Rare domino transplant procedure saves two lives

By Sara Wykes, Stanford Hospital & Clinics communications office

Stanford Medicine surgeons Y. Joseph Woo, MD, Jack Boyd, MD, and Michael Fowler, MD, performed an unusual transplantation in which one woman received a heart-lung transplant, while her existing heart was given to another patient. The first thing Linda Karr asked her doctor after her heart transplant surgery at Stanford Hospital was, “How is my heart donor doing?” That question is as exceptionally rare as the surgery that made it possible. On Feb. 1, as part of a “domino” procedure, Karr received the heart of Tammy Griffin, who received a new heart and lungs from a deceased donor. A little more than six weeks later, on March 17, the two women met for the first time. Griffin listened to her old heart beat in Karr’s chest as their families and Stanford Medicine doctors looked on. “I feel as though a world of possibilities opens up now for my future — kind of a second chance in life,” Karr told Griffin.


New Faculty in Pediatric Cardiology and Cardiovascular Medicine

Shiraz Maskatia, MD

Erik Ingelsson, PhD

Matthew Whitlock, MD

Shiraz Maskatia, MD, has joined the Division of Pediatric Cardiology as a Clinical Assistant Professor as of April of this year. His clinical work will focus on providing care to patients in the Echocardiography Laboratory and Outpatient Heart Center at Lucile Packard Children’s Hospital, Stanford.

His clinical research will focus on both non-invasive imaging and fetal cardiology. Administratively, he will be the new Associate Director of the Fetal Cardiology program.

Erik Ingelsson, PhD has been hired as a Professor of Medicine, Cardiovascular Medicine, at Stanford.

Dr. Ingelsson obtained his MD and PhD at Uppsala University, Sweden. He moved to Karolinska Institutet in Stockholm where he was later appointed Professor of Cardiovascular Epidemiology in 2010. Since 2013, he has been Professor of Molecular Epidemiology at Uppsala University.

Dr. Ingelsson’s main area of interest is the link between metabolic disturbances and the development cardiovascular disease.

Matthew Whitlock, MD, joins Stanford’s Cardiovascular Medicine in the Department of Medicine as a Clinical Assistant Professor of Medicine.

Dr. Whitlock received his MD from UNC-Chapel Hill in 2005. He completed his internal medicine residency training at Oregon Health & Science University and cardiology training at Vanderbilt.

He will have a split general cardiology position between the Monterey clinic and the VA Palo Alto Health Care System where he will work with the cardiovascular imaging program.

Cardiovascular Faculty Recruitment Opportunities:

- Two full-time academic advanced heart failure and transplant cardiologists in the Medical Center Line. Click for details.
- One full-time interventional cardiologist to join the VA Palo Alto in the Medical Center Line. Click for details.
- One full-time faculty member with an interest in biobanking and the use of biobanked samples in population research in the University Tenure Line, Medical Center Line, or Non-Tenure Line (Research). Click for details.
- One full-time general cardiologist in the Clinician Educator line. Click for details.
- One full-time faculty member in Pediatric Cardiology with an interest in cardiovascular genetics in the University Tenure Line or Medical Center Line. Click for details.
Stanford University School of Medicine researchers have unraveled the workings of an important type of immune cell whose existence was unknown just a few years ago.

The scientists found that this cell type keeps a lid on immune response, preventing runaway inflammation. But it becomes rare and malfunction-prone in even healthy people’s bodies as they get older. That could help to explain why our immune systems go increasingly haywire with advancing age. The researchers identified the primary cause of these cells’ malfunction and linked it to an auto-inflammatory disorder, giant cell arteritis. They suspect this connection may hold for some far more common age-related conditions, too.

The findings, described in a study published April 18 in the Journal of Clinical Investigation, suggest possible new approaches to restoring function in these cells.

Just as the immune system’s assault brigades must expand and become warlike when confronting a pathogen or incipient tumor, they must contract and become peaceful afterward, lest they harm healthy tissues, said the study’s senior author, Cornelia Weyand, MD, professor and chair of immunology and rheumatology. First authorship is shared by postdoctoral scholar Zhenke Wen, MD, PhD, and visiting scholar Yasuhiro Shimojima, MD, PhD.

“Fortunately, the immune system has built-in brakes,” said Weyand. “We call them regulatory T cells, or Tregs.”

When a pathogen invades the body or a cancerous cell emerges or a vaccine dose is administered, the immune system ramps up, producing antibodies and attacking suspected infected or tumorous cells, and secreting copious signaling substances that spur further attack-mode action.

If it weren’t for Tregs, this chain reaction might go unchecked, resulting in chronic inflammation, said Weyand. That’s what begins to happen in many people as they grow older. As we age, our immune response tends to grow both hyperactive and unfocused, like a car with lousy brakes, a distracted driver and a brick on the gas pedal. “The aging immune system becomes less focused — less capable of defending against cancers and infections or responding robustly to vaccinations — and much more inflammatory,” Weyand said.

Tregs have long been known to exist. But until recently, the only ones known belonged to a category of immune cells called CD4 T cells. These cells have earned their nickname as “helper T cells” by participating in the immune response’s expansion, as opposed to contraction, phase. But CD4 Tregs suppress the activation and proliferation of helper T cells by secreting anti-inflammatory substances, for example, or by soaking up growth factors.


For the journal article: [https://www.ncbi.nlm.nih.gov/pubmed/27088800](https://www.ncbi.nlm.nih.gov/pubmed/27088800)

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**Nanoscattering Patterning and Endothelial Function**

Using real time live-cell imaging, the Huang laboratory, tracked the alignment, migration trajectories, proliferation, and anti-inflammatory behavior of endothelial cells when cultured on parallel-aligned or randomly oriented nanofibrillar films. The study provided new insights into how endothelial cells respond to opposing cues derived from nanotopography and mechanical shear force. This work has implications in the design of polymeric conduits and bioengineered tissues.

iPS cells aid study of chemotherapy side effect

By Krista Conger

Doxorubicin is a chemotherapy drug used to treat many cancers, but it causes serious heart damage in some patients. Heart muscle cells made from the skin cells of breast cancer patients can be used to study this phenomenon.

Cancer patients who receive a particular type of chemotherapy called doxorubicin run a risk of sustaining severe, lasting heart damage. But it is not possible to predict who is likely to experience this serious side effect. It is also unknown exactly how the drug damages heart muscle.

Now, researchers at the Stanford University School of Medicine have shown that heart muscle cells made from the skin cells of breast cancer patients who suffered cardiac side effects after receiving doxorubicin respond more adversely to the drug than cells made from patients who did not.

These cells provide researchers with a sorely needed platform to study the effects of doxorubicin exposure on human heart muscle cells, and may allow them to one day predict which patients should avoid the drug. Until now, researchers have relied primarily on animal models to investigate the phenomenon because heart muscle tissue is difficult to obtain from living patients.

“In the past, we’ve tried to model this doxorubicin toxicity in mice by exposing them to the drug and then removing the heart for study,” said Joseph Wu, MD, PhD, director of the Stanford Cardiovascular Institute and a professor of cardiovascular medicine and radiology. “Now we can continue our studies in human cells with iPS-derived heart muscle cells from real patients. One day we may even be able to predict who is likely to get into trouble.”

Wu, who is also the Simon H. Stertzer, MD, Professor, is the senior author of the research, which was published online April 18 in Nature Medicine. Paul Burridge, PhD, a former instructor of cardiovascular medicine at Stanford, is the lead author of the study. Burridge is now an assistant professor of pharmacology at Northwestern University.

The research relies on induced pluripotent stem cells, or iPS cells, derived from patients’ own skin cells to make heart muscle cells. iPS cells are stem cells that can be coaxed to develop into nearly any tissue in the body. The technique gives researchers access to a variety of human cell types, such as brain and heart muscle cells, that are typically difficult to obtain for study.

**Toxic side effect:** About 8 percent of cancer patients treated with doxorubicin will experience heart damage, which can be severe enough to require a heart transplant. The failing heart function is due to the death of the cells in the organ’s muscle tissue. This dilemma places patients in a medical Catch-22, having been cured from cancer but later suffering heart disease as a result of the chemotherapy. Advanced prediction of which patients are susceptible to doxorubicin’s heart damage would greatly benefit cancer patients.

For the study, the researchers collected skin cells from 12 women, eight of whom had been treated at Stanford for breast cancer. Four of the eight had experienced heart damage in response to the drug while the other four did not. The other group of four women served as healthy control subjects. The researchers used the study participants’ own skin cells to create iPS cells, which they then grew in the lab into heart muscle cells.

“We found that cells from the patients who had experienced doxorubicin toxicity responded more negatively to the presence of the drug,” said Burridge. “They beat more irregularly in response to increased levels of doxorubicin, and we saw a significant increase in cell death after 72 hours of exposure to the drug when we compared those cells to cells from healthy controls or patients who didn’t have heart damage.”

Other Stanford co-authors are postdoctoral scholars Yong Li, PhD, Haodi Wu, PhD, Sang-Ging Ong, PhD, Alexandra Holmstrom, PhD, and Alex Chang, PhD; instructors Elena Matsa, PhD, Antje Ebert, PhD, and Michael Coronado, PhD; graduate student Arun Sharma; assistant professor of cardiovascular medicine Joshua Knowles, MD, PhD; associate professor of medicine Ronald Witteles, MD; professor of microbiology and immunology Helen Blau, PhD; professor of pediatric cardiology Daniel Bernstein, MD; and professor of bioengineering, of genetics and of medicine Russ Altman, MD, PhD.

The research was funded by the National Institutes of Health (grants K99/R00HL121177, R21HL123655, R01LM05652, R01GM102365, R24GM61374, R01HL123968, R01HL126527, R01HL128170 and R01HL130020), the California Institute of Regenerative Medicine, the American Heart Association, a Dixon Translational Research Grant Young Investigator Award, the Muscular Dystrophy Association and the Burroughs Wellcome Fund. The Stanford Department of Medicine and the Stanford Cardiovascular Institute also supported the work.


For Article: http://www.ncbi.nlm.nih.gov/pubmed/27089514
Every year the CVI awards selected postdoctoral researchers who have published notable works in the scientific literature. Below are some of these articles that were awarded for the CVI Manuscript Award for 2015.

"Contractility of single cardiomyocytes differentiated from pluripotent stem cells depends on physiological shape and substrate stiffness."

In this study, we enhanced the maturity of myofibril organization in stem cell-differentiated cardiomyocytes with microfabrication approaches and investigated the mechanisms that drive structural maturation.

Alexandre J. S. Ribeiro, et. al, and Beth L. Pruitt. Published in Proc Natl Acad Sci U S A. 2015 112(41)

"Epicardial FSTL1 reconstitution Regenerates the Adult Mammalian Heart"

We found that epicardial cells contain a potent cardiogenic activity identified as follistatin-like 1 (Fstl1). Application of the human Fstl1 protein via an epicardial patch stimulates cell cycle entry and division of pre-existing cardiomyocytes, improving cardiac function and survival in mouse and swine models of myocardial infarction.


"Epigenetic Regulation of Phosphodiesterases 2A and 3A Underlies Compromised β Adrenergic Signaling in an iPSC Model of Dilated Cardiomyopathy"

This is the first study that systematically characterized β-adrenergic signaling maturation in iPSC-CMs, which has set a baseline for all the studies focusing on beta signaling mechanism and beta-blocker drug screening in iPSC-CM models. In this paper, we have identified the up-regulation of key molecular events during the pathogenesis of familial DCM, subtype-specific blockade.


"The Prognostic Value of Residual Coronary Stenoses After Functionally Complete Revascularization."

In this paper, we investigated the prognostic value of the residual angiographic coronary artery stenoses after FFR-guided "functionally" complete revascularization. We found that after "functionally" complete revascularization with FFR guidance, the residual angiographic lesions do not reflect residual ischemia or predict a worse outcome.


Dorothy Dee & Marjorie Helene Boring Trust Research Award

As part of a $2M gift to the Cardiovascular Institute the Boring Trust Award supports Stanford medical students dedicated to cardiovascular research. Each recipient received $10,000 towards medical school tuition.

The next deadline for applying for this research award is Sept. 2016. For details visit: http://med.stanford.edu/cvi/research/i-heart-research-award.html
SPARKing a global movement  By Jennifer Huber

Many academic researchers are tenacious, spending years in the lab studying the processes that lead to human diseases in hopes of developing treatments. But they often underestimate how difficult it is to translate their successful discovery into a drug that will be used in the clinic.

That’s why Daria Mochly-Rosen, PhD, founded SPARK, a hands-on training program that helps scientists move their discoveries from bench to bedside. SPARK depends on a unique partnership between university and industry experts and executives to provide the necessary education and mentorship to researchers in academia.

In recent years, Stanford’s program has sparked identical programs throughout the world; at TEDMED 2015, Mochly-Rosen described this globalization. I recently spoke with her about the SPARK Global program, which she co-directs with Kevin Grimes, MD, MBA.

How has SPARK inspired similar programs throughout the world? "We’ve found our solution for translational research to be particularly powerful. Of the 73 completed projects at Stanford, 60 percent entered clinical trials and/or were licensed by a company. That’s a very high accumulative success rate. So I think it has showed other groups that we have a formula that really works – a true partnership with academia and industry. It’s the combination of industry people coming every week to advise us and share lessons learned and our out-of-the-box, risk-taking academic ideas that makes SPARK so successful,” said Dr. Mochley-Rosen.

Full story- See more at: http://scopeblog.stanford.edu/2016/02/03/sparking-a-global-movement/

Faculty Highlights

Kim elected to National Academy of Engineering

By Amy Adams (Director of Interdisciplinary Life Sciences Communications for Stanford University)

Biochemist Peter Kim has been elected to the National Academy of Sciences. Kim is now one of only 20 people who are members of all three national academies.

The other two academies are the National Academy of Science and the National Academy of Medicine. Stephen Quake, PhD, professor of bioengineering and of applied physics, is also a member of all three academies. Kim was honored for his work developing novel drugs and vaccines that are used worldwide.


Sean M. Wu Appointed Associate Professor

The CVI congratulates Sean Wu, MD, PhD, who was promoted to Associate Professor of Medicine (Cardiovascular Medicine) and, by courtesy, of Pediatrics. His laboratory focuses on cardiac lineage commitment during embryonic development.

"We believe that by understanding the transcriptional and epigenetic basis of cardiomyocyte growth and differentiation, we can identify the most effective ways to repair diseased adult hearts," said Wu. The Wu lab is also developing new approaches and technologies for tissue engineering.

Visit his lab at http://med.stanford.edu/seanwulab.html

2016 Stanford Cardiovascular Institute Seed Awards

How will you make your mark? Applications Now Being Accepted!

Each year the Cardiovascular Institute commits to support projects addressing major challenges in cardiovascular health and disease. To date the Institute has provided over $2,000,000 in awards to 70 projects since 2006. Projects aimed at establishing new areas of cardiovascular research and improve treatments are welcomed. Topics range from pediatric and obstetric related research, new methods and technologies, vascular biology, engineering and genetics. Stanford faculty and Instructor members of the Cardiovascular Institute are eligible to apply.

Visit http://tinyurl.com/cvisg2016 for details and previous seed award recipients.
Stanford’s first Community Advisory Board for Clinical Research

The Stanford Center for Clinical Research (SCCR) leadership is pleased to announce the launch of Stanford’s first Community Advisory Board (CAB) for Clinical Research. The CAB partnership aims to enhance research recruitment success and improve community engagement. Led by SCCR’s Nicole Ventre, MS and Katherine Connors, MPH, from the Department of Anesthesiology, the CAB is chaired by faculty member Judith Prochaska, PhD, MPH and community co-chair, Jonathan Shaw, MD. The initiative is supported by the Office of Community Health and multiple departments, including Medicine, Pediatrics, and Psychiatry & Behavioral Sciences.

The CAB will provide a forum to foster dialogue and consultation among researchers and the community. CAB community members will engage and participate in the research planning process and work with researchers in the Stanford School of Medicine to promote and disseminate research findings. Clinical researchers will receive community feedback and guidance on study protocols to support and enhance the success of their research. For more: http://med.stanford.edu/sccr/services/site-based-research/community-advisory-board.html.

Stanford Medicine Partners with AstraZeneca

The Stanford Center for Clinical Research and AstraZeneca have entered into a multiyear collaboration that will address major health-care challenges and provide funding to School of Medicine investigators. The project will combine AstraZeneca’s expertise in the biopharmaceutical industry with the School of Medicine’s research capabilities. This collaboration will initially focus on cardio-metabolic diseases, respiratory diseases and oncology, and will explore partnerships in areas such a mobile health, clinical trial management services, and education and training opportunities.

Kenneth Mahaffey, MD, professor of cardiovascular medicine and vice chair of clinical research for the Department of Medicine, will lead Stanford’s participation. SCCR staff and leadership will provide operational support and coordination for the project.

Amol Rajmane, MD, MBA, associate director of SCCR, said AstraZeneca has funded the research of individual investigators at Stanford in the past, leading to discussions about a formal collaboration. “This project is the culmination of those talks,” he said.

Each year, a committee comprising Stanford and AstraZeneca leadership will solicit and review research proposals from the Stanford medical community and select two or three projects that would receive between $50,000 and $250,000 each. The company has allocated $2 million to initiate the collaboration and to support the research of Stanford investigators over the next three years.

Under the agreement, inventions by Stanford researchers will be the intellectual property of the university, while discoveries by AstraZeneca researchers will be the intellectual property of the company. Joint discoveries will be jointly owned.

For more visit: http://med.stanford.edu/sccr.html

Marlene Rabinovitch, MD, Dwight and Vera Dunlevie Professor in Pediatric Cardiology, was selected as the Amberson Lecturer at the American Thoracic Society (ATS) 2016 International Conference in San Francisco. The J. Burns Amberson Lecture recognizes a career of major lifetime contributions to clinical or basic pulmonary research and clinical practice. It is one of the highest honors in pulmonary medicine. The Conference will be held May 13-18 and the award presentation is scheduled for Sunday, May 15th at 4:30 pm.

Amberson Lecturer: Marelene Rabinovitch, MD

Marlene Rabinovitch, MD, Dwight and Vera Dunlevie Professor in Pediatric Cardiology, was selected as the Amberson Lecturer at the American Thoracic Society (ATS) 2016 International Conference in San Francisco. The J. Burns Amberson Lecture recognizes a career of major lifetime contributions to clinical or basic pulmonary research and clinical practice. It is one of the highest honors in pulmonary medicine. The Conference will be held May 13-18 and the award presentation is scheduled for Sunday, May 15th at 4:30 pm.
Vascular Surgery Clinical Trial Updates: N-TACT Overview

The NIH-funded Non-Invasive Treatment of Abdominal Aortic Aneurysm Clinical Trial (N-TACT) is the first large trial in the U.S. testing a new way to reduce aneurysm growth. The Veterans Affairs Palo Alto / Stanford is one of 19 sites in the U.S. actively enrolling patients. The goal of the trial is to address the effectiveness of doxycycline in slowing aneurysm expansion. There is evidence suggesting that doxycycline may prevent or delay the breakdown of proteins in the wall of the aorta. In addition, the trial will test for circulating markers in the blood that will predict aneurysm growth. N-TACT is positioned to add a tremendous amount of valuable information regarding the patterns of growth of abdominal aortic aneurysm with 6-month interval CT scans; no other clinical trial has endeavored to collect this quality level of data. The study coordinator is Lori McDonnell.

Patients with Limb Threat due to Peripheral Artery Disease

BEST-CLI Trial (Best endovascular versus best surgical options for treating critical limb ischemia)

Critical limb ischemia (CLI) is the most severe form of peripheral arterial disease and is associated with a significant risk of limb loss. The incidence of CLI is growing rapidly with the growing population and rise in diabetes. Currently, CLI is treated with limb revascularization by a variety of specialists. Although both open vascular bypass and endovascular therapy are offered to patients with peripheral vascular disease and CLI, significant disagreement exists as to which therapy works best. BEST-CLI is a multicenter, open label, randomized trial that compares best endovascular therapy with best open surgical treatment in patients eligible for both. The trial aims to provide much needed clinical guidance for CLI management by evaluating limb amputation rates, repeat interventions and mortality in patients treated. The trial is funded by the National Institutes of Health. Institutional P.I. is Venita Chandra, MD, Clinical Assistant Professor of Surgery.

Connecting Genes to Aortic Aneurysm Progression

Heme oxygenase-1 (HO-1) is the rate-limiting enzyme in heme degradation. This cytoprotective enzyme is up-regulated in the vasculature by increased flow and inflammatory stimuli. Analysis of human genetic data suggest that a diminished HO-1 expression may predispose one to abdominal aortic aneurysm (AAA) development. The results of this study entitled “Heme Oxygenase-1 Expression Affects Murine Abdominal Aortic Aneurysm Progression” were published in PLoS One.

2016 Stanford Drug Discovery Conference

In a single day the collective expertise of Stanford researchers, Silicon Valley leaders, and government agencies assembled to discuss new approaches to drug discovery. The inaugural conference was attended by 515 guests from throughout Stanford, Silicon Valley, and the country.

Discussions included:

- Risk and regulation
- Modeling diseases in silico
- Developing vaccines and immunotherapies
- Cardiovascular disease

Keynotes

- Director of the National Center for Advancing Translational Sciences, Christopher Austin MD
- Chief Medical Officer of Verily, Jessica Mega, MD
- 2012 Nobel Laureate, Brian Kobilka, MD

The event was video recorded. Available presentations can now be viewed at http://tinyurl.com/cvidrugdiscovery. Sponsors included:

Visit our page for more photos.
Postdoctoral Fellow
T32 Training Grant
Position Available:
Cardiovascular Imaging Program at Stanford

The Multi-Disciplinary Training Program in Cardiovascular Imaging at Stanford brings together post-doctoral fellows and faculty from three complementary areas—clinical, engineering, and molecular imaging—to train the next generation of CV imaging investigators for successful careers. Interested fellows should apply! Details http://med.stanford.edu/cvi/education/cvis-t32.html.

THANK YOU
The Stanford Cardiovascular Institute recently received a generous $100,000 gift from an anonymous donor. The donation will support education of tomorrow’s leaders in cardiovascular research and medicine.

2016 CVI Faculty Club: Lorry Lokey (SIM1)
4:30 p.m., First Wednesday of each month, Room G1161

May 04 JARED CHURKO, PHD
"Transcriptomic Identification and Characterization of hiPSC Cardiomyocyte Subpopulations"

June 01 Y. JOSEPH WOO, MD AND AMANDA STEELE "A Pilot study for an engineered HGF fragment for the treatment of myocardial infarction in a preclinical ovine model"

September 07 KENNETH MAHAFFEY, MD "Defining the role of Immune Biomarkers in Non-ST Elevation Myocardial Infarction: analysis from TRACER trial biorepository"

October 05 EVGENIOS NEOFYTOU AND DAVID STEVENS "Modeling Chronic Chagasic Cardiomyopathy Disease Mechanisms Using Human induced Pluripotent Stem Cells"

November 02 MICHAEL MCCONNELL, MD, MSEE

December 07 ANITRA ROMFH AND MANISH BUTTE, MD, PHD "T-Cell Deficiencies in Adult Congenital Heart Disease"

2016 Spring Travel Awards

Elda Dzilic, MD
Sean Wu Laboratory
Keystone Symposia 2016

Arjun Adhikari, PhD
James Spudich Laboratory
Biophysical Society Annual Meeting (2016)

Jan K. Hennigs, MD
Marlene Rabinovitch Laboratory, ATVB
Scientific Sessions (2016)

Brian Kim, MD
Thomas Quertermous Laboratory
AHA Scientific Sessions, Nov 7, 2015

Kegan Moneghetti, MD
Francois Haddad Laboratory
27th Annual American Society of Echocardiography (ASE) Scientific Sessions

Notable Awards

Fatima Rodriguez, MD
Cardiovascular Medicine Fellow
ACC Merck award winner at ACC 2016

Elsie Ross, MD
Society for Vascular Medicine Jay D. Coffman Award finalist for "Machine Learning for the automated diagnosis of peripheral vascular disease"
Recently Awarded Projects

Paul Yock, MD
Agency For Science, Technology And Research (A*STAR)
Singapore-Stanford Biodesign Program

Richard N. Zare
American Heart Association
Monitoring Nanoparticle-Mediated Angiogenesis Using Mass Spectrometry Imaging

Russ B. Altman, MD, PhD
Genentech, Inc.
Identifying New Drug Targets and Assessing Drug Efficacy and Safety with Systems Pharmacology

Thomas Quertermous, MD
Merck Sharp & Dohme Corp.
Evaluation of Fam13a as an Insulin Resistance Gene

Ada S. Poon, PhD
National Institutes of Health
Midfield Wireless Powering and Communication System for Deeply Implanted Miniscale Sensors

Sanjiv Sam Gambhir, MD, PhD
National Institutes of Health
A Novel Positron Emission Tomography Strategy for Early Detection and Treatment Monitoring of Graft-versus-host Disease

Ngan Fong Huang, PhD
National Institutes of Health
Aligned Nanofibrillar Scaffolds Enhance Angiogenesis and Viability in Ischemia

Mark Nicolls, MD
NIH/NHLBI T32
Stanford Training Program in Lung Biology
(Co-Director: David Cornfield, MD)

Norbert J Pelc, PhD
General Electric Healthcare
Advanced Computed Tomography (CT) Systems and Algorithms

Thomas A. Rando MD, PhD
Glenn Foundation for Medical Research
The Paul F. Glenn Center for Biology of Aging Research at Stanford University

Stanley G. Rockson, MD
Lymphatic Education & Research Network
International Lymphatic Disease and Lymphedema Patient Registry & Tissue Bank

Edda Spiekerkoetter, MD
National Institutes of Health R01
Targeting Novel BMPR2 modifiers in Pulmonary Hypertension with Repurposed Drugs

New Clinical Trials

Richard-Tien Van Ha, MD | ReliantHeart Inc.
A Prospective, Randomized, Multicenter Clinical Trial to Evaluate the Safety and Efficacy of the Heart Assist 5® VAD System Compared to the HeartMate II VAD and HVAD® for Left Ventricular Support in Patients Awaiting Cardiac Transplantation.

Doff McElhinney, MD | Medtronic
Melody Transcatheter Pulmonary Valve (TPV) in Patients with a Dysfunctional Bioprosthetic Valve (BPV) in the pulmonary position.

David Patrick Lee, MD | Medtronic Vascular, Inc.
Global Clinical Study of Renal Denervation with the Symplicity Spyral™ i multi electrode renal denervation system in Patients with Uncontrolled Hypertension on Standard Medical Therapy.
Faculty Funding Opportunities

MAY
Breakthrough Prizes
Topics: Life Sciences, Physics, Mathematics
Amount of funding: $3 million each
Deadline: May 31, 2016
Breakthrough Prize

JUNE
Children’s Cardiomyopathy Foundation Research Grant Program
Amount of funding: $25-50K for 1 year
Deadline: June 1, 2016

Children’s Heart Foundation Research Grant
Amount of funding: $100K per year for 2 years
Deadline: June 3, 2016

National Institute of Health Research Project Grant (Parent R01)
Deadline: June 5, 2016
PA-13-302

Small Grant Program of NHLBI K01/K08/K23 Recipients (R03)
Deadline: June 15, 2016
RFA-HL-16-020

Improving Outcomes in Cancer Treatment-Related Cardiotoxicity
Deadline: June 2016
R01: PA-16-035
R21: PA-16-036

NHLBI Clinical Trial Pilot Studies (R34)
Deadline: June 16, 2016
PAR-16-037

JULY
American Heart Association Strategically Focused Research Network - Obesity
Deadline: June, 2016 LOI

AHA Grant-In-Aid
Amount of funding: $154K over two years
Deadline: July, 2016
AHA Grant-In-Aid

AUGUST

HOW WILL YOU MAKE YOUR MARK?
2016 CVI Seed Awards
Deadline: August 1, 2016

SEPTEMBER
Stanford University Spectrum Pilot Grants
Amount of funding: $15-50K for 1 year

Postdoctoral Funding Opportunities

MAY
Stanford Systems Biology Seed Grants
Amount of funding: $25K
Deadline: May 17, 2016

Stanford Career Development Program in ‘Omics’ of Lung Disease (K12)
Deadline: accepted on an ongoing basis

JUNE
K01 Mentored Research Scientist Development Awards
Deadline: June 12, 2016
PA-14-044

NHLBI Mentored Career Development Award to Promote Faculty Diversity K01
Deadline: June 12, 2016
RFA-HL-16-006

K08 Mentored Clinical Research Career Development Award
Deadline: June 12, 2016
PA-14-046

K23 Mentored Patient-Oriented Research Career Development Award
Deadline: June 12, 2016
PA-14-049

National Scientist Development Grant
Amount of funding: $231K over three years
Deadline: July, 2016
AHA Scientist-Development-Grant

AHA Mentored Clinical and Population Research
Amount of funding: $154,000 over 2 years
Deadline: July, 2016
AHA Postdoctoral Fellowship
Amount of funding: $95,450-120,800 over 2 years
Deadline: July, 2016
AHA Postdoctoral Fellowship

Juvenile Diabetes Research Foundation Advanced Postdoctoral Scholar Fellowship
Deadline: July, 2016

Stanford University
Katherine McCormick Advanced Postdoctoral Scholar Fellowship
Amount of funding: $35,000 for 1 year
Deadline: July 2016

Walter V. and Idun Berry Postdoctoral Fellowship Program
Amount of funding: $55,000 for 1 year
Deadline: July 2016

Translational Research Applied Medicine (TRAM) Pilot Grant
Amount of funding: $5K-30,000 for 1 year
Deadline: July, 2016

AUGUST
National Institute of Health
Ruth L. Kirschstein National Research Service Awards (NRSA) for Individual Postdoctoral Fellows
Deadline: August 8, 2016
PA-14-149
2016

Frontiers in Cardiovascular Science

Li Ka Shing Center for Learning & Knowledge | 291 Campus Drive, Stanford, CA 94305
Tuesdays from 12:00 - 1:00pm (unless otherwise stated)

APRIL 05, 2016
Mark Nicolls, MD
Associate Professor of Medicine (Pulmonary and Critical Care), Stanford School of Medicine

APRIL 12, 2016
Calum A. MacRae, MD, PhD
Chief, Cardiovascular Medicine, Harvard Medical School; Brigham and Women’s Hospital

APRIL 19, 2016
Mark Hlatky, MD
Professor of Health Research and Policy
Stanford University

APRIL 26, 2016
Aruni Bhatnagar, PhD
Professor of Medicine and Distinguished University Scholar
University of Louisville

MAY 10, 2016
Phil Tsao, PhD
Professor of Medicine (Cardiovascular Medicine)
Stanford School of Medicine

MAY 24, 2016
Edward Yeh, MD
Professor and Chair
Dept. of Cardiology
MD Anderson Cancer Center

MAY 31, 2016
Thomas F. Lüscher, MD, FRCP
Professor and Chairman of Cardiology
U. Hospital Zurich; University Zurich

JUNE 07, 2016
David Maron, MD
Clinical Professor, Medicine
Cardiovascular Medicine, Stanford University

Joshua Knowles, MD, PhD
Assistant Professor of Medicine (Cardiovascular Medicine)
Stanford University

SEPTEMBER 13, 2016
Glenn I. Fishman, MD
New York University
School of Medicine

SEPTEMBER 20, 2016
James N. Weiss, MD
Kawata professor of Medicine & Physiology
Chief, Division of Cardiology Director, Cardiovascular Research Laboratory, David Geffen School of Medicine at UCLA

SEPTEMBER 27, 2016
Evangelia “Litsa” Kranias, PhD
Hanna Professor and Director
Cardiovascular Biology Distinguished University Professor
Co-Director, Cardiovascular Center of Excellence Department of Pharmacology & Cell Biophysics
University of Cincinnati College of Medicine

OCTOBER 04, 2016
Professor Thomas Eschenhagen
Director, Department of Experimental Pharmacology and Toxicology, University Medical Center Hamburg-Eppendorf (UKE)

NOVEMBER 01, 2016
Kirk Kowlton, MD
Director of Cardiovascular Research
Co-Chief of Cardiology
Intermountain Medical Center, Heart Institute

NOVEMBER 08, 2016
Brian H. Annex, MD
Lantheus Medical Imaging Distinguished Professor of Cardiovascular Medicine

NOVEMBER 22, 2016
Jake Lusis, PhD
Professor, Medicine, Human Genetics, Microbiology, Immunology and Molecular Genetics
David Geffen School of Medicine at UCLA
<table>
<thead>
<tr>
<th>May</th>
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<tbody>
<tr>
<td>Sudden Cardiac Death</td>
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<tr>
<td>Heart Rhythm Scientific Sessions</td>
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<tr>
<td>May 4-7, 2016, San Francisco</td>
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<tr>
<td>Arteriosclerosis, Thrombosis and Vascular Biology</td>
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<tr>
<td>May 5-7, 2016, Nashville, TN</td>
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<tr>
<td>Peripheral Vascular Disease</td>
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<tr>
<td>May 5-7, 2016, Nashville, TN</td>
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<tr>
<td>European Society of Cardiology – Heart Failure</td>
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<tr>
<td>May 21-24, 2016, Florence, Italy</td>
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<tr>
<th>June</th>
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<tr>
<td>International Society for Stem Cell Research</td>
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<tr>
<td>June 22-25, 2016, San Francisco, CA</td>
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<tr>
<td>2016 Drug Safety Gordon Research Seminar and Conference</td>
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<tr>
<td>June 25- July 1, Easton, MA</td>
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<tr>
<td><a href="http://www.grc.org/programs.aspx?id=16738">www.grc.org/programs.aspx?id=16738</a></td>
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<th>July</th>
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<tr>
<td>Basic Cardiovascular Sciences Scientific Sessions</td>
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<tr>
<td>July 18-21, 2016, Phoenix, AZ</td>
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<th>August</th>
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<tr>
<td>10 Day Seminar on the Epidemiology and Prevention of Cardiovascular Disease</td>
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<tr>
<td>July 24-Aug 5, 2016, Tahoe City, CA</td>
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<tr>
<td>International Academy of Cardiology – 21st World Congress on Heart Disease</td>
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<tr>
<td>July 30–Aug. 1 , Boston, MA</td>
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<tr>
<td>AUGUST</td>
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<tr>
<td>9th World Cardiology Conference</td>
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<tr>
<td>Aug. 1-3, 2016, Manchester, UK</td>
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<tr>
<td>European Society of Cardiology – Congress 2016</td>
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<td>Aug. 27-31, 2016, Rome, Italy</td>
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<tr>
<td>XVIII Paavo Nurmi Symposium: Future Technologies for Heart Disease</td>
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<td>Aug. 31-Sept 2, 2016 , Turku, Finland</td>
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<th>September</th>
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<tr>
<td>Council on Hypertension 2016 Scientific Sessions</td>
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<td>Sept. 14-17, 2016, Orlando, FL</td>
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<tr>
<td>Heart Failure Society of America Annual Scientific Meeting</td>
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<td>Sept. 17-20, 2016, Orlando, FL</td>
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<th>October</th>
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<tbody>
<tr>
<td>Great Wall International Congress of Cardiology</td>
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<td>Oct. 13-16, 2016, Beijing, China</td>
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<td>Centre for Commercialization of Regenerative Medicine</td>
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<td>Oct. 27-28, 2016, Whistler, Canada</td>
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<tr>
<td>Vascular Biology (NAVBV – North American Vascular Biology)</td>
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<td>Oct. 30–Nov. 3, 2016 Boston, MA</td>
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<tr>
<th>November</th>
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<tr>
<td>AHA Scientific Sessions</td>
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<td>Nov. 12-16, 2016, New Orleans, LA</td>
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<th>December</th>
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<tr>
<td>World Stem Cell Summit</td>
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<td>Dec. 6-8, 2016, West Palm Beach, FL</td>
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**Conferences at Stanford**

- Big Data in Biomedicine Conference: Enabling Precision Health  
  May 25-26, 2016  
  Li Ka Shing Center  
  8:00 AM - 6:30 PM  
  Info: http://bigdata.stanford.edu/

- 2016 Stanford Solid Organ Transplant Symposium  
  Friday, June 24, 2016  
  Li Ka Shing Center  
  8:00 AM - 4:30 PM  

**Stanford Cardiovascular Institute & Karolinska Cardiovascular Institute Symposium**

October 20th 2016  
*Joint Research Symposium*

**Contemporary Diagnosis and Management of Adults with Congenital Heart Disease**

8:00 am - 4:05 p.m.  
Saturday, May 21, 2016  
Paul Berg Hall, Li Ka Shing Center  
Stanford University School Of Medicine  
Our Mission

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

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

Contact Us

Francois Haddad, MD (fhaddad@stanford.edu) or Ingrid Ibarra, PhD (iibarra@stanford.edu) at CVI.

Stanford CVI Human iPSC Biobank Service

Normal and patient-derived reprogrammed cardiomyocytes is 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 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, the Institute created a service by which de-identified PBMC samples from selected patients can be sent to Stanford CVI for reprogramming free of cost. Please contact Joseph Wu, MD, PhD (joewu@stanford.edu) or Biobank manager, Justin Vincent (justin81@stanford.edu), with any questions.

SCVI biobank is supported in part by National Heart, Lung and Blood Institute (NHLBI), the California Institute for Regenerative Medicine (CIRM), and the Stanford Cardiovascular Institute (CVI). Stanford iPSC Biobank was mentioned in Nature Methods News: http://www.nature.com/nmeth/journal/v12/n2/full/nmeth.3263.html.

3DQ Imaging Laboratory

Stanford’s 3DQ Imaging Laboratory was established in 1996 at Stanford by Geoffrey Rubin, MD, and Sandy Napel, PhD, Professor of Radiology (General Radiology) and, by courtesy, Electrical Engineering. Today the center is co-directed by Dominik Fleischmann, MD, Professor of Radiology (General Radiology) and Roland Bammer, PhD, Associate Professor (Research) of Radiology.

Currently the lab processes over 1,200 clinical cases per month. Linda Horst, Marc Sofilos, and Shannon Walters are an integral part of the 3DQ Lab management team.

For more visit: http://3dqlab.stanford.edu/

Lab Resources

Clinical Biomarker & Phenotyping Core Lab (BPCL)

Key Initiatives

1. Stanford Athletic Screening Program. The BPCL is the core laboratory responsible for the echocardiographic studies of Stanford Athletic Screening Program and has imaged more than 500 athletes.

2. Stanford Immune Aging Longitudinal Study. The BPCL is the core providing clinical cardiovascular phenotypes for collaboration through the NIH funded projects of the Immunity Transplantation and Infection Institute led by Mark Davis, MD.

3. The Pulmonary Hypertension Wall Center Outcome and Physiology Studies. The BPCL works closely with the Vera Moulton Wall Center for Pulmonary Vascular Disease to provide quantitative echocardiographic assessment of the right heart.

4. The CCML-Stanford Collaborative Effort. Through a close collaboration with the University of Paris and the Marie-Lannelongue surgical center (CCML), the BPCL is providing quantitative analysis of experimental and clinical studies focused on right heart physiology. The CCML is a recognized worldwide center of expertise in pulmonary hypertension (Elie Fadel MD PhD and Olaf Mercier MD PhD).

Biobank

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Communication is at the heart of scientific advancement and innovation. This quarter the Stanford Cardiovascular Institute members published over 240 original manuscripts and reviews further contributing to our understanding of cardiovascular biology and disease. In the following pages, we highlight selected manuscripts by our members.

**January 2016**


Sports genetics moving forward - lessons learned from medical research.
Mattsson CM, Wheeler M, Waggott D, Caleshu C, Ashley EA. Physiol Genomics. 2016 Jan 12


MARCH 2016


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

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

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

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

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

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

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

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

Mark Nicolls, MD
Associate Professor, Dept. of Medicine
Chief, Pulmonary and Critical Care Medicine

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

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

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

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