The Stanford Cardiovascular Institute stands united against racism and social injustice. We are committed to enacting meaningful change. Our goal is to educate ourselves and pursue meaningful practices that support diversity, equity and inclusion in recruitment, mentorship and work environment. — Joseph C. Wu, MD, PhD

Stanford Medicine Community Calls for Action Against Racial Injustice  By Amy Jeter Hansen

Health care workers and students in blue scrubs and white coats held up signs proclaiming messages of sorrow and determination, condemning police brutality and systemic violence, and expressing solidarity with black Americans. They all wore surgical masks or other face coverings to mitigate transmission of the novel coronavirus.

“We find ourselves at an all too familiar and horrible crossroads once again,” pediatrics resident Kamaal Jones, MD, told the crowd. “And the question that we have to ask ourselves is what are we going to do differently in this moment to ensure that future generations are not having the exact same conversation that we’re having right now.”


CVI Scientists Respond to COVID-19

In the face of the coronavirus pandemic (COVID-19), cardiovascular scientists and clinicians have pivoted their research efforts to combat the virus and mitigate the effects of the disease. They have launched new research projects to investigate outbreak dynamics, identify biomarkers, predict illness onset, understand how COVID-19 affects cardiovascular disease risk and have published over 50 peer-reviewed articles since March. Further details in subsequent pages.

New CVI Appointment: Kevin Alexander, MD

Kevin M. Alexander, MD, joined the Stanford CVI in July 2020 as Assistant Professor of Medicine in the MCL line. Dr. Alexander’s clinical and research interests primarily lie in cardiac amyloidosis, and the ability to pursue “bench-to-bedside” translational medicine. He has initiated projects that utilize blood and heart tissue from cardiac amyloid patients to elucidate the molecular determinants of amyloid formation. His promising work resulted in him receiving the highly competitive American Heart Association - Harold Amos Medical Faculty Development Award. Moreover, he recently was one of five junior faculty accepted into the Stanford KL2 Mentored Career Development Program. He has also previously received grant funding for cardiac amyloidosis research, including the Pfizer ASPIRE Transthyretin Amyloidosis Competitive Research Grant. Dr. Alexander is a highly collaborative scientist with an established academic niche in an understudied and important area. His recruitment will help members of the CVI engage in translational research.

Virtual Undergraduate Summer Research Program

This June, 21 exceptional students began a virtual research program with CVI faculty mentors. Support for this program includes two funding sources specifically devoted to promoting diversity in STEM (AHA SURE and R25). Recordings of the majority of events are available online. The students will be presenting their final projects at 2:00pm PST on August 7th. For more information about similar CVI initiatives, contact our Office of Education and Outreach: cvi_outreach@stanford.edu.
New Faculty in Cardiothoracic Surgery

James Longoria, MD has joined the department of Cardiothoracic Surgery as a Clinical Associate Professor in the Division of Adult Cardiothoracic Surgery. Dr. Longoria received his medical degree from the University of Illinois, College of Medicine. He completed his general surgery residency at the University of California, Davis, and cardiothoracic surgery residency at Beth Israel Deaconess Medical Center, Harvard Medical School. Dr. Longoria also completed his pediatric cardiovascular surgery residency at Boston Children's Hospital. Dr. Longoria has an applied interest in atrial fibrillation and is a nationally recognized expert in atrial fibrillation’s minimally invasive surgical treatment.

Saverio La Francesca, MD has joined the department of Cardiothoracic Surgery as a Clinical Assistant Professor. He comes to Stanford from Ohio State University, where he held the position of Assistant Professor in the Department of Surgery. Previously, he held posts as active staff at the DeBakey Heart and Vascular Center, and Methodist JC Walter Transplant Center in Houston, Texas. He was Director of Organ Procurement, Perfusion, and Preservation, and the Director of the ex-vivo lung perfusion laboratory at the Methodist JC Walter Transplant Center. In his new role as Clinical Assistant Professor, Dr. La Francesca will provide organ procurement surgery and coordination services.

Chief of Medical Service at the VA Palo Alto

Paul Heidenreich, MD, has been appointed as the Chief of Medical Service at the VA Palo Alto Health Care System (VAPAHCS). Dr. Heidenreich earned his medical degree from the University of Chicago and completed an internship at the University of California, Los Angeles. He completed an internal medicine residency and fellowships in cardiology and imaging at the University of California, San Francisco. Dr. Heidenreich has over 450 peer reviewed publications in the areas of cardiovascular outcomes, quality of care, imaging, and health economics. He has led numerous quality efforts of cardiology professional societies and was recently honored with a Life-Time Achievement Award for Quality of Care and Outcomes Research by the American Heart Association.

Fellows Accepting New Faculty Appointments

Stephanie Lindsey, PhD, has accepted a faculty appointment as Assistant Professor in the Mechanical and Aerospace Engineering Department at UCSD.

Chi Keung Lam, PhD, has accepted a faculty appointment as Assistant Professor in the Department of Biological Sciences at the University of Delaware.

David Ouyang, MD, has accepted a faculty appointment as Assistant Professor at Cedars-Sinai Medical Center.

Huaxio Yang, PhD, has accepted a faculty appointment as Assistant Professor in the Department of Biomedical Engineering at the University of North Texas.

Donate to the Stanford Cardiovascular Institute

The Institute currently consists of over 240 faculty members representing physicians, surgeons, engineers, basic and clinical researchers. The Institute’s mission is integrating fundamental research across disciplines and applying technology to prevent and treat cardiovascular disease. To support cardiovascular research and education at CVI, please contact: Joseph C. Wu, MD, PhD, CVI Director at joewu@stanford.edu or Cathy Hutton, Senior Associate Director, Medical Center Development at cathy.hutton@stanford.edu.

For more: http://med.stanford.edu/cvi/support-our-research.html and http://cvi.stanford.edu
A Message on Diversity from Dr. Eldrin Lewis

I want to address everyone, not as Chief of Cardiovascular Medicine, but as a black man in America who happens to wear a white coat and happens to have the opportunity of a lifetime to be in this role in such a great institution with such great people. I am armed with the knowledge I do not walk the streets in my white coat and that I could have easily been Mr. Floyd on Memorial Day in Minneapolis…simply a black man murdered due to racism.

Eight minutes and 46 seconds. This time will be forever burned in my mind. Unfortunately, this time marked the amount of time that Mr. George Floyd suffered under the knee of racism in his murder. We have all watched with disbelief, pain and horror as we try to function daily in the application of the Hippocratic Oath. Over the past 11 days, I have also been touched by so many people who have reached out to me to ensure that I am OK and have shared how these events have touched them. It reminds me of the importance of us all helping each other: our colleagues, our family and friends, our patients and anyone we can contact.

At the Rally for Racial Justice, I was touched by the strong support, message of unity, and importance of change from the diverse workforce at Stanford University. This is a proud moment for me as a black man and as Chief of Cardiovascular Medicine, that we can say that “We Are Stanford”! Though we have many backgrounds, fears, and risks, we have to stand together for change so that we all can work together and ensure our safety both at work and at home.

As I knelt together with colleagues for 8 minutes and 46 seconds, I felt pain, heat, and anguish with the clear knowledge that this was nothing compared to what has been felt not only by Mr. Floyd, but also by many black people across America, both before Mr. Floyd’s death and afterwards. The pain in my back and joints was without someone forcing me to kneel because of inequities and without the excessive force that was used on Mr. Floyd. It reflects the pain that Blacks in America (and others in America) feel as their wounds remain opened. The 92-degree heat that made it challenging to keep my hand on the hot concrete for the full time is nothing compared to the pain Mr. Floyd must have felt to have his face and body pressed against the concrete with force and without the ability to adjust as I could do yesterday for momentary relief. The anguish I experienced while kneeling due to my reflection on the injustices of people I know and those I don’t know is nothing compared to the anguish of the experiences that have created PTSD among some of us due to racial injustice, the anguish of what continues to be a normal existence daily for many who suffer in silence, and the fear of what the future holds with knowledge that life is so precious and can be forever changed in a moment.

I stand with you and am ready to listen to all of you. To our faculty, staff, trainees, and the community I serve, I grieve with you. As a premier academic institution, we are all leaders. Our patients and our community watch us. We can be the change that we want to see. But we know that change is associated with pain, heat, and anguish. Change occurs with fear; change comes with self-examination and honesty. As these emotions arise, remember that members of our community experience this daily but we must march forward. As we continue to grieve and try to heal with focus on the “Black American experience,” let’s know that we can each do our part to help. We are all unique and each contribute to the richness of Stanford…the richness of America. I appreciate the support from everyone! Let’s reflect on kindness, patience, understanding, and self-control as we interact with each other, our patients, and the greater community. Let’s think outside of the box about how we can help each other and reduce inequities in America and in healthcare.

This is a time for healing: a time for change and the relentless pursuit of hope.

Please stay safe! Please reach out to let me know how I can help and how we can move this nation forward. Together we need to cultivate a safe workplace and to ensure the safety of the communities in which we and our families and friends live. The brutal killing of Mr. Floyd is the stark reminder that much work lies ahead to make Dr. King’s dream a reality not only for us, but for the future generations to come. “Our lives begin to end the day we become silent about things that matter.”

Protestors kneel in silence for eight minutes to protest anti-Black racism and police brutality. (Photo: DANIEL WU/The Stanford Daily)

Protestors for Black Lives Matter gather in front of Lokey Stem Cell Building.
Commitment to Fostering Equity and Community

At the end of June, Stanford President Marc Tessier-Lavigne addressed the Stanford community on the subject of advancing racial justice at Stanford. His message began as follows:

"The events of recent weeks following the murder of George Floyd have made us all painfully aware of the shameful legacy of anti-Black racism and how it endures in our communities and our country. Unfortunately, our campus is not immune from such pernicious forces. We must recognize the stereotyping, stigmatization and marginalization of diverse individuals and communities that occur on our own campus and work to tackle them. We have made some progress in the past several years through our IDEAL initiative, overseen by Provost Drell, but we need to do more and act with even greater urgency to create an inclusive, accessible, diverse and equitable university for all our members. And we need to start now, including working to eliminate the anti-Black racism that has been laid bare by the events of the past weeks.

Beyond our own campus, as an institution of higher learning we have an additional responsibility to ensure that our research and educational endeavors are sufficiently focused on helping society more broadly to evolve beyond the scourge of racism that has been present in our country for far too long."

President Tessier-Lavigne went on to describe the efforts that are being made to continue to advance the overarching goal of creating a more inclusive environment for everyone on our campus. By listening to members of Stanford’s community about the racial climate on campus, ideas and recommendations were developed on how to counter racism on campus and improve the overall racial climate. In addition to the formation of a new Community Board on Public Safety, President Tessier-Lavigne introduced several initiatives to focus on the critical issue of racial justice. These initiatives include:

**Changing our culture:** Hearing diverse stories of community members is an essential part of creating an inclusive environment. Among several concrete steps defined in the President’s message are: listening sessions with communities; providing anti-bias training for faculty, students, and staff; and providing development programs for all staff of color to advance in their careers. CVI fully supports these programs for its faculty, staff and trainees. In addition, CVI commits to ensuring that the committees that direct its operations include individuals from diverse backgrounds so that their voices are heard and heeded in steering CVI’s mission.

**Academic programs and research:** President Tessier-Lavigne also announced three new initiatives to support the goal of studying racial inequities and enabling students to learn about racism and the corrosive effects of racial bias. CVI’s mission is to further cardiovascular science and medicine and in pursuing that mission, CVI commits to continue and expand its efforts to support individuals from disadvantaged backgrounds in education and research. Our Undergraduate Summer Research Program strongly supports the training of young scientists from diverse backgrounds in cardiovascular research. CVI’s postdoctoral training programs are also strongly committed to facilitating recruitment from diverse and underrepresented communities, and to working with PRISM to ensure a diverse pool of applicants have access to our programs. CVI will further expand recruitment efforts by reaching out directly to minority-serving institutions and organizations. To enhance the diversity of the research workforce, CVI will maintain a list of diversity-related funding announcements and our Office of Research Development will work closely with individuals from underrepresented backgrounds to develop their proposals.

**Enhanced support for existing programs:** CVI commits to ensuring that our programs, including our flagship Frontiers in Cardiovascular Science series and annual Drug Discovery Symposium, incorporate significant representation from diverse communities. Additionally, in order to increase diversity in cardiovascular medicine and research, we are creating a new Outreach Travel Award. This award, exclusive to candidates from underrepresented groups, will facilitate access to career development and research opportunities at national and international cardiovascular conferences. To further facilitate access to resources, we have also created a website devoted to Diversity and Inclusion at CVI and Stanford to help underrepresented members of our community identify relevant information as easily as possible.

**Holding ourselves accountable:** Noted also in our President’s message is the importance of holding oneself accountable by measuring the effectiveness of our efforts. CVI will host an annual and anonymous climate survey that will allow us to learn about, and address, sensitive problems within our community. The results of this survey will be shared and distributed among CVI leadership and used to hold ourselves accountable for the progress we intend to make.

Like Stanford as a whole, CVI is committed to embracing ideas for producing concrete, long-lasting change. We have a lot of work ahead of us, but we aspire to be a force of positive change in our community.

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Joseph C. Wu, MD, PhD

Using Math to Understand COVID-19 Outbreak Dynamics By Amanda Chase, PhD

The World Health Organization has declared that COVID-19 is a global pandemic. The increasing knowledge of SARS-CoV-2 is allowing us to understand more about COVID-19, but we still lack a precise timeline of the disease, infectivity, and the effect of the strategies put in place to stop spread. This is critical information for easing restrictions in the safest way possible.

A group of researchers at Stanford, led by first author Mathias Peirlinck and senior author Ellen Kuhl, PhD, used mathematical modeling to help estimate outbreak dynamics and provide guidelines for outbreak control. The researchers, who are known for their simulations of the human heart, have just published their first COVID-19 study in *Biomechanics and Modeling in Mechanobiology*. Dr. Kuhl and her team were able to establish a simulation tool to estimate the dynamics of the COVID-19 pandemic, both at a local level for individual states and globally for the entire United States. Their results reinforce the benefit of the steps currently underway, including isolating infectious people, contact tracing, travel restrictions, and physical distancing. The simulation tool has the potential to predict the timeline of the outbreak in individual states to help optimize planning and essential distribution of medical resources.


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Stanford Medicine Scientists Hope to Use Data from Wearable Devices to Predict Illness, Including COVID-19 By Hanae Armitage

Researchers from Stanford Medicine and their collaborators aim to predict the onset of viral infection through data provided by wearable technology. By using wearable devices to measure things such as heart rate and skin temperature, which are known to elevate when the body is fighting off an infection, the team seeks to train a series of algorithms that indicates when your immune system is acting up. If the algorithms succeed, the team hopes they could help curb the spread of viral infections, such as COVID-19. “Smartwatches and other wearables make many, many measurements per day — at least 250,000, which is what makes them such powerful monitoring devices,” said Michael Snyder, PhD, professor and chair of genetics at the Stanford School of Medicine. “My lab wants to harness that data and see if we can identify who’s becoming ill as early as possible — potentially before they even know they’re sick.”

Snyder’s research will be based on an algorithm that he and former postdoctoral scholar Xiao Li, PhD, now an assistant professor in the Center for RNA Science and Therapeutics at Case Western Reserve University, created in 2017. The algorithm showed that it was possible to detect infection using data — specifically, data from a change in heart rate — from a smartwatch. Snyder’s study showed that specific patterns of heart rate variation can indicate illness, sometimes even while the individual is asymptomatic.

*https://med.stanford.edu/news/all-news/2020/04/wearable-devices-for-predicting-illness-.html*

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COVID-19 Interactions with Blood Pressure Medication

Sean Wu, MD, PhD and Patricia Nguyen, MD are cardiologists working on ways to reduce cardiovascular complications of COVID-19 in collaboration with the labs of Drs. Catherine Blish and Carrett. In particular they are addressing the relationship between SARS-CoV-2 infection on heart muscle and vascular cells and the consequences of taking common drugs for high blood pressure. Their research project will employ human induced pluripotent stem cells-derived muscle and vascular cells to determine the effects of blood pressure medication and viral entry and replication on gene expression. They will also investigate sex- and age-related differences in gene expression.

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CARDIO-COVID Database

The department of critical care and cardiology have launched the CARDIO-COVID database. This database is a multi-national patient registry collecting data on intensive care patients demonstrating evidence of cardiac injury or myocardial dysfunction. This project is led by PI Paul Mohabir, MD and Co-Investigators Connor O’Brien, MD and Manisha Desai, PhD. Many members of cardiology are supporting the project, including Drs. Myriam Amsallem, Francois Haddad, William Fearon, Paul Wang, and Ronald Witteles.

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Cutting Edge COVID-19 Research by CVI Scientists

More Than $14 Million in Research Grants Awarded for Health Technology Solutions Focused on Heart and Brain Health, Including Special projects Related to COVID-19 and CVD By Cathy Lewis

“The widespread consumer adoption of healthcare technology, fueled by increasingly sophisticated technology on digital mediums including tablets, smartphones and wearable devices, offers a unique outlet to find new solutions to improve health outcomes,” said American Heart Association (AHA) president Robert A. Harrington, MD, FAHA, Arthur L. Bloomfield Professor of Medicine and chair of the department of medicine at Stanford University.

Research teams at Cincinnati Children’s Hospital, The Johns Hopkins University, Stanford University School of Medicine and the University of Michigan will receive $2.5 million each from the AHA for their individual projects aimed at reducing health care disparities, empowering people to better manage their health and wellness, and enhancing patient/provider connectivity. Together, they’ll also receive $4 million to work collectively on at least one highly impactful project and form a national Health Technology Research Collaborative. The Collaborative may ultimately serve as an AHA research ‘think tank’ to assist with identifying, creating, testing and bringing to scale future innovative health technologies.

At Stanford the Center for Heart Health Technology (H2T): Innovation to Implementation will be led by Mintu Turakhia, MD, MAS, Executive Director of Stanford’s Center for Digital Health, associate professor of medicine and a cardiac electrophysiologist at the VA Palo Alto Health Care System. The H2T Center’s mission is to rapidly develop technologies that address unmet needs for heart health, evaluate them quickly and then implement these solutions at scale.


New Study to Discover Biomarkers in COVID-19 Patients

Drs. Kari Nadeau, Angela Rogers, and Holden Maecker are site leaders for a new NIH COVID-19 study, called IMPACC (Immunophenotyping Assessment in a COVID-19 Cohort). The primary objective of the study is to discover biomarkers of severe disease in hospitalized COVID-19 patients. Drs. Nadeau and Rogers will lead the Stanford clinical collection site, and Dr. Maecker will co-lead a core for immunoassays.


Electrical Storm in COVID-19

CVI members Connor O’Brien, Ning (Maggie) Ning, James McAvoy, James Mitchell, Neal Kalwani, Paul Wang, Duy Nguyen, Risheen Reejhsinghani, Angela Rogers, and Javier Lorenzo contributed to a case report published in JACC Case Reports entitled “Electrical Storm in COVID-19”. While myocarditis and cytokine storm may be significant drivers of morbidity and mortality in COVID-19, this case highlights that not all cardiovascular complications are the result of direct viral injury or systemic inflammation specific to SARS-CoV-2.

https://casereports.onlinejacc.org/content/early/2020/05/27/j.jaccas.2020.05.032

Two Reviews on Cardiovascular Risks in Patients with COVID-19

Several Stanford cardiovascular scientists, including Drs. Sean Wu, Han Zhu, Ronald Wittles, and June-Wha Rhee, contributed to a pair of reviews published in Current Cardiology Reports that review the cardiovascular risks in patients with COVID-19. One review discusses consequences of viral toxicities and host immune response, the second discusses potential mechanisms and areas of uncertainty. Cardiovascular diseases appear intricately linked with COVID-19, with cardiac complications contributing to the elevated morbidity/mortality of COVID-19. Robust epidemiologic and biologic studies are urgently needed to better understand the mechanism underlying these associations to develop better therapies.


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CVI Community Adjusts to COVID-19

CVI members dedicate their resources, knowledge and platforms to supporting and educating the community on COVID-19.
COVID-19 Patient Data Registry

The American Heart Association is developing a novel registry to aggregate data and aid research on the disease, treatment protocols and risk factors tied to adverse cardiovascular outcomes. In addition to the associations with morbidity and mortality, there is strong evidence for an association with adverse cardiovascular outcomes. Moreover, patients with existing cardiovascular disease or CVD risk factors may be at higher risk for serious complications from COVID-19 including death.

Registry Steering Committee: Fatima Rodriguez, MD, MPH, FACC, FAHA, Assistant Professor, Cardiovascular Medicine, Stanford University School of Medicine


Q&A: Cardiologist Fatima Rodriguez on the AHA's COVID-19 Patient Data Registry

By Michael Walter, Staff Writer Cardiovascular Business

Back in April, as the COVID-19 pandemic continued to spread like wildfire, the American Heart Association (AHA) launched a new patient data registry to learn more about the virus and its associations with cardiovascular disease. Nearly two months later, what kind of progress has the registry made? What do we know today about COVID-19 and how it impacts patients with these common pre-existing conditions?

Fatima Rodriguez, MD, MPH, an assistant professor of cardiovascular medicine at Stanford University School of Medicine and a volunteer working on the AHA registry, spoke to Cardiovascular Business about those topics and much more.

I wanted to start by asking you about COVID-19’s impact on cardiovascular care. How has it impacted physicians? What about patients?

COVID-19 is the health crisis of our lifetime and has impacted almost every aspect of cardiovascular care for patients and physicians. Because of the lack of high-quality data across diverse populations, physicians are often making management decisions with uncertainty. As such, the AHA has recognized the pressing need to rapidly collect, analyze, and disseminate high-quality data about the cardiovascular effects of COVID-19.

What do researchers know now about how COVID-19 affects patients with a history of cardiovascular disease?

We know that cardiovascular disease both potentiates and can be a serious complication of COVID-19. Early research suggests that the SARS-COV2 virus may affect every aspect of the cardiovascular system—the coronary arteries, the myocardium, and the electrical system. Patients also seem to be more prone to both venous and arterial thromboembolism, including stroke. However, much of our clinical practice is driven by single-center data and lower-quality observational data.

How can this new COVID-19 data registry make an impact?

The goal of this registry is to capture high-quality and comprehensive data across U.S. hospitals for patients hospitalized with COVID-19. We are collecting detailed demographic data, serial laboratory and testing data, treatments, and cardiovascular outcomes in patients. We hope that this high-quality observational data will be used to inform hospital-level, regional, and national COVID-19 CVD quality improvement and research.

How can healthcare providers participate and contribute?

We encourage all U.S. hospitals to enroll in the AHA registry. We need to work together to make sure the data we collect are truly representative of the diversity of the U.S. patient population. Participating sites will be able to leverage the registry to track their own experiences and outcomes caring for COVID-19 patients. In just the first month of data collection, we have seen data from nearly 3,000 unique patients from many of the more than 100 hospitals who have signed up to participate. More information about the registry, including a full list of participating hospitals, can be found online. The list is updated twice a week, as we have been adding hospitals throughout the country.

New Technologies: Diagnosis and Treatment of Cardiovascular Disease

Molecular Imaging of Microbial Infections of the Heart

In this study, several Stanford cardiovascular scientists, including first author Mirwais Wardak, PhD and senior author Sam Gambhir, MD, PhD, developed a positron emission tomography-computed tomography (PET-CT) based strategy for directly imaging bacteria in an infective endocarditis mouse model. Infective endocarditis is a microbial infection of the heart and is generally fatal if untreated. The current approach for diagnosing infective endocarditis (IE) involves a combination of clinical examination, blood cultures, and echocardiographic findings. However, blood cultures and echocardiography can be inconclusive, leading to a high proportion of unconfirmed cases of suspected infective endocarditis. Computed tomography and magnetic resonance imaging are also limited in diagnosing IE because they reveal anatomic changes only when the infectious process is advanced and tissue damage has occurred. To address these challenges, the authors developed a new imaging strategy using a novel probe. This probe targets a carrier system that is exclusive to bacteria and not expressed in mammalian cells. Plans are currently underway to translate the unique tracer into the clinic for imaging patients with IE and cardiovascular device infections.

https://www.ahajournals.org/doi/10.1161/CIRCULATIONAHA.119.043924

Stanford Vascular Performs First Commercial Case Using Surfacer® System in the U.S.

A Stanford surgeon has performed the first U.S. commercial case using the Surfacer® Inside-Out® Catheter System. “Essentially, we create a tunnel between the outside, usually near the right side of the neck, to the inside, close to the right atrium,” said Dr. Sorial. “By doing so we can place any central catheter to use for infusion, hemodialysis, IV fluids and/or cardiac pacemaker wires.” Sorial, a clinical associate professor in the Division of Vascular Surgery, performed the operation at Santa Clara Valley Medical System (SCVMC) on Wednesday, May 13 in collaboration with Dr. Ajit Nair, an interventional radiologist. “I am proud to see the device that I have worked on for so long finally come to fruition and be the first to use it on two of my patients,” said Sorial.


Smartphone Camera Apps Can Detect AF, But False Positives a Concern

A systematic review and meta-analysis of four smartphone camera applications that detect atrial fibrillation reported high sensitivity and specificity of the apps for diagnosing AF, but a modest predictive value, which researchers concluded could generate a high number of false-positive results. “Our results have provided both users and health care professionals who care for these patients the diagnostic accuracy of these applications collectively and individually for the commercially available applications,” Jack O’Sullivan, MBBS, DPhil, postdoctoral research fellow in cardiovascular medicine at Stanford University, and colleagues wrote.


Drug Development: From a Concept to the Clinic

New Course - MED225

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. It will provide perspectives on essential issues in drug development, with an emphasis on cardiovascular applications. The curriculum will focus on all stages of drug development – discovery and translational science, analyzing data, communication and interpretation clinical trials results, regulatory issues and commercial considerations.

The course will be directed by Dr. Jaykumar Rajadas and co-directed by Drs. Philip Sager, Alexander Gold, Pete DiBattiste, and Jonathan Fox, who all have extensive experience in drug development in leading bio-pharmaceutical companies.
Molecular Signatures of Statins on Human Cardiomyocytes

By Amanda Chase, PhD

Statins are widely prescribed to lower cholesterol and prevent cardiovascular disease in at-risk patients. In combination with lifestyle modifications, statins can reduce the risk of heart attack, stroke, and death in at-risk patients by 25-35%. Although statins have established benefits in reducing the risk of cardiovascular diseases, individual patient response to statin treatment is highly variable. In addition to lowering cholesterol levels, statins have been shown to exert cholesterol-independent, or pleiotropic, effects on different organs. This suggests that statins may have different drug-specific responses depending on specific cell types, such as cardiomyocytes, that could explain their pleiotropic effects.

Given the benefits of statins on heart disease, a team of researchers at the Stanford Cardiovascular Institute, led by co-first authors Lei Tian, PhD, and Angelos Oikonomopoulos, PhD, and senior author Joseph C. Wu, MD, PhD, investigated the drug-and individual-specific effects of clinically relevant concentrations of statins on human cardiomyocytes. Because testing the direct effect of statins on human cardiomyocytes is difficult due to the relative lack of access to these cells, the Stanford team instead used human induced pluripotent stem cells (iPSCs) that can be readily differentiated into iPSC-derived cardiomyocytes (iPSC-CMs).

In their recently published letter in Circulation, the authors looked at the effects of four different statins on iPSC-CMs from healthy patients. Specifically, they looked at differences in gene expression in response to different statins. They were able to identify previously unknown effects on human cardiomyocytes primarily related to statins’ pleiotropic effects, independent of their primary action on cholesterol lowering. These effects were mainly related to energy production, preventing abnormal heart muscle thickening and preventing cell death during stress. In addition to identifying a core set of commonly regulated genes that correlated with the clinical effects of statins, they also found that each statin had a different, specific response on cardiomyocytes. Together, these findings provide a framework for future research to test how the use of statins may benefit the heart directly and to better understand the variable responses observed among patients.

Exosomes – A Potential Alternative to Stem Cells for Treating Heart Attacks

By Adrienne Mueller, PhD

Heart attacks cause cardiomyocytes or heart cells to die. To help recover the lost heart tissue, recent research efforts have primarily focused on creating new cardiomyocytes from stem cells. Unfortunately, cardiomyocyte transplants have had limited success as a therapy. Yet in some cases even very small or poor transplants can improve heart function. Why that is the case is unclear, but in a study recently published in the Journal of the American Heart Association, a group of Stanford researchers sought to find out.

Led by first author Michelle Santoso and senior author Phillip Yang, MD, Associate Professor of Medicine, the authors hypothesized that recovery might not be caused by the transplanted cells directly, but instead by something secreted by the normal or injured cardiomyocytes. Specifically, they investigated whether cardiomyocyte-secreted exosomes could be the actual source of improvements in cardiac function. Exosomes are vesicles containing numerous small molecules and are a means for cells to communicate with each other. If exosomes are sufficient to improve cardiac function this would explain why even small or poor transplants can sometimes cause cardiac improvement. They tested this hypothesis and found that – sure enough – exposure to exosomes was as effective as cardiomyocyte transplants in improving cardiac function in mice recovering from heart attacks.

The next question was, how are the exosomes improving cardiac function? One process that exosomes influence in neighboring cells is autophagy: a cell’s self-digestion. Although it seems counterintuitive, digesting their own material is part of a healthy cell’s life cycle, and previous work has shown that autophagy is dysregulated in unhealthy heart tissue. The authors demonstrated that cardiomyocyte exosomes increase autophagy and rectify the impaired autophagy exhibited by unhealthy heart tissue. Promoting autophagy is therefore an excellent candidate mechanism for how exosomes improve cardiac function.

The study by Santoso et al shows that it may not be necessary to subject patients with heart disease to the risks of stem cell transplants – and their uncertain outcomes. Instead, patients could potentially be treated with cardiomyocyte exosomes: an alternative cell-free, patient-specific therapy.

Expanding Human Cardiomyocytes for Cardiac Repair  By Amanda Chase, PhD

Heart failure is a major health problem with a significantly unmet medical need. Causes of heart failure include heart attack from coronary artery occlusion (blocked blood flow in an artery) or cardiomyopathy, an intrinsic disease of heart muscle cells, among others. The loss of heart muscle cells (cardiomyocytes; CMs) leads to impaired heart function, resulting in frequent hospitalization and/or death. Prior studies have shown that the adult human heart has little to no ability to regrow damaged muscle cells. Currently, patients with severe or end-stage heart failure require heart transplantation or implantation of a mechanical ventricular assist device (mechanical pump), which is expensive and has been associated with significant infection and risk of blood clots. Recent attempts to regenerate the loss CMs have focused on cell-based approaches, such as an injection of stem cell-derived CMs or transplantation of engineered stem cell-derived heart tissue. While these approaches show great promise, the biggest hurdle to implementing stem cell-derived CM therapy currently is the lack of a sufficient number of CMs (e.g., multiple billions needed per patient) due to the extremely labor- and time-intensive process of generating pure stem cell-derived human CMs.

In work published this week in Cell Stem Cell, Stanford Cardiovascular Institute researchers, led by co-first authors Jan Buikema, MD, PhD, and Soah Lee, PhD, and senior author Sean Wu, MD, PhD, Sanford and Joan Weill Scholar and Associate Professor of Medicine, uncovered a way to significantly improve the expansion of human induced pluripotent stem cell (hiPSC)-derived CMs. Beyond serving as an autologous cell source (i.e., cells coming from the same patient) of CMs for transplantation, hiPSC-CMs can also be used for drug screening to identify new therapeutic drugs to treat heart failure. Prior to this work, it has been common to grow hiPSC-CMs in densely packed culture where CMs are often in direct contact with one another. Studies by Wu and colleagues, reported on July 2nd, 2020, show that this direct contact is a major barrier to hiPSC-CMs expansion. Avoiding cell contact by keeping fewer cells in culture, plus treatment with Wnt agonists, allows iPSC-CM to grow and divide continuously for 2 months, generating multiple billions of hiPSC-CMs with each production. The Wnt agonists allow multiple billions of hiPSC-CMs to be generated. Importantly, the authors showed that the expanded iPSC-CMs have the same functional characteristics as the un-expanded iPSC-CMs, making them an excellent source of cells for drug screening, cell-based therapy, and mass production of engineered heart tissue. These findings have major implications for the future of cardiac therapies and regenerative strategies in patients with myocardial damage, congenital heart defects, or cardiomyopathy. The findings presented in this publication provide a major step forward in reaching the goal of cardiac regenerative medicine – to restore the function of damaged heart muscle.


New Insights into Mechanisms Underlying Congenital Heart Disease  By Adrienne Mueller, PhD

Congenital heart disease (CHD) is characterized by problems with the heart or local vasculature that are present at birth. Approximately 25% of children with congenital heart disease need surgery or other invasive procedures before the age of one. Because these problems arise so early during development, before an individual is even born, they are extremely hard to study.

Recently, a team of researchers at the Stanford Cardiovascular Institute have gained important insights into the mechanisms underlying this challenging disease. Led by co-first authors Tomoya Kitani, MD, PhD, Lei Tian, PhD, and Tiejun Zhang, PhD, as well as senior author Joseph C. Wu, MD, PhD, they investigated congenital heart disease by studying gene expression in human induced pluripotent stem cell-derived cardiomyocytes (iPSC-CMs) generated from 5 patients with single ventricle disease (SVD), 5 patients with tetralogy of Fallot (TOF), and 5 healthy individuals (non-CHD). Using RNA-seq, a method of measuring gene expression through RNA levels, they discovered which genes were abnormally expressed in the cardiomyocytes of two different congenital heart disease patient populations.

Their findings, recently published in Circulation Research, determined that over 900 genes were differentially expressed in iPSC-CMs derived from patients with CHD compared to iPSC-CMs derived from healthy patients. One insight into the underlying mechanisms of this dysregulation is that many of the abnormally expressed genes, in both groups of patient-derived cells, are involved with cardiac development. Future work will focus on further specifying those pathways most relevant for therapies.

Advances in Heart Surgery Treatments

Decreasing Risks After Heart Transplantation  By Amanda Chase, PhD

Heart failure is a very common condition. It can progress to the point where lifestyle changes and medications no longer control symptoms, and a heart transplant is considered. Heart transplantation involves significant side effects, including an increased risk of blood clots, which can lead to heart attack or stroke. A team at Stanford led by Erik Henricksen, PharmD, Maxime Tremblay-Gravel, MD, and senior author Kiran Khush, MD, aimed to understand the best course of treatment to prevent blood clots in heart transplantation patients. Their results were recently published in the Journal of Heart and Lung Transplantation.

After transplant, patients are put on blood thinners, or anticoagulants, to treat and/or prevent the formation of blood clots. Historically, warfarin was the most commonly prescribed anticoagulant, but it has drawbacks. Newer drugs, direct oral anticoagulants (DOAC), are now available, but there is limited guidance for use, particularly after transplantation. This study compared DOACs to warfarin after heart transplant. The authors showed that, compared to warfarin, DOAC therapy resulted in a lower risk of bleeding that required transfusion. It provides evidence that DOACs are an acceptable alternative to warfarin for heart transplant patients, and may even provide benefits over warfarin. While this study calls for additional studies with larger cohorts to validate the findings, it provides an important step towards addressing the public health need for better treatment options for AF and VTE in high risk populations.


Kiran Khush, MD

Invasive Intervention or Not? How to Treat Coronary Disease  By Adrienne Mueller, PhD

Coronary disease, the cause of heart attacks, is the most common cause of death in the United States. Established treatments for coronary disease are noninvasive medical therapies such as lifestyle interventions and drugs, and invasive revascularization procedures to open arteries with stents or go around obstructions with bypass surgery. Unfortunately, these invasive methods do not yield clear and unambiguous improvements in patient outcomes.

A team of scientists formed an international group (ISCHEMIA) to analyze the best management strategy for patients with stable ischemic heart disease. Their study is published in the New England Journal of Medicine. Led by Dr. David Maron of Stanford University and Dr. Judith Hochman of New York University, they performed a clinical trial with over 5,000 patients to determine whether invasive treatment actually improves outcomes for patients with coronary disease. Statistically, the answer is no. At six months: a higher proportion of patients in the invasive-strategy group had cardiovascular events than in the conservative-strategy group. At five years, the opposite was true. The ISCHEMIA trial highlights the need for shared decision-making between patient and clinician when considering stenting or bypass surgery. The investigators hope to receive funding for long-term follow-up to see if a survival benefit emerges from an invasive strategy.


David Maron, MD

Reducing Risk After Cardiac Surgery  By Amanda Chase, PhD

Atrial fibrillation (AF) is an irregular heartbeat that can lead to an increase in the risk for strokes, heart failure, and/or other heart-related complications. AF that develops after cardiac surgery (post-operative atrial fibrillation, POAF) is the most common complication for these patients. The overall rates of POAF have persisted over the last decade despite significant attempts to develop an intervention. A team at Stanford University, led by first author Terrence Pong, MD, PhD, and senior author Anson Lee, MD, recently carried out a clinical trial addressing interventions, and the results were published in the Journal of American College of Cardiology.

The team proposed to combine a test to determine those at risk for POAF with treatment targeted towards those higher-risk patients. They recruited 115 patients who were undergoing cardiac surgery for the first time and had no history of AF. For those patients who were tested to be more susceptible to AF, half were randomize to standard care and the other half to an FDA-approved drug (amiodarone) proposed to decrease POAF. They were able to show that the amiodarone significantly decreased the rate of POAF in the patients identified to be at a higher risk. The ability to identify patients who get the most benefit from amiodarone will likely decrease the rate of hospital readmissions for those patients, while providing a prevention strategy to help lessen the incidence of POAF.


Terrence Pong, MD, PhD
Anson Lee, MD
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.

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.html and http://med.stanford.edu/cvi/translational-research/clinical-trials.html.

Introduction to the Khush Research Team: The Research Team of Kiran Khush, MD 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) and Fouzia Khan (coordinator), 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 ongoing or preparing to start.

CVI Seed Grant Awards

Due October 1, 2020

Eligibility: Stanford faculty or instructor members of CVI

Our goal is to ignite and support new ideas that will change how we diagnose and treat cardiovascular disease. To achieve this mission, the CVI is offering two calls for Seed Grant Proposals. We highly encourage proposals that establish new interdisciplinary collaborations. Focus on topics relevant to COVID-19 are welcome.

2020 Stanford CVI Seed Grant Competition:

- Maternal and Child Health
- Sudden Cardiac Death

Application and more information: http://tinyurl.com/CVI-SeedGrant
CVI Welcomes R38 StARR Resident-Investigators

The R38 StARR (Stimulating Access to Research in Residency) program is designed to recruit and train resident-investigators in cardio-pulmonary research and to accelerate their development into independent clinician-investigators.

This year we welcome our first cohort of resident-investigators into the program: Cayley Bowles, MD, Alex Dalal, MD and Benjamin Solomon, MD.

This program is directed by Joseph Wu, MD, PhD, Marlene Rabinovitch, MD and Michael Fischbein, MD, PhD. It is funded by the National Heart, Lung and Blood Institute (NHLBI) of the NIH.  

http://med.stanford.edu/cvi/education/resident-education.html

Recruitment for T32 Fellowships

Multi-Disciplinary Training Program in Cardiovascular Imaging T32 Training Grant

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

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

Mechanisms and Innovations in Cardiovascular Disease T32 Training Grant

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

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
Stimulating Stem Cells to Help COVID-19 Patients Recover By Megan Mayerle, PhD

A subset of COVID-19 patients, including both young and elderly individuals, exhibit symptoms of such severity that they are hospitalized in the intensive care unit (ICU) and must be placed on a ventilator. One of the most common issues experienced by ICU survivors is muscle weakness and fatigue, particularly of the diaphragm, which manifests as Ventilator Induced Diaphragm Dysfunction (VIDD). COVID-19 patients are particularly susceptible to VIDD because they spend weeks, as opposed to days, immobilized and on mechanical ventilation. Such patients could take months to years to fully recover, and many may not fully recover at all. Cardiovascular Institute member and stem cell and muscle biologist Dr. Helen Blau and her team have just been awarded a grant by the California Institute for Regenerative Medicine (CIRM) to tackle this problem. Her group’s approach is to apply an existing small molecule that stimulates muscle growth and increases muscle mass, strength, and endurance in limb muscles to the diaphragm. If successful, this approach could increase ventilator availability at hospitals by decreasing the duration patients are ventilated and significantly decrease recovery time and improve quality of life for COVID-19 survivors.

Transgenerational Effects of E-cigarette Vapor on Aortic Aneurysm Risk

Cigarette smoking dramatically increases an individual’s risk for developing abdominal aortic aneurysm (AAA: an abnormal enlargement of the aorta). In the U.S. AAs account for approximately 10,000 deaths and 84,000 inpatient hospitalizations per year. Over 90% of individuals diagnosed with AAA are either current or prior tobacco users, and studies have associated continued cigarette smoking with accelerated aneurysm expansion. Much of this risk may be attributable to nicotine, a key chemical constituent. Recent years have seen massive increases in the popularity of vaping using nicotine-containing e-cigarettes (e-cigs). Joshua Spin, MD, PhD, (left) and Phil Tsao, PhD (right) were awarded a Research Grant from the Tobacco-Related Disease Research Program of the Palo Alto Veterans Institute for Research to study “Transgenerational Effects of E-cigarette Vapor on Aortic Aneurysm Risk.” Their recent preliminary studies using implantable pumps show that the offspring of mice exposed to nicotine, whether in the womb or even prior to conception, experience increased risk of AAA and death from vessel rupture, along with stiffer vessels. Given the dire implications for the health of future generations, they now intend to use our mouse models to study the effects of e-cig vaporized nicotine on their offspring’s AAA risk, and to identify what mechanisms are involved.

Stanford Medicine awarded $2.5 Million Grant to Investigate Digital Tools for Heart Health By Tracie White

The American Heart Association has awarded $2.5 million to Stanford Medicine’s Center for Digital Health to investigate how digital technology can improve cardiovascular health. Mintu Turakhia, MD, Vivek Bhalla, MD, and Paul Wang, MD, (left to right) have been awarded a Strategically Focused Research Network Grant in the area of Health Technology from the American Heart Association. “This grant will help promote our research into expanding the use of digital health care to help make medical decisions remotely,” said Mintu Turakhia, MD, executive director of the center and associate professor of medicine. https://med.stanford.edu/news/all-news/2020/04/grant-to-investigate-digital-tools-for-heart-health.html

Studying Vascular Disease in Diverse Patients

Joseph Wu, MD, PhD, Elsie Ross, MD and Philip Tsao, PhD (left to right) received a Chan Zuckerberg Initiative on “Studying Vascular Disease in Diverse Patients”. It is possible that inflammation from other organs causes vascular disease and plaques at distant sites. As most cardiovascular diseases are over-represented in African American and Hispanic individuals, this project will study samples from diverse patients. The team will examine samples from inflammatory vascular disease patients and utilize single-cell analysis to understand whether the presence or response of specific immune cells varies among individuals of different ancestry. https://med.stanford.edu/news/all-news/2020/06/chang-zuckerberg-initiative-awards-grants-to-researchers.html

Three Researchers Honored with 2020 Top 10 Clinical Research Achievement Awards

Three Stanford Department of Medicine researchers have been recognized for their groundbreaking clinical studies published in peer-reviewed journals in 2019. On April 15, the Clinical Research Forum (CRF) issued a release naming the 2020 Top 10 Clinical Research Achievement Award recipients, which include the Department’s Rebecca Sharon Chinthrajah, MD, clinical associate professor of medicine and pediatrics, Ken Mahaffey, MD, professor of cardiovascular medicine, and Marco Perez, MD, associate professor of cardiovascular medicine (left to right). The CRF says these prestigious awards honor research that is advancing therapies and treatments for diseases through innovation and scientific rigor. https://medicine.stanford.edu/news/current-news/standard-news/clinical-research-achievement-awards.html

Stanford Medicine CVI MSPA Scholarship (PAsCare)

The Cardiovascular Institute and the Master of Science in PA Studies program at Stanford University have selected two awardees for the 2020 PAsCare grant. This research award is for MSPA students pursuing exceptional scholarly work in cardiovascular medicine.

Alison Leibold
Pain in Adult Congenital Heart Disease Research

Cosette Motta
Determining Underlying Genetic Components of Dilated Cardiomyopathy
Grants and Awards

**Thomas Rando, MD, PhD**, director of the Glenn Center for the Biology of Aging at Stanford and member of Stanford Cardiovascular Institute was elected to the American Academy of Arts and Sciences. His research focuses on understanding the biological signals that activate stem cells in response to injury or other environmental cues, particularly in the context of aging.

**Gentaro Ikeda, MD, PhD**, a postdoc in Dr. Phil Yang’s lab, was a Young Investigator Award Finalist for the American College of Cardiology with "Mitochondria-Containing Extracellular Vesicles from Autologous uPSC-derived Cardiomyocytes Restore Bioenergetics in Ischemic Myocardium."

**Kevin Alexander, MD**, received the Stanford K12 Mentored Career Development Award. The title of his project is “Metabolic Profiling to Elucidate Novel Biomarkers for Transthyretin Cardiac Amyloidosis.”

**Seraina Dual, PhD and CVI Translational Research Fellow** was awarded a Postdoctoral fellowship by the Swiss National Foundation to develop a "Soft Robotic Assist Device for the Forgotten Half of Heart Failure Patients."

**David Paik, PhD**, was awarded a K99 from the National Heart, Lung and Blood Institute, titled "Identifying Angiocrine Factors Cardiomyocyte Maturation Using Single Cell Sequencing."

**Ning Ma, PhD** received a Career Development Award from the American Heart Association for a project on "Abnormal Protein N-terminal Acetylation Mediated Cardiac Dysfunction."

**Han Zhu, MD**, received the Gerald Reaven Award for Basic Science.

**Nicholas Leeper, MD and Eri Fukaya, MD, PhD** of Stanford Vascular Medicine were selected as directors of the inaugural Ansell Fellowship from the Anticoagulation Forum. This fellowship provides funding to train the next generation of clinical investigators in the field of Vascular Medicine.

**Detlef Obal, MD, PhD**, has been appointed MCL-track Assistant Professor in Stanford’s Department of Anesthesiology.

**Sean Wu, MD, PhD** was recently elected to a 3-year term as a member of the Scientific Committee of the Sarnoff Cardiovascular Research Foundation. This foundation supports research fellowships for medical students interested in cardiovascular medicine and scholar awards for clinical CV fellows during transitioning into faculty.

**Sanjiv Narayan, MD, PhD**, Professor in the Division of Cardiology and CVI and **Matei Zaharia, PhD**, Professor of Computer Sciences were awarded an NIH R01 (HL149134) entitled "Machine Learning in Atrial Fibrillation" which will use AI techniques to match physiological data at the biological scales of tissue, the whole heart and the individual patient.

**David Ouyang, MD**, received the Alderman Award for Clinical Research.

**Kevin Alexander, MD**, was awarded the Stanford SAGE Center Pilot Grant, with the project “Evaluating Cognitive Impairment in Blacks and Elderly Patients with Transthyretin Amyloid Cardiomyopathy.”

**Phil Tsao, PhD and Nick Leeper, MD** renewed their 5-year Institutional Training Grant for Mechanisms and Innovations in Cardiovascular Disease.

**Stanford University**, hosted four Sarnoff Fellows including Corinne Carland (with Tim Assimes, MD, PhD), Joseph Heiler (with Joseph C. Wu, MD, PhD), Michael Jiang (with Alison Marsden, PhD) and Abra Shen (with Michael Longaker, MD).

**Sangkyun Cho, PhD**, was awarded an F32 from from the National Heart, Lung, and Blood Institute (NHLBI) for his project "Human iPSCs for Elucidating Stress-mediated Paracrine Signaling in Dilated Cardiomyopathy."

**CVI Mentorship Program**

CVI is launching a new program to facilitate mentorship among trainees, junior faculty, and senior faculty.
Funding Opportunities

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

JULY 2020


AUGUST 2020

NIH Support for Conferences and Scientific Meetings. Deadline: August 12, 2020. PA-20-207


SEPTEMBER 2020


The Thoracic Surgery Foundation Research Award. Awards of up to $40,000 per year for up to two years are granted to support the work of an early-career cardiothoracic surgeon. Deadline: September 15, 2020.

The Thoracic Surgery Foundation STS Research Award. The STS Research Award designation is given to the highest-ranking TSF research application awarded by TSF based on merit as judged by a rigorous peer review process. Deadline: September 15, 2020.

The Thoracic Surgery Foundation Nina Starr Braunwald Research Award. Awards of up to $40,000 per year for up to two years are made each year to support the work of an early-career woman cardiac surgeon (within five years of first faculty appointment). Deadline: September 15, 2020.

The Thoracic Surgery Foundation Resident Research Fellowship Award. This award provides up to $30,000 per year for up to two years to support the research fellowship of a resident who has not yet completed cardiothoracic surgical training. During the fellowship, the resident will work in a cardiothoracic surgical clinical or laboratory research program. Deadline: September 15, 2020.

The Thoracic Surgery Foundation Nina Starr Braunwald Research Fellowship. This award provides up to $30,000 per year for up to two years to support the research fellowship of a resident who has not yet completed cardiothoracic surgical training. During the fellowship, the resident will work in a cardiothoracic surgical clinical or laboratory research program. Deadline: September 15, 2020.


OCTOBER 2020


NIH Research Project Grant (Parent R01 Clinical Trial Not Allowed). New application Deadline: October 5, 2020. PA-20-185

NIH Research Project Grant (Basic Experimental Studies with Humans Required). New application Deadline: October 5, 2020. PA-20-184

NIH Research Project Grant (Parent R01 Clinical Trial Req). New application Deadline: October 5, 2020. PA-20-183


NIH Research Project Grant (Parent R01 Clinical Trial Not Allowed). New application Deadline: October 5, 2019. PA-19-056

NIH Research Project Grant (Parent R01 Clinical Trial Req). New application Deadline: October 5, 2019. PA-19-055

NIH Pathway to Independence Award (Parent K99/R00 Independent Clinical Trial Req). Deadline: October 12, 2020. PA-20-187

NIH Pathway to Independence Award (Parent K99/R00 Independent Clinical Trial Not Allowed). Deadline: October 12, 2020. PA-20-188

NIH Pathway to Independence Award (Parent K99/R00 Independ Basic Exp Studies with Humans Req). Deadline: October 12, 2020. PA-20-189


ROLLING DEADLINE

Mackay California-Pacific Rim Tobacco Policy Scholar Award. $250K/yr x 3 yrs. Build leadership among mid-career researchers to foster evidence-based tobacco control policy with relevance to California and the Pacific Rim. Eligibility: mid-career faculty with PI eligibility and mid-career CE faculty. No citizenship requirement.
National and Global Cardiovascular Conferences

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

JULY 2020


AUGUST 2020


SEPTEMBER 2020


OCTOBER 2020


Stanford CVI Postdoc Retreat
Fall, 2020
Virtual Event
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 (BioADD)

The Cardiovascular Pharmacology/Biomaterials and Advanced Drug Delivery (BioADD) 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. The 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


Maternal obesity and diabetes mellitus as risk factors for congenital heart disease in the offspring. Helle E, Priest JR. J Am Heart Assoc. 2020 Apr 20:e011541. PMID: 32308111


Protecting medical trainees on the COVID-19 frontlines saves us all. Harrington RA, Elkind MSV, Benjamin JI. Circulation. 2020 May 5;141(18):e775-e777. PMID: 32250654


Heterogeneous T cell motility behaviors emerge from a coupling between speed and turning in vivo. Jerison ER, Quake SR. Elife. 2020 May 19;9:e53933. PMID: 32427565

Liprotein(a) and cardiovascular disease prevention across diverse populations. Pearson K, Rodriguez F. Cardiol Ther. 2020 May 25. PMID: 32451810

Molecular imaging of infective endocarditis with 6''-[18F]Fluoromaltotriose.


**June**


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Leadership

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

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

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

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

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

**Michael Snyder, PhD**
Stanford W. Ascherman, MD, FACS, Professor in Genetics
Chair, Department of Genetics
Director, Stanford Center for Genomics and Personalized Medicine

**Eldrin Lewis, MD, MPH**
Professor of Medicine and Division Chief, Cardiovascular Medicine

**Y. Joseph Woo, MD**
Norman E. Shumway Professor in Cardiothoracic Surgery
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**Kenneth Mahaffey, MD**
Professor, Dept. of Medicine
Vice Chair of Medicine for Clinical Research

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

**Mark Nicolls, MD**
Professor of Pulmonary, Allergy & Critical Care Medicine, Dept. of Medicine; Chief, Division of Pulmonary, Allergy & Critical Care Medicine

**Marlene Rabinovitch, MD**
Dwight and Vera Dunlevie Professor in Pediatric Cardiology, Director of BASE Program