AHA Children's Heart Foundation Postdoctoral Award from the American Heart Association for the project "Regulatory maps of endothelial cell differentiation to connect congenital heart disease risk variants to target genes."



Vinh Wang, PhD, postdoctoral scientist in the lab of Dr. Nicholas Leeper, is starting a new tenure-track position as Assistant Professor at the University of British Columbia.



Paul Cheng, MD, PhD, instructor in the Department of Medicine, was awarded an American Heart Association Career Development Award for the project "Regulation of Arterial Stiffness by Transcription Factor Zeb2."

Funding Opportunities

For more information about funding opportunities or grant application support, please contact our Office of Research Development: cvi_grants@stanford.edu.

MARCH 2021

R21 Secondary Analysis of Existing Dataset of Tobacco Use and Health. Application Deadline: March 8, 2021; will be extended. RFA-OD-19-022

NIH Pathway to Independence Award (Parent K99/R00 - Independent Clinical Trial Required). Renewal, Revision, Resubmission Deadline: March 12th, 2021. PA-19-129

NIH Pathway to Independence Award (Parent K99/R00 Independent Basic Experimental Studies with Humans Required). Renewal, Revision, Resubmission Deadline: March 12th, 2021. PA-19-090

NIH Mentored Patient-Oriented Research Career Development Award (Parent K23 Independent Clinical Trial Required). Renewal, Revision, Resubmission Deadline: March 12th, 2021. PA-19-118

NIH Mentored Patient-Oriented Research Career Development Award (Parent K23 – Independent Clinical Trial Not Allowed). Renewal, Revision, Resubmission Deadline: March 12th, 2021. PA-19-119

NIH Mentored Clinical Scientist Research Career Development Award (Parent K08 Independent Clinical Trial Not Allowed). Renewal, Revision, Resubmission Deadline: March 12th, 2021. PA-19-117

NIH Mentored Clinical Scientist Research Career Development Award (Parent K08 Independent Clinical Trial Required). Renewal, Revision, Resubmission Deadline: March 12th, 2021. PA-19-116

NIH R01 Understanding and Reducing Cardiovascular Disease in Type 1 Diabetes Mellitus. Application Deadline: March 15th, 2021. RFA-HL-21-014

NIH Exploratory/Developmental Research Grant Program (Parent R21 Clinical Trial Not Allowed). Deadline: March 16th, 2021, PA-19-053

NIH Exploratory/Developmental Research Grant Program (Parent R21 Clinical Trial Required). Deadline: March 16th, 2021. PA-19-054

NIDDK Small Grants for New Investigators to Promote Diversity in Health-Related Research (R21 Clinical Trial Optional). Deadline: March 16th, 2021. PAR-19-222

Maternal and Child Health Research Institute (MCHRI) Transdisciplinary Initiatives Program. Full Proposal (by invitation) Deadline: March 29th, 2021. LOI Deadline: January 11th, 2021.

APRIL 2021

AHA Research Supplement to Promote Diversity in Science. Open to currently funded AHA faculty awardees. To support pre- or post-doctoral fellows from under-represented ethnic and racial groups in science. Application Deadline: April 1st, 2021.

Maternal and Child Health Research Institute (MCHRI) Pilot Grant. Application Deadline: April 5th, 2021

Ruth L. Kirschstein National Research Service Award (NRSA) Individual Postdoctoral Fellowship (Parent F32). Application Deadline: April 8th, 2021. PA-21-048

MAY 2021

Shared Instrumentation Grants (SIG) Program (S10 Clinical Trial Not Allowed) Stanford internal vetting deadline April 13, 2021. Application deadline May 24, 2021. PAR-21-126

Program Project Applications (P01 Clinical Trial Optional). Application Deadline: May 25th, 2021. PAR-21-088.

Tobacco Regulatory Science (R01 Clinical Trial Optional). Letter of Intent due May 15, 2021. Application deadline July 14, 2021. RFA-OD-21-002

Immune Cell Engineering for Targeted Therapy and Disease Monitoring in Type 1 Diabetes (R01 Clinical Trial Not Allowed). Letter of Intent due May 22, 2021. Application deadline June 22, 2021. RFA-DK-21-005.

JUNE 2021

NIH R01 Research Project Grant. Improving Patient Adherence to Treatment and Prevention Regimens to Promote Health (R01 Clinical Trial Optional). Application Deadline: June 5th, 2021. PA-18-722.

NIH R01 Research Project Grant. Implementation of shared decision making for HLBS diseases and conditions (R01 Clinical Trial Optional). Application Deadline: June 5th, 2020. PA-19-166.

NIH Research Project Grant (Parent R01-Clinical Trial Not Allowed). Deadline: June 5th, 2020. PA-19-056.

NIH Research Project Grant (Parent R01 Clinical Trial Required). Note that NHLBI only accepts mechanistic studies. Deadline: June 5th, 2021. PA-19-055.

NIH Mentored Clinical Scientist Research Career Development Award (Parent K08 Independent Clinical Trial Not Allowed). Deadline: June 12, 2020. PA-20-203.

NIH Mentored Clinical Scientist Research Career Development Award (Parent K08 Independent Clinical Trial Required). Deadline: June 12, 2020. PA-20-202.

NIH Mentored Patient-Oriented Research Career Development Award (Parent K23 Independent Clinical Trial Required). Deadline: June 12, 2020. PA-20-206.

NIH Mentored Patient-Oriented Research Career Development Award (Parent K23 – Independent Clinical Trial Not Allowed). Deadline: June 12, 2020. PA-20-205.

NIH/NHLBI - Single-Site Investigator-Initiated Clinical Trials (R61/R33 Clinical Trial Required). Deadline: June 13, 2020. PAR-18-406.

Immune Cell Engineering for Targeted Therapy and Disease Monitoring in Type 1 Diabetes (R01 Clinical Trial Not Allowed). Letter of Intent due May 22, 2021. Application deadline June 22, 2021. RFA-DK-21-005.

ROLLING DEADLINES

Urgent Phase I/II Clinical Trials to Repurpose Existing Therapeutic Agents to Treat COVID-19 Sequelae (U01 Clinical Trial Required). RFA-TR-20-003. The purpose of this urgent funding opportunity announcement is to invite applications to repurpose existing therapeutic agents to treat Coronavirus Disease 2019 (COVID-19) sequelae and associated complications that result from Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) infections. The therapeutic agent must have already completed at least a Phase I clinical trial for a different indication, and not require additional regulatory studies for the new indication prior to starting a clinical trial.

Research Supplements to Promote Re-Entry into Biomedical and Behavioral Research Careers (Admin Supp - Clinical Trial Not Allowed). PA-18-592

Research Supplements to Promote Diversity in Health-Related Research (Admin Supp - Clinical Trial Not Allowed). PA-21-071

Research Supplements to Promote Diversity in Health-Related Research (Admin Supp - Clinical Trial Not Allowed). PA-20-166

National and Global Cardiovascular Conferences

Please note: some events may be canceled or postponed due to COVID-19. Please check directly with event organizers.

MARCH 2021

Residency: Picking the Right Program, Creating Your Opportunities, and Transitioning to Fellowship and Beyond. March 4th, 2021. Webinar.

Keystone Symposia – Precision Engineering of the Genome, Epigenome and Transcriptome. March 8th-10th, 2021. Virtual

Heart Tank for the Cardiovascular Investigator: Heart Failure. March 9th, 2021. Virtual

ICCP 2021: 15. International Conference on Cardiac Pacemakers. March 11th-12th, 2021. Miami, Florida. Conference Code: 21US03ICCP

ICPCCR 2021: 15. International Conference on Pediatric Cardiology and Cardiac Remodeling. March 11th-12th, 2021. Miami, Florida

AHA International Stroke Conference. March 17th-19th, 2021. Virtual

Keystone Symposia – Single Cell Biology. March 17th-19th, 2021. Virtual

Keystone Symposia – Fatty Liver Disease and Multi-System Complications. March 22nd-24th, 2021. Virtual

Keystone Symposia – Hepatobiliary Cancers: Pathobiology and Translational Advances. March 22nd-24th, 2021. Virtual

Keystone Symposia – Metabolic Decisions in Development and Disease. March 24th-25th, 2021. Virtual

Keystone Symposia – Lipidomics of Health and Disease. March 24th-26th, 2021. Virtual

APRIL 2021

2021 Innovation Showcase. April 1st, 2021. Virtual

The Heart Valve Society: HVS 2021. April 9th, 2021. Virtual

The Evolving Practice of Cardiovascular Precision Medicine. April 16th, 2021. Virtual

The Cardiometabolic Challenge: Navigating a Syndemic. April 16th-18th, 2021. Virtual

Stanford Drug Discovery Symposium. April 19th-20th, 2021. Virtual

Transcatheter Cardiovascular Therapeutics Asia Pacific TCTAP 2021. April 21st-24th, 2021. Virtual

Society for Cardiovascular Angiography & Intervention 2021 Scientific Sessions. April 28th – May 1st, 2021. Virtual

MAY 2021

ACC Scientific Sessions. May 15th-17th, 2021. Virtual

JUNE 2021

Echo/Imaging New York: State-of-the-Art 2021. June 3rd-6th, 2021. Virtual

ASE 2021: A Revolution in Cardiovascular Imaging. June 18th-21st, 2021. Virtual

Care of the Athletic Heart Virtual: From Elite to Exercise Enthusiasts. June 24th-26th, 2021. Virtual

25th Annual Hypertension, Diabetes & Dyslipidemia Conference. June 24th-26th, 2021. Virtual

ON DEMAND VIRTUAL CONFERENCES

New York Cardiovascular Symposium. December 12th, 2020 – March 31st, 2021. Virtual

Advancing the Cardiovascular Care of the Oncology Patient. January 25th, 2021 – April 25th, 2021. Virtual

Cardiovascular Summit Virtual on Demand. February 1st, 2021 – April 30th, 2021. Virtual.



SDDS 2021
Stanford Drug Discovery Symposium
April 19-20, 2021

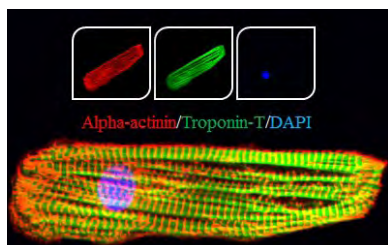
<http://tinyurl.com/SDDS2021>

Connect with CVI on LinkedIn



<https://www.linkedin.com/company/stanfordcvi>

Stanford CVI Human iPSC Biobank Service



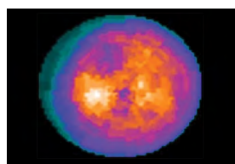
Normal and patient-derived reprogrammed cardiomyocytes are a tremendous resource for researchers and physicians here at Stanford and around the country. Understanding the disease process directly at the population level and observing these cells as surrogates under a myriad of conditions has the potential to be a game-changer for cardiovascular medical research.

To facilitate research in a dish that allows screening of new compounds or characterization of human disease phenotypes using cardiomyocytes, CVI created a service by which de-identified peripheral blood mononuclear cell (PBMC) samples from selected patients can be sent to Stanford CVI for reprogramming free of cost.

SCVI biobank is supported in part by the National Heart, Lung and Blood Institute (NHLBI) and the Stanford Cardiovascular Institute (CVI).

Contact: Joseph Wu, MD, PhD / joewu@stanford.edu
or Biobank manager, **Yan Zhuge, PhD** / yanzhuge@stanford.edu with any questions.

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, 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 a full spectrum of support to CVI members and their clinical trials. The coordinator has extensive clinical research experience in both industry and academia. The team provides services and support to principal investigators and sponsors, including:

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

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



Cardiovascular Pharmacology (ADD-ReB)

The Advanced Drug Delivery & Regenerative Biomaterials (ADD-ReB) Laboratory is a cutting edge research facility that specializes in the creation of biomaterials and drug delivery agents. The lab lends its expertise toward designing and analyzing biomaterials, developing drug delivery devices and formulations, pharmacokinetic and pharmacodynamic studies, and developing smart materials for biomedical applications. CVI Cardiovascular Pharmacology also offers trainings and lectures.

Contact: Jayakumar Rajadas, PhD
jayraja@stanford.edu



3DQ Imaging Laboratory

Stanford's 3DQ Imaging Laboratory develops new approaches to exploration, analysis and quantitative assessments of diagnostic images that result in new and/or more cost-effective diagnostic approaches, and new techniques for the design and monitoring of therapy. The lab processes over 1,200 clinical cases to deliver relevant visualization and analysis of medical imaging data at Stanford. The lab is co-directed by Dominik Fleischmann, MD, Roland Bammer, PhD and Sandy Napel, PhD. **Contact: Dominik Fleischmann, MD** / d.fleischmann@stanford.edu

Communication is at the heart of scientific advancement and innovation. Between December 1st and February 28th, Stanford Cardiovascular Institute members published **513 original manuscripts and reviews, further contributing to our understanding of cardiovascular biology and disease. Here, we highlight selected manuscripts by our members.**

December

Off-Pump Mini Thoracotomy Versus Sternotomy for Left Anterior Descending Myocardial Bridge Unroofing. Wang H, Pargaonkar VS, Hironaka CE, Bajaj SS, Abbot CJ, O'Donnell CT, Miller SL, Honda Y, Rogers IS, Tremmel JA, Fischbein MP, Mitchell RS, Schnittger I, Boyd JH. *Ann Thorac Surg.* 2020 Dec 14:S0003-4975(20)32111-1. doi: 10.1016/j.athoracsur.2020.11.023. PMID: 33333083

Rosette Trajectories Enable Ungated, Motion-Robust, Simultaneous Cardiac and Liver T2 * Iron Assessment. Bush AM, Sandino CM, Ramachandran S, Ong F, Dwork N, Zucker EJ, Syed AB, Pauly JM, Alley MT, Vasanaawala SS. *J Magn Reson Imaging.* 2020 Dec;52(6):1688-1698. doi: 10.1002/jmri.27196. PMID: 32452088

The Use of Clevidipine for Hypertension in Pediatric Patients Receiving Mechanical Circulatory Support. Wu M, Ryan KR, Rosenthal DN, Jahadi O, Moss J, Kwiatkowski DM. *Pediatr Crit Care Med.* 2020 Dec;21(12):e1134-e1139. doi: 10.1097/PCC.0000000000002562. PMID: 32796396

A Call for a New Paradigm for Diabetes Care in the Era of Sodium-Glucose Cotransporter 2 Inhibitors (SGLT2i). Kim SH, Chang TI, Mahaffey KW. *Cardiol Ther.* 2020 Dec;9(2):219-225. doi: 10.1007/s40119-020-00190-7. PMID: 32661684

PPAR γ -p53-Mediated Vasculoregenerative Program to Reverse Pulmonary Hypertension. Hennigs JK, Cao A, Li CG, Shi M, Mienert J, Miyagawa K, Körbelin J, Marciano DP, Chen PI, Roughley M, Elliott MV, Harper RL, Bill MA, Chappell J, Moonen JR, Diebold I, Wang L, Snyder MP, Rabinovitch M. *Circ Res.* 2020 Dec 16. doi: 10.1161/CIRCRESAHA.119.316339. PMID: 33322916

Quantification of antibody avidities and accurate detection of SARS-CoV-2 antibodies in serum and saliva on plasmonic substrates. Liu T, Hsiung J, Zhao S, Kost J, Sreedhar D, Hanson CV, Olson K, Keare D, Chang ST, Bliden KP, Gurbel PA, Tantry US, Roche J, Press C, Boggs J, Rodriguez-Soto JP, Montoya JG, Tang M, Dai H. *Nat Biomed Eng.* 2020 Dec;4(12):1188-1196. doi: 10.1038/s41551-020-00642-4. PMID: 33122853

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