Successful Stanford Drug Discovery Symposium 2021
April 19-20, 2021, was the first virtual Stanford Drug Discovery Symposium. As a virtual event, we were able to reach a far broader audience. There were over 5,400 registrants and over 7,400 individuals logging in to view the talks. Individuals were from the US, Europe, Asia, Australia, North and South America, and Africa, reflecting how our meeting has progressed and gained international recognition over the last five years.

The 45 Speakers, moderators, and panelists represented pharmaceutical and biotech companies, government policy makers, Nobel laureates and academic leaders, scientists, editors from major journals, venture capitalists, and angel investors. They presented their groundbreaking work and perspectives in the field of drug development and provided insights into how the COVID-19 pandemic adjusted how they worked.

The Symposium also honored Drs. Doug Lowy and John Schiller from the National Cancer Institute with the 2021 Lifetime Achievement Award for their work in HPV-associated cancers and the HPV vaccine. Read about more highlights on page 4.

Mark your calendars for next year’s event - SDDS 2022 will be held April 25-26!

View recordings of the SDDS 2021: https://med.stanford.edu/cvi/events/2021-drug-discovery-conference/event-recordings.html#day1

Faculty Position Opening: VA Palo Alto Health Care System and Stanford CVI
The VA Palo Alto Health Care System (VAPAHCS) and the Cardiovascular Institute at Stanford Medicine are seeking to recruit an outstanding academic cardiologist to join their full-time faculties. This appointment will be at the rank of Assistant Professor in the Medical Center Line at Stanford University School of Medicine and jointly supported by the Medical (Cardiology) and Radiology Services at VAPAHCS, Departments of Medicine (Cardiovascular Medicine) and Radiology at Stanford University, and the Stanford Cardiovascular Institute. A major objective of this recruitment is to identify a highly qualified individual with broad experience in clinical cardiology, strong expertise in basic or translational cardiovascular research, and the potential to stimulate and lead interdisciplinary collaborations among clinicians and scientists from the supporting services/departments, as well as the rest of VAPAHCS-Stanford research communities. The successful candidate will be expected to lead a prolific research group with a focus on structural heart disease, cardiovascular imaging, or stem cell biology. Read the full announcement.

Faculty Position Opening: Cardio-Oncologist
The Division of Cardiovascular Medicine in the Department of Medicine and the Cardiovascular Institute at Stanford Medicine are seeking a board-certified Cardiologist with expertise in Cardio-Oncology to join the faculty as Assistant, Associate or Professor in the Medical Center Line or University Tenure Line. The predominant criterion for appointment in the University Tenure Line is a major commitment to research and teaching. The major criteria for appointment for faculty in the Medical Center Line shall be excellence in the overall mix of clinical care, clinical teaching, scholarly activity that advances clinical medicine, and institutional service appropriate to the programmatic needs the individual is expected to fulfill. The candidate should possess an MD or MD/PhD, be board certified in Cardiovascular Disease, and have current basic science/translational science research expertise in cardio-oncology. Additionally, we are seeking a candidate who is an outstanding clinician and is a nationally recognized or upcoming clinical and academic leader in the field. Applicants should submit a curriculum vitae, statement of research interests, and the names of three references (who will not be contacted without your permission) to search committee chair, Dr. Hannah Valentine at: http://facultyapplication.stanford.edu/.
Standing Against Asian American Racism

Dear Colleagues and Friends,

We write to you to share our anger and frustration over the despicable violence that took place in Georgia on March 16th where 3 Asian/Asian American-owned business were targeted and 8 innocent lives were lost, including 6 Asian/Asian American women. This incident punctuated a year that has seen a nearly 150% increase in anti-Asian hate crimes across the country, including here in the Bay Area.

As members of a minority group that is expected to be quiet, polite, and obedient, we feel compelled to speak out and to let you know that many if not all Asian American and Pacific Islanders (AAPIs) in this country experience profound racism and discrimination. As children, we were kicked, punched, spat upon, called “Chink”, harassed with slanted eye gestures or told to “go back to your own country.” Yet we were led to believe this was just an expected part of being different.

As we became a part of the medical profession, the sense of alienation was reinforced by constantly hearing from our patients, our professors, our classmates, our colleagues: “You all look alike,” “you are too quiet,” “your English is pretty good,” reminders that we never fully belong. These near-universal experiences of racism by ourselves and our AAPI peers growing up in the US unfortunately persist to this day.

For all of AAPI students, staff, faculty, we are here for you and support you during this most difficult time. We understand your fears and your frustrations and want you to know that you have allies here at Stanford who will help you with what you need. For our non-Asian colleagues who are willing to take a stand against anti-Asian hate and violence, we ask that you do these three things: 1. Reach out to your friends in the AAPI community and let them know that you are thinking about them, 2. Call out racism and stop it anytime you see it happening to make it known that anti-Asian racism is not tolerated by anyone whether or not s/he is a member of the AAPI community, and 3. Contact your government officials and ask them what they are doing right now to support the AAPI community.

This past year of pandemic plus the scapegoating by the previous administration have led to an alarming rise in abhorrent acts of violence on top of an always-present current of racism against AAPIs. Now more than ever we need to show our support for one another and unite in our efforts against racism, sexism, and violence. Will you stand with your Asian American and Pacific Islander colleagues and friends?

Yours sincerely,

Joseph C. Wu, MD, PhD, Director, Cardiovascular Institute
Joy Y. Wu, MD, PhD, Vice Chair for Basic Science, Department of Medicine
Sean M. Wu, MD, PhD, Associate Professor of Medicine and, by courtesy, Pediatrics

Welcome 2021 Undergraduate Summer Researchers!

This June, 28 exceptional undergraduate students from across the globe began a virtual research program with Stanford CVI faculty research mentors. Support for this program includes two funding sources specifically devoted to promoting diversity in cardiovascular research and medicine (AHA SURE and NIH NHLBI R25).

Final Symposium - August 9th

For more information about the program please visit our website, check out the public events calendar, or contact cvi_outreach@stanford.edu.
Monday, July 19, 2021
8:30am - 4:00pm

Join us to celebrate
Sam Gambhir’s legacy, impact
and scientific achievements!

Welcome/Opening Remarks

Lloyd Minor, MD
Stanford University

Garry Gold, MD
Stanford University

Joseph Wu, MD, PhD
Stanford University

Aruna Gambhir, MS, MBA
CellSight Technologies

Keynote

Joseph DeSimone, PhD
Stanford University

Session 1: Molecular Imaging

Anna Wu, PhD
City of Hope Medical Center

Simon Cherry, PhD
University of California, Davis

Michael Phelps, PhD
University of California, Los Angeles

Katherine Ferrara, PhD
Stanford University

Session 2: Cancer Early Detection

Norman Sharpless, MD
National Cancer Institute

Ralph Weissleder, MD, PhD
Harvard Medical School

David Suhy, PhD
Earl

Sangeeta Bhatia, MD, PhD
Howard Hughes Medical Institute

Session 3: Precision Health

Roderic Pettigrew, MD, PhD
Texas A&M University

Michael Snyder, PhD
Stanford University

Jessica Mega, MD, MPH
Verily, Google Health
Stanford University

Robert Califf, MD
Verily, Google Health
Stanford University and Duke University

For More Information and Registration:
http://gambhir.stanford.edu
Stanford Drug Discovery Symposium 2021 Highlights

During the Stanford Drug Discovery Symposium (SDDS) 2021, we heard about COVID-19 therapies, and the amazing work behind generating the Pfizer, Moderna, and Johnson & Johnson vaccines. We heard about treatments in cancer, heart disease, and rare orphan diseases, and about advances in discovery research. We also heard from a panel of editors from major scientific journals on how COVID-19 has influenced the scientific review process and how science news has been presented to the public. There was also the opportunity to hear about health care policy, and to learn more about how pharmaceutical, biotech, and start-up companies are pushing forward advancements in new technology and drug manufacturing. These exciting talks and panel discussions were enhanced by audience participation, both during panel sessions and via social media.

2021 Featured Speakers: Hal Barron, GlaxoSmithKline; Michael Basson, Nature Medicine; Robert Califf, Verily Life Sciences; Andrea Carfi, Moderna; Carmen Chang, New Enterprise Associates; Stanley Crooke, Ioanis Pharmaceuticals; Jürgen Eckhardt, Leaps by Bayer; Levi Garraway, Genentech/Roche; Helene Gayle, The Chicago Community Trust; Anne Heatherington, Takeda; Thomas Hudson, AbbVie; Mir Imran, Rani Therapeutics; Kathrin Jansen, Pfizer; Nina Kjellson, Canaan; Peter Kim, Stanford; Brian Kolbila, Stanford; Roger Kornberg, Stanford; Douglas Lowy, National Cancer Institute; Nanna Luneborg, Novo Holdings; Fady Malik, Cytokinetiks; Mathai Mammen, Janssen Pharmaceutical; Joan Mannick, Life Biosciences; Ken Mills, REGNEXBIO; Michael Nedelman, CNN; Philip Pizzo, Stanford; Andrew Plump, Takeda; Camille Samuels, Venrock; Serge Saxonov, 10X Genomics; John Schiller, National Cancer Institute; Marcus Schindler, Novo Nordisk; Orla Smith, Science Translation Medicine; Young Sohn, HARMAN; Janet Woodcock, FDA; George Yancopoulos, Regeneron; Taiyin Yang, Gilead; Wendy Young, Genentech; Elias Zerhouni, formerly with Sanofi, NIH, and former US Presidential Science Envoy.

Video recordings of talks and panel discussions are available on our website: https://med.stanford.edu/cvi/events/2021-drug-discovery-conference/event-recordings.html#day1.

We hope you can join us next April 25-26 for SDDS 2022.
Addressing the Energy Needs of the Failing Heart by Amanda Chase, PhD

The heart is an amazing muscle – able to pump about 2,000 gallons of blood through the body in one day. Two thousand gallons of blood that are necessary for the body to function. To achieve that fantastic feat, the heart must use energy, just as any of us must expend energy to lift and move heavy objects. In cardiomyocytes (cardiac muscle cells), most of the cell’s energy is in the form of ATP produced by mitochondria.

When the heart is not able to pump as efficiently as needed, it results in heart failure. Importantly, heart failure is an imbalance between energy supply and demand. There is decreased ATP (energy) production while also increased energy demands from the failing heart, resulting in contractile abnormality and myocardial (heart muscle) dysfunction. As an energy imbalance is at the apparent root of heart failure, it is essential to develop a therapy that targets the intracellular energy supply directly, creating the potential for a curative therapy.

That critical need was recently addressed by a team of researchers led by first author Gentaro Ikeda, MD, PhD, and senior author Phillip Yang, MD, and published in the Journal of the American College of Cardiology. The team established a preclinical proof-of-concept that they could enhance cardiac function by transferring mitochondria and restoring myocardial energy production.

Their work relied on two important considerations: (1) Extracellular vesicles can transfer cargo to the recipient cells and mitochondria can exist inside the EVs, and (2) induced pluripotent stem cells (iPSCs) have tremendous therapeutic potential for cardiovascular disease treatment. Patient-specific iPSCs can be made into cardiomyocytes (iCMs) that produce EVs with functional mitochondria. Using iCMs, the team was able to show that transfer of mitochondria by EVs restored the energy needed by heart muscles cells to then also restore the normal contractility of injured heart muscle cells. Further, injection of EVs containing functional mitochondria improved cardiac function in mice after damage resulting from a heart attack. This critical study demonstrated the feasibility of using EVs to transfer mitochondria as a potentially curative treatment for heart failure.

Patient specific iPSCs can be generated and made into cardiomyocytes (iCMs). The resulting extracellular vesicles that contain fully functional mitochondria can be collected and used as a therapy to address the energy imbalance characteristic of heart failure.
How Does Research Experience Shape Your Future? By Adrienne Mueller, PhD

Exposure to research can be transformative and two young scientists, who spent their pandemics working as research assistants in the lab of Dr. Joseph C. Wu, Director of the Stanford Cardiovascular Institute, explain how they have come to the decision to pursue higher degrees. Exposure to research has been valuable and inspiring in very different ways for both Jessica Malisa and Nicole Lopez, but they share passion to get at the root of hard questions. Jessica was motivated by directly seeing how patient care could be translated into scientific questions, “Working in Joe’s lab was really great because I would see how a physician scientist would come to a question based on something that their patients were personally experiencing. Seeing that translational pipeline: from meeting the patient, to identifying a problem, to starting a study - was great for me.” Whereas Nicole has been motivated by the fundamental ‘whys’, “I want to understand how the molecular mechanisms and cellular process – the processes that make us, that are us – go awry in disease and death. Studying science helps me make meaning out of life and why we’re here.” This Fall, Jessica will be starting her MD at the University of Southern California and Nicole will be starting her PhD at the University of California, San Diego.

But the decision to pursue advanced degrees wasn’t a foregone conclusion; both Jessica and Nicole struggled with doubts about their abilities and whether it was the right fit. When asked what advice they’d give to students trying to decide whether to pursue careers in science or medicine, Jessica and Nicole both urged students to overcome their personal demons. Academia and medicine will give both Jessica and Nicole the opportunity to support others in ways that are especially meaningful to them. For Nicole, “I want to have a position in science, where I can not only do science that is meaningful to me and helpful for others, but a position where I can mentor other students. Students are so impressionable, and I think they just need exposure.” And for Jessica, “I know that there’s a big gap in health care for minority communities and that causes a lot of medical distress. That’s part of the reason I want to go into medicine - to be a doctor for those people and those populations that are usually overlooked.”

What’s next for Jessica and Nicole? Jessica is thrilled to start her MD, “Because the curriculum emphasizes not only being a physician and a scientist, but also just a model citizen that contributes to the world around you.” And Nicole is excited to start her PhD, “To understand disease and create new therapeutics - that’s the dream I hope I can spend my career pursuing.”

CVI Trainee Mentorship Program

- First-hand advice on career and research goals
- 53 faculty mentors, spanning 16 Stanford departments
- Structured program makes mentorship easy and effective

Join the program!
https://med.stanford.edu/cvi/education/cvi-mentorship-program.html
Reversing Genetic Damage in Pulmonary Arterial Hypertension

By Adrienne Mueller, PhD

Our blood vessels’ inner surface is lined by a single layer of specialized cells called endothelial cells, that have multiple functions including maintaining vascular contractility and permeability and preventing inflammatory cell invasions. When endothelial cells fail in their function, the effect on our system can lead to a host of disorders including a devastating disease of the lungs called pulmonary arterial hypertension (PAH). There are currently no existing treatments that reverse the narrowing of the large vessels or regenerate lost microvessels. To develop better treatments, a clearer understanding of the mechanisms underlying PAH is needed.

Failure of DNA repair can eventually lead to cell death and contributes to the loss and narrowing of blood vessels in PAH. It was not known what caused DNA damage or impaired the ability of cells to repair damaged DNA in PAH, but previous studies led the Rabinovitch lab to believe that this was directly related to a gene, BMPR2, that is mutant or deficient in PAH. One of the roles of BMPR2 is to activate a pair of DNA-repair proteins: PPARγ and p53. The question that had not been answered is what genes are controlled by these proteins that are critical for endothelial cells to repair damaged DNA, to regenerate lost vessels and reverse narrowing of larger arteries that can lead to PAH.

First author Jan Hennigs, MD, and senior author Marlene Rabinovitch, MD, reported in Circulation Research that PPARγ and p53 join to form a complex in response to DNA damage that regulates a host of downstream genes influencing cell survival, regeneration, and DNA repair. They then deployed a pharmacological intervention, Nutlin, to increase p53 levels in a mouse without BMPR2 in endothelial cells, allowing the PPARγ-p53 complex to reform. Once the complex was restored DNA damage was repaired, microvessels were regenerated, and the narrowing of the larger arteries reversed. The investigators have therefore identified a novel strategy for reactivating a molecular genetic repair system that is otherwise not functioning in PAH.

Using Patient Genes to Further Understand Pulmonary Arterial Hypertension

by Amanda Chase, PhD

Pulmonary arterial hypertension (PAH) is a rare, progressive disorder in which the blood vessels in the lung are narrowed or blocked, slowing blood flow through the lungs and making the heart work harder. The exact cause of PAH is unknown, although it is known that 15-20% are inherited due to a change or mutation in a gene. Of those, 20% are a result of an unknown gene mutation. Understanding what mutations contribute to PAH could significantly impact patient care.

A team from Stanford University, including CVI-affiliated senior author Vinicio de Jesus Perez, MD, and led by Dr. Jair Tenorio, from Spain, collaborated to identify two novel variants that cause PAH. Their findings were recently published in Frontiers in Medicine. They used whole-exome sequencing (WES) on two unrelated families with PAH. Genes are the recipe for making proteins and are made up of parts that are used to make the protein (exons; game highlights) and other information. WES specifically reads the exons of most genes at once to find any gene changes, or variants. By comparing families with PAH, the researchers were able to identify two novel variants that contributed to PAH: TNIP2 and TRAF2. Both genes are involved with inflammation and immunity, and the team was able to show that the variants likely increased susceptibility to PAH by their ability to change immune responses and to drive abnormal cell growth in the vasculature of the lungs, ultimately leading to narrowing of the arteries. This is the first report to document a link between TNIP2 or TRAF2 loss of function and PAH in humans.

A new podcast series from the Vera Moulton Wall Center for Pulmonary Vascular Disease at Stanford, with the goal to eradicate pulmonary vascular disease by discovering fundamental causes, developing innovative therapies, disseminating crucial knowledge, and delivering transformative care.
13 Years in the Making – Immunotherapy for Scleroderma By Adrienne Mueller, PhD

Scleroderma, from the Greek ‘hard skin,’ is a condition that afflicts approximately 100,000 people in the US and is characterized by a buildup of scar tissue in the skin and other organs. Scleroderma is an autoimmune disorder, meaning that the body’s immune system mistakenly identifies its own healthy tissue as a foreign substance and attacks it, causing tissue damage. One of the most serious and potentially fatal complications patients with scleroderma develop is a lung condition called pulmonary arterial hypertension (PAH). Current medications to treat scleroderma-associated PAH all act by dilating lung blood vessels to reduce blood pressure and there is currently no treatment that acts directly against the underlying autoimmune response.

In their recent American Journal of Respiratory and Critical Care Medicine article, first author Roham Zamanian, MD, and senior-author Mark Nicolls, MD, report the results of a 13-year clinical trial devoted to identifying an immunotherapy treatment to scleroderma-incited PAH. For their study, they chose to target B-cells, a type of immune cell that is thought to contribute to the autoimmune response in scleroderma. This trial is the first to evaluate the safety and efficacy of an entirely new, immunotherapy-based treatment using B-cell depletion. The investigators identified a trend in the data that suggested that the B-cell depleting drug rituximab reduces symptoms of PAH in patients. A secondary analysis then revealed a significant improvement in lung function caused by rituximab treatment. Future work is necessary to determine rituximab’s specific mechanism of action and to further investigate the potential of this promising drug for treating scleroderma-associated PAH.

Study Helps Latino Children Manage Obesity Over Two Years By Erin Digitale

A three-year intervention designed to reduce weight gain in overweight and obese Latino children generated improvements in body mass index and many other health measures during the trial’s initial two years, according to a study led by researchers at the Stanford University School of Medicine. The finding could help clinicians, health educators and policymakers in their approach to reducing childhood obesity in populations at risk for the condition.

A paper describing the research was published online April 29 in The Lancet Diabetes & Endocrinology. The study enrolled 241 Latino children and their families living in low-income neighborhoods in the Bay Area. All children were 7-11 years old and overweight or obese when the research began. The children were randomized to two groups. The treatment group participated in a multifaceted program that involved the children’s families, communities, and primary health care professionals. The control was designed to provide families with a beneficial treatment of their own through the entire study.

When the study began, about three-quarters of participants were classified as obese, with a BMI above the 95th percentile for their age and sex. The children in the treatment group maintained significantly healthier BMIs than those in the control group in the first two years of the study. “The changes we saw are very positive, and good evidence that there’s a lot of promise for this community-based, multi-level model of intervention,” said Thomas Robinson, MD, professor of pediatrics and of medicine at Stanford, who led the study. “It motivates us: There’s more to learn, and more we can improve on.”

CVI Proposal Development Resource

Questions about how to apply for a grant at Stanford? Steps for a fellowship, career development award, research, or collaborative grant? Templates to guide your proposal development?

Visit our new website to find answers to those questions and more. https://med.stanford.edu/cvi/funding-opportunities/research-development.html, or contact: cvi_grants@stanford.edu
Pulmonary arterial hypertension (PAH) is a severe and chronic disease, in which the blood vessels of the lung progressively narrow, and some become completely occluded. When this happens, PAH becomes life-threatening. Although the cause of PAH is poorly understood, we know that individuals with PAH have abnormal growth of the smooth muscle cells of the lung blood vessels - responsible for the narrowing and blockage of the vessels. Blood can only flow through the remaining vessels that have narrow openings, if the pressure is very high. Because the side of the heart pumping blood to the lungs must maintain an ever higher pressure, the heart muscle eventually weakens and fails. Previous studies have shown that abnormal cell growth is associated with increased sugar metabolism – a means for our cells to produce energy. Suppressing sugar metabolism in lung smooth muscle cells can reduce cell proliferation by depriving the cells of the energy they need to divide. While it is known that cells that are rapidly dividing have intense energy demands, products of metabolism or metabolites can also drive changes in genes and proteins that may be necessary for growth. A study recently published in *Circulation* and led by first authors Dan Li, PhD, and Ning-Yi Shao, PhD, and by senior author Marlene Rabinovitch, MD, found a single enzyme that connected energy demands with the genes required for rapid growth of smooth muscle cells in PAH. Li and Shao et al identified the specific mechanism underlying lung blood vessel narrowing in PAH: excessive activity of the sugar-metabolizing protein ALDH1A3 leads to the activation of a master transcription factor that increases expression of genes required for excessive lung smooth muscle cell proliferation and produces the energy the cells need to divide. When they reduced the amount of ALDH1A3 in the smooth muscle cells, pulmonary hypertension was prevented because the vessels did not narrow with excessive smooth muscle cell growth. ALDH1A3 is therefore a potential drug target in PAH, if it can be delivered to the smooth muscle cells of lung circulation.
As Easy as ABC: From GWAS to Genes to Disease  
By Adrienne Mueller, PhD

Since the completion of the human genome in the early 2000s, researchers have made big strides in their efforts to determine the relationship between genes and disease. Genome-wide association studies (GWAS) are a powerful approach that scans the genomes of many individuals to find common markers associated with a specific disease. The identified GWAS markers are often located in non-coding regions of the genome called “enhancers.” Enhancers are not genes themselves, but influence the expression of disease-related genes far away. Identifying which genes an enhancer influences is challenging in its own right, but it is made even more difficult by the fact that enhancers work differently in different cell types.

Jesse Engreitz, PhD, newly appointed Assistant Professor in Genetics and the Basic Science and Engineering Initiative, as well as the Cardiovascular Institute at Stanford, recently led a project developing a model that overcomes these challenges. As reported in Nature and a communication by the Broad Institute, the ABC model connects over 5,000 genetic variants to nearly 2,250 genes across 72 traits and diseases - including heart disease and cancer. Dr. Engreitz states, “We now have the ability to look comprehensively across many cell types and, for the first time, make reasonably accurate predictions of what these non-coding enhancers and variants do.” The ABC model will accelerate our interpretation of GWAS markers and pave the way for a better understanding of how a person’s specific genome influences disease.
CVI Staff Spotlight

Francesca Mae G. Tongco, MS-HCA has been with Stanford Cardiovascular Institute for just over two years. Depending on the time of year, her three main responsibilities currently include managing CVI’s Frontiers in Cardiovascular Science events, providing administrative support to CVI core faculty, and developing the Cardiovascular Fellowship Alumni program. Little known fact - starting from when she was 6/7 years old and living the Bay Area, Francesca used to figure skate and wanted to be the next Michelle Kwan! Alas, she had to stop skating when she moved to Sacramento in junior high.

Francesca enjoys many thing about working at CVI, but one thing in particular that she appreciates is the closeness between everyone working for the institute and the ability to learn so many new things from everyone's experiences and expertise. In exciting news, just last month Francesca completed her Masters in Health Care Administration. Congratulations, Francesca!
Bad News Made Better: How an App Helps Explain Lung Cancer Surgery

By Adrienne Mueller, PhD

Surgery is always a daunting prospect for the patient, and surgery of the lungs especially so. Currently, one of our best treatments for lung cancer is surgical removal of the tumors, also known as ‘resection’. Several previous studies have shown that providing patients with better information about surgical procedures before they occur can decrease patient anxiety and increase overall satisfaction with care. What first author Jalen Benson and senior author Leah Backhus, MD, wanted to determine in their recent Seminars in Thoracic Cardiovascular Surgery study is whether a multimedia education app can help reduce reduce patient anxiety and improve satisfaction with one of the most scary procedures patients face: lung resection.

To test whether an educational intervention could help with lung cancer patient care, the Backhus lab developed a multimedia education app to help explain the resection procedure to patients. Their app had three features: a 3D model of the lungs and associated structures, video walkthroughs of lung surgeries, and the ability for the surgeon to upload and annotate CT and PET images in real-time. The investigators then determined whether use of the app improved patients’ lung cancer knowledge, quality of life and/or satisfaction with their care. They found that, interestingly, there was no significant increase in patients’ lung cancer knowledge, but the patients who were exposed to the app reported higher satisfaction with their education about their procedure. The study also showed that information delivered using the app was significantly clearer than without the app.

Benson et al’s pilot study is a great first step in providing patients with better understanding of their care, more agency in their decisions, and higher satisfaction regarding their lung surgery treatment. Patients having higher satisfaction with their care means they are more likely to adhere to their treatment plans. And better adherence to treatment plans, in turn, leads to better patient outcomes. As virtual healthcare continues to rise, it will be important to continue to use technological advances not just in the operating room, but also – as the Backhus lab has done - to provide patients with a better understanding of their treatment and an even higher standard of care.

Disease detective tells stories of mystery diseases in new book

By Hanae Armitage

Euan Ashley is a self-proclaimed Sherlock Holmes enthusiast. And given his love for (medical) mysteries, one could go so far as to say that Ashley, MB ChB, DPhil, and Holmes are kindred spirits of sorts. A seeker of truth and acutely aware of fine details easily overlooked, Ashley’s Holmes-like nature manifests in the clinic, where he helps patients with rare, undiagnosed diseases find answers through their genome. In his debut book, "The Genome Odyssey: Medical Mysteries and the Incredible Quest to Solve Them:" Ashley, professor of medicine, of genetics and of biomedical data science, brings a decade of diagnostic mysteries to life. It features patient stories, deep dives into medical and scientific histories and reflections on his personal journey during the rise of genome sequencing.

What drove you to put these stories to paper, and who do you hope this book appeals to?

I live in awe of my patients and what they go through, so I’d say I’m first and foremost inspired by my patients’ stories. But I’ve also always been drawn to the narrative aspect of science and discovery as well. My hope was to try to somehow weave those two threads together in a way that was interesting for everyone to read – not just doctors or scientists. I’d like to think this book is for anyone who’s interested in human stories.

The book includes personal information about patients and even some of your colleagues. What was it like to ask folks to share such personal stories?

I can’t express how deeply grateful I am to all the patients who shared their stories. I hope these stories empower other patients to understand that there’s hope, even in what might seem like the most hopeless of cases. Patients without a diagnosis often refer to themselves as being on “undiagnosed island,” because of the sense of isolation they feel. As well as describing their cases, in the book I describe how we try to build a bridge off that island.

Likewise I feel so privileged to be at Stanford and to be able to work with such incredible colleagues. Solving these cases takes a whole team of scientists, doctors, counselors, informaticians and curators, and I feel such joy from being a part of these teams. That camaraderie and sense of purpose, it’s what we’re all driven by.
ISCHEMIA Trial Receives Top Clinical Research Award

The ISCHEMIA Trial, a groundbreaking cardiovascular study coauthored by David Maron, MD, C.F. Rehnborg professor of medicine and Director of Preventive Cardiology, received the Clinical Research Forum’s (CRF) prestigious Herbert Pardes Clinical Research Excellence Award in recognition of its high degree of innovation and impact on human disease.

Maron, who partnered with Judith Hochman, MD, professor and associate director of cardiology at the NYU Grossman School of Medicine, to lead the project, explains that the study was designed to determine whether adding invasive procedures to medical therapies improved outcomes for stable patients with coronary artery disease.

The first of its kind, the clinical trial revealed no difference in the likelihood of an adverse event, including heart attack and death, between those treated with surgery and those with medicine and lifestyle changes. The researchers say the findings underscore the importance of shared decision making between physicians and patients, as well as a decreased need for stenting in bypass surgery.

As noted in a CRF announcement, the research shows “potential to improve the management of millions of patients around the world.” The ISCHEMIA Trial was also named a CFR 2021 Top 10 Clinical Research Achievement Award Finalist. Maron and Hochman were honored during a virtual presentation on March 30th.
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.

Black Americans are Harder Hit by Heart Disease

Black Americans disproportionately experience heart disease risk factors like high blood pressure, diabetes, and obesity. Learn from Dr. Eldrin Lewis, cardiologist and chief of the Division of Cardiovascular Medicine at Stanford University School of Medicine, about how knowing your numbers can help protect your heart. One of the most important numbers is blood pressure.

High blood pressure is a silent problem because often people feel no symptoms when their blood pressure is elevated. High blood pressure, however, puts unnecessary strain on your heart and can cause damage. Talk to your doctor about making changes today that can positively impact the long-term condition of your heart. View the video at https://youtu.be/JvHGBnGCYk4
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, 12:30 - 1:20 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

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 - 5:20 pm | 1 credit

Course Directors: Peter DiBattiste, MD; Jonathan Fox, MD, PhD; Alexander Gold, MD; Jayakumar Rajadas, PhD; Philip Sager, MD

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
CVI’s R38 Stimulating Access to Research in Residency (StARR) program is designed to train resident-investigators in cardio-pulmonary research and to accelerate their development into independent clinician-investigators. The R38 StARR program is funded by the National Heart Lung and Blood Institute. CVI is excited to welcome its 2021 cohort of resident investigators, starting July 1st. 

**Welcome CVI R38 StARR Resident-Investigators!**

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Tomi Obafemi, MD  
Resident in Cardiothoracic Surgery  
MD from University of Texas Medical Branch  
Research Mentor: Anson Lee, MD  
Research Project: High resolution mapping of ventricular tachycardia using a Langendorff model.

Krishna Martinez-Singh, MD, MPH  
Resident in Vascular Surgery  
MD from Albany Medical College of Union University  
Research Mentor: Purvesh Khatri, PhD  
Research Project: The use of FlowMet-R technology to predict wound healing in critical limb ischemia patients in a wound care center setting.
and in complex comorbid populations.

Dr. Quertermous was also awarded an NIH Research Project Grant (R01) for the project “PDGF Regulates a Transcriptional Network to Modulate Smooth Muscle Cell Transition and Disease Risk.”

Joseph Wu, MD, PhD, Simon H. Stertz Professor and Professor of Radiology was awarded Honorary Lifetime Membership to the Society of Toxicology.

Caitlin Bell, MD, cardiology fellow in the labs of Drs. Nicholas Leeper and Irving Weissman, was awarded the Damon Runyon Cancer Research Foundation 2021 Physician-Scientist Training Award for her work towards understanding the connection between cardiovascular disease and cancer.

Chad Weldy, MD, PhD, fellow in in cardiovascular medicine in the lab of Dr. Thomas Quertermous, was awarded an NIH Individual Postdoctoral Fellowship (F32) for his project, "A Transcriptional Network which Governs Smooth Muscle Transition is Mediated by Causal Coronary Artery Disease Gene PDGFD.”

Heyjun Park, PhD, postdoctoral scientist in the lab of Dr. Michael Snyder, was an Emerging Leaders in Nutrition Science Finalist for her abstract, “Meal Timing-Based Dietary Patterns Are Associated With Glucose Regulation, Insulin Resistance, and Incretin Effect in individuals at Risk for Type 2 Diabetes.”

Mario Funes Hernandez, MD and James Tooley, MD will be joining Dr. Mintu Turakhia’s AHA-sponsored Heart Health Technology Innovation Fellowship as fellows. They will be working building and then clinical trialing technology-based remote management programs to optimize care of hypertension and heart failure in underserved and in complex comorbid populations.

Adam Bush, PhD, postdoctoral scientist in the lab of Dr. Shreyas Vasanawala, is starting a new tenure-track position as Assistant Professor in the Biomedical Engineering Department of the University of Texas at Austin in January 2022.

Alice Popejoy, PhD, postdoctoral scientist in the lab of Dr. Carlos Bustamante, is starting a new position as Assistant Professor in the Department of Public Health Sciences in the Division of Epidemiology, in the UC Davis School of Medicine.

Pauline Berens, MD, will be joining the Vascular Surgery Integrated Residency Program this June. Dr. Berens received her medical degree from Baylor College of Medicine.

John Cabot, MD, will be joining the Vascular Surgery Integrated Residency Program this June. Dr. Cabot received his medical degree from the University of Texas Health Science Center at San Antonio.

Ngan Huang, PhD, Assistant Professor of Cardiothoracic Surgery, was appointed as Courtesy Assistant Professor in Chemical Engineering. This appointment will foster interdisciplinary collaborations between the departments of Cardiothoracic Surgery and Chemical Engineering.

Stanley Rockson, MD, Allan and Tina Neill Professor of Lymphatic Research and Medicine, received the Nobility in Medical and Scientific Achievement Award at the Run/walk to Fight Lymphatic Diseases in April, 2021.

Kevin Cyr, a medical student in the lab of Dr. Paul Wang, received the 2021 Cardiac Electrophysiology Society and Heart Rhythm Society Young Investigator Award.

Gema Mondejar Parreno, PhD, a postdoc co-mentored by Drs. David Paik and Joseph Wu was awarded an AHA postdoctoral fellowship for her project “Elucidating Cardiomyocyte-Fibroblast Crosstalk Pathways in Atrial Fibrillation.”

Brian Wayda, MD, MPH, postdoctoral fellow in the lab of Dr. Kiran Khush, was awarded second place in the Young Investigator Awards in Outcomes Research at the 2021 American College of Cardiology (ACC) Scientific Session.

Hao Zhang, PhD, a postdoc in the lab of Dr. Joseph Wu, was awarded an AHA postdoctoral fellowship for his project “Elucidating the Role of Adenosine Receptor Antagonists in Cardiac Fibrosis Using iPSCs.”

Neil Kalwani, MD, will be starting a new position as Clinical Scholar in the Division of Cardiovascular Medicine in July. He will be supported by an NIH T32 training grant through the Stanford-AHRQ Health Services Research Training Program.

Rohan Shad, MD, a postdoc in the lab of Dr. William Hiesinger and co-mentored by Dr. Euan Ashley, was awarded an AHA postdoctoral fellowship for his project “Elucidating Receptor Specific Effects of Chemokine Mediated Myocardial Recovery.”

Mark Chandy, MD, PhD, a postdoc in the lab of Dr. Joseph Wu, is starting a new position as Assistant Professor in the Division of Cardiology at the University of Western Ontario, Canada in July, 2021.

Ruibin Feng, PhD, will be joining Dr. Sanjiv’s Narayan’s Computational Arrhythmia Lab as a postdoctoral research fellow. His research interests lie at the intersection of machine learning, deep learning, medical imaging and bioinformatics, concentrating on computer-aided diagnosis and analysis for atrial fibrillation.

Brototo Deb, MD, will be joining Dr. Sanjiv Narayan’s Computational Arrhythmia Lab as a postdoctoral fellow. He is interested in using machine-learning-based analytical approaches to gain novel, easily interpretable insights into the pathophysiological mechanisms of arrhythmias and translate that into clinical practice.
For more information about funding opportunities or grant application support, please contact our Office of Research Development: cvi_grants@stanford.edu.

JULY 2021


Friedrich’s Ataxia Research Alliance General Research Grant. LOI Due: July 15, 2021. Application Deadline: September 15, 2021. FARA.

Friedrich’s Ataxia Research Alliance Postdoctoral Research Award. LOI Due: July 15, 2021. Application Deadline: September 15, 2021 FARA.


TRDRP Call for Applications. Open July, 2021.

AUGUST 2021


NIH Director’s New Innovator Award Program (DP2 Clinical Trial Optional) Deadline August 20, 2021. RFA-RM-21-016.

NIH Support for Conferences and Scientific Meetings. (Parent R13 – Clinical Trial Not Allowed), Deadline: August 12, 2021. PA-21-151.

SEPTEMBER 2021

NIH Directors Transformative Research Awards (R01 Clinical Trial Optional) Office of Strategic Coordination (Common Fund) Deadline: September 01, 2021 (RFA-RM-21-017.)


The Thoracic Surgery. Foundation Research Award. Up to $40,000/year for up to two years to support early-career cardiothoracic surgeon work. Deadline: September 15, 2021.

The Thoracic Surgery Foundation STS Research Award. Given to the highest-ranking TSF research application awarded by TSF based on merit. Deadline: September 15, 2021.

The Thoracic Surgery Foundation Nina Starr Braunwald Research Award. Up to $40,000/year for 1-2 years to support the work of an early-career woman cardiac surgeon. Deadline: September 15, 2021.

The Thoracic Surgery Foundation Resident Research Fellowship Award. Up to $30,000/year for 1-2 years supporting the research of a resident in cardiothoracic surgical training. Deadline: September 15, 2021.

The Thoracic Surgery Foundation Nina Starr Braunwald Research Fellowship. Up to $30,000/year 1-2 years to support the research of a resident in cardiothoracic surgical training. Deadline: September 15, 2021.

Friedrich’s Ataxia Research Alliance General Research Grant. LOI Due: July 15, 2021. Application Deadline: September 15, 2021. FARA.

Friedrich’s Ataxia Research Alliance Postdoctoral Research Award. LOI Due: July 15, 2021. Application Deadline: September 15, 2021. FARA.

NIH K08 - Mentored Clinical Scientist Research Career Development Award. (Parent K08 Independent Clinical Trial Not Allowed). Deadline: October 12, 2021. PA-20-203.


NIH K24 – Midcareer Investigator Award in Patient-Oriented Research. (Parent K24 Independent Clinical Trial Not Allowed) Deadline: October 12, 2021. PA-20-186.


NIH K08 - Mentored Clinical Scientist Research Career Development Award. (Parent K08 Independent Clinical Trial Not Allowed). Deadline: October 12, 2021. PA-20-203.

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

JUNE 2021
European Society of Cardiology- Heart Failure 2021. June 29-July 1, 2021. Virtual

JULY 2021
Complex Interventional Cardiovascular Therapy. July 16-17, 2021. Chicago, IL

AUGUST 2021
VESS Spring Meeting. August 18, 2021. San Diego, CA

SEPTEMBER 2021
Mayo Clinic- Internal Medicine review for Nurse Practitioners, Physician Assistants & Primary Care Physicians. September 16-17, 2021. Virtual
UCLA Heart Failure Symposium 2021: State of the Art Updates & Therapies for Advanced Heart Failure. September 18, 2021. Hybrid

OCTOBER 2021
Mayo Clinic- Echo in Congenital Heart Disease. October 1-3, 2021. Hybrid
2021 SCAI SHOCK Virtual Conference. October 7-8, 2021. Virtual
Mayo Clinic- The genetics of Heart Variation. October 7-9, 2021. Hybrid
Mayo Clinic- Artificial Intelligence in Cardiology. October 14-16, 2021. Hybrid
16th Annual Cardiometabolic Health Congress. October 14-17, 2021. National Harbor, MD
Mayo Clinic- Coronary Artery Disease. October 15-17, 2021. Hybrid
Mayo Clinic- Cases in echo, Cardiac CT, and MRI. October 20-23, 2021. Hybrid

SAVE THE DATE
CATCH - Caring for Adults and Teens with Congenital Heart Disease. February 17-19, 2022. Honolulu, HI

Save the Date!
CVI Early Career Symposium
Join Stanford CVI early career scientists for a day of cardiovascular and pulmonary science, professional development, networking and fun!

November 3rd, 2021
**CVI Resources**

### 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

### Stanford 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 March 1st and May 31st, Stanford Cardiovascular Institute members published 573 original manuscripts and reviews, further contributing to our understanding of cardiovascular biology and disease. Here, we highlight selected manuscripts by our members.

### March


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April


May


The Need to Expand the Framework of Environmental Determinants of Cardiovascular Health From Climate Change to Planetary Health: Trial by Wildfire. Chang AY, Barry M, Harrington RA. Circulation. 2021 May 25;143(21):2029-2031. doi: 10.1161/CIRCULATIONAHA.120.051892. PMID: 34029138
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

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

Anne Dubin, MD
Professor and Interim Chief, Pediatric Cardiology

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

Dominik Fleischmann, MD
Professor, Department of Radiology
Chief, Cardiovascular Imaging

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

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

Hannah Valantine, MD
Professor of Medicine, Cardiovascular Medicine

Kenneth Mahaffey, MD
Professor, Cardiovascular Medicine
Associate Dean, Clinical Research
Vice Chair, Clinical Research
Director, Stanford Center 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, Department of Medicine
Chief, Division of Pulmonary, Allergy & Critical Care Medicine