Cardiovascular Institute Annual Symposium

The Stanford Cardiovascular Institute is hosting its annual symposium in Li Ka Shing Center on October 27th. For this year’s meeting, leaders from pediatric cardiology, vascular surgery, genetics, health policy, and engineering at Stanford will share their latest research. As cardiovascular disease is the leading cause of death in our country in both men and women, our goal is to provide a venue in which new approaches and solutions are discussed. All medical and research students are welcome and encouraged to attend. The general public is welcome. Attendance is free. List of speakers on page 2.

October 27, 2015
Paul Berg Hall, Li Ka Shing Center, Stanford, CA
Register here: http://tinyurl.com/cvi2015

Mark Mercola, PhD was Professor of the Department of Bioengineering, University of California, San Diego and co-founder of the screening center at the Sanford-Burnham-Prebys Medical Institute. His lab collaborates with engineers to develop tools and instrumentation for high throughput biology, with a focus on high throughput measurements of cardiomyocyte physiology. These technologies enable disease-in-dish assays using patient-specific cardiomyocytes derived from human induced pluripotent stem cells (hiPSCs).

Dr. Mercola discovered the first eukaryotic enhancer sequence, holds a patent on engineered dominant negative proteins, and has authored over 120 articles. His research at Stanford aims to delineate critical processes in the heart that contribute to a loss of contractile function and can be applied therapeutically to restore function.

He co-founded ChemRegen, a biotech company that is commercializing small molecule therapeutics, and is on several advisory boards.

‘Mark is a great addition to our cardiovascular program at Stanford and we are excited to welcome him to campus.’
- Joseph C. Wu, Director, Stanford Cardiovascular Institute

Dr. Backhus joins Dept. Cardiothoracic Surgery

Leah Backhus, MD, MPH, was appointed Associate Professor of Cardiothoracic surgery. Dr. Backhus is a Stanford University graduate who practiced Thoracic Surgery at the University of Washington in Seattle for 5 years before returning to Stanford School of Medicine this summer as Associate Professor of Cardiothoracic Surgery. At UW, she developed a reputation as an excellent surgeon, teacher, and Health Services Researcher. Her research, which has been published in multiple prestigious journals, focuses on imaging in the diagnosis, evaluation, and post-therapy surveillance of non-small cell lung cancer, and also on the impact of segregation and race on lung cancer mortality. She will care for patients at both the Palo Alto VA and at Stanford Medical Center. She will also serve as Associate Director of the Residency Program for the Thoracic Track component and co-direct a new departmental Center for Health Services Research.
The Institute currently consists of 124 faculty members representing engineers, physicians, surgeons, basic and clinical researchers. The mission of the Institute is integrating fundamental research across disciplines and applying technology to prevent and treat cardiovascular disease. To support cardiovascular research and education at CVI, please contact Cathy Hutton, Senior Associate Director, Medical Center Development (cathy.hutton@stanford.edu) or Dr. Joseph C. Wu, Director CVI (joewu@stanford.edu), or Ingrid Ibarra, Assistant Director of CVI, (iibarra@stanford.edu).

For more information: http://cvi.stanford.edu/waystogive.html and http://cvi.stanford.edu

SPEAKERS | Cardiovascular Research Symposium

**KEYNOTE SPEAKER**

Garret A. FitzGerald, MD  
McNeil Professor  
Translational Medicine and Therapeutics  
University of Pennsylvania

Dean Lloyd B. Minor, MD  
The Carl and Elizabeth Naumann Professorship for the Dean of the School of Medicine,  
Professor of Otolaryngology—Head & Neck Surgery  
and, by courtesy, of Neurobiology and Bioengineering

Brian Kobilka, MD  
Helene Irwin Fagan Chair in Cardiology,  
Professor, by courtesy, of Chemical and Systems Biology, 2012 Nobel Laureate in Chemistry

Paul Heidenreich, MD  
Professor of Medicine (Cardiovascular) and, by courtesy, of Health Research and Policy at the Palo Alto Veterans Affairs Health Care System

Matthew Porteus, MD, PhD  
Associate Professor of Pediatrics

Alison Marsden, PhD  
Associate Professor of Pediatrics (Cardiology)  
and of Bioengineering and, by Courtesy, of Mechanical Engineering

**KEYNOTE SPEAKER**

Clyde W. Yancy, MD  
Chief, Division of Medicine  
Northwestern University  
Feinberg School of Medicine

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

Thomas Quertermous, MD  
William G. Irwin Professor in Cardiovascular Medicine,  
Chief, Division of Cardiology

Matthew Mell, MD  
Associate Professor Surgery (Vascular Surgery)

Todd Brinton, MD  
Clinical Associate Professor  
Cardiovascular Medicine

Register at: http://med.stanford.edu/cvi/support-our-research/2015-cv-research-at-stanford.html

About the Stanford Cardiovascular Institute

The Institute currently consists of 124 faculty members representing engineers, physicians, surgeons, basic and clinical researchers. The mission of the Institute is integrating fundamental research across disciplines and applying technology to prevent and treat cardiovascular disease. To support cardiovascular research and education at CVI, please contact Cathy Hutton, Senior Associate Director, Medical Center Development (cathy.hutton@stanford.edu) or Dr. Joseph C. Wu, Director CVI (joewu@stanford.edu), or Ingrid Ibarra, Assistant Director of CVI, (iibarra@stanford.edu).

For more information: http://cvi.stanford.edu/waystogive.html and http://cvi.stanford.edu
Are Donor Hearts Getting Wasted?

By Tracie White

I wrote a press release recently on a study that showed a high percentage of donated hearts were not being used, raising concerns that some were getting wasted when they could be used to save lives. This made me curious about the process of just how a donor heart, which ideally has about a two-hour window before it gets transplanted to a patient with heart failure, gets matched.

The result is a Stanford Medicine magazine story titled “Heart Choices” that describes this process, the tough decisions that family members make when a loved one donates a heart, and the excruciating waiting that patients in need of a new heart go through.

Most importantly the article asks the question: Should more “high-risk” donor hearts be used? An estimated 20,000 people across the country are waiting for new hearts, and only a few thousand transplants happen on average per year. My story explains the dilemma:

The general assumption is that there simply are not enough donor hearts available to meet a growing demand. But new research is questioning that assumption. Some researchers and surgeons claim that thousands of donor hearts that could be used are turned away each year. The hearts are considered marginal because they come from older, sicker or riskier donors, but many argue they are safe for transplant, and could be saving lives.

“As patients wait longer, they often get sicker, and we often lose patients,” says Stanford cardiologist Kiran Khush, MD, whose research reports that 65 percent of available heart donations are discarded because of stringent acceptance criteria. Yet the criteria have not been critically evaluated, she says. “Increasing the supply of donor hearts is, of course, a great concern of mine.”


Robotically Assisted Coronary Artery Bypass Grafting

To develop innovative treatments for Coronary Artery Disease (CAD), Stanford has designed a program that brings together, preventative cardiologists, interventional cardiologists, and cardiothoracic surgeons: the Advanced Coronary Revascularization Program (ACR).

Jack H. Boyd, MD, Clinical Assistant Professor, Cardiothoracic Surgery, leads the surgical arm of the program and focuses on minimally invasive approaches to surgical revascularization. For example, Hybrid Coronary Revascularization (HCR), combines the advantages of two standard treatments, Coronary Artery Bypass Grafting (CABG) and Percutaneous Coronary Interventions (PCI). The combinatorial approach has survival benefits and avoids median sternotomy and prolonged recovery.

Boyd, along with a dedicated multidisciplinary cardiac care team, performed the first robotically-assisted coronary revascularization in Northern California, using the da Vinci Xi Surgical System. Utilizing robotic technology offers patients yet another alternative to traditional open-heart surgery and yields faster recoveries with decreased discomfort and trauma.

The Stanford ACR team will continue to push boundaries for revascularization treatments.
Atrial fibrillation (AF) is the most common form of cardiac arrhythmia affecting over two million people in the United States alone. Today, the standard for treating AF is using (radiofrequency, cryo-ablation) catheters. Cardiac ablation methods have a high rate of failure: the procedure fails to cure at least 27% of the population after the first procedure with a 6% chance of serious complications arising during the operation. We propose a robotic system that autonomously traces the atrial chambers to deliver pre-planned ablation treatments.

Currently, it takes an average of about 10 years to bring a new chemical entity to the market at an estimated cost of about $1.4 billion. Herein we propose to screen the Food & Drug Administration (FDA) approved known drug molecules using stem cells, to develop better understanding of their mode-of-action. Results of our systematic study will allow for repurposing of such molecules towards disease(s) with better/effective therapeutic outcomes. Importantly also, it will enable in designing new molecular entities for drug discovery/development.

Despite improvement in clinical management, non-ST elevation acute coronary syndrome (NSTE-ACS) remains a major cause of mortality and morbidity. There is an unmet need to identify key immune mediators of major cardiovascular events including cardiovascular death, heart failure, recurrent MI or stroke. The role of inflammation in the pathophysiology in NSTE-ACS has been well established using both experimental and clinical biomarkers studies. We aim to identify a cytokine and growth factor profile associated with recurrent MI in patients admitted for NSTEMI as part of the TRACER trial.

‘Stem Cell Based Mechanistic Study of FDA Approved Drugs for Repurposing of their Drug Actions’

‘Defining the Role of Immune Biomarkers in Non-ST Elevation Myocardial Infarction: Analysis from TRACER Trial Biorepository’
‘A Pilot Study for an Engineered HGF Fragment for the Treatment of Myocardial Infarction in a Preclinical Ovine Model’

An estimated 20 million Americans suffer from coronary artery disease and 6 million have heart failure. Over 1 million a year have acute myocardial infarction (MI) with a short-term mortality that still exceeds 7% despite maximal aggressive therapy. We will evaluate the efficacy of a novel engineered peptide, HGF-f in a large animal model of ischemic cardiomyopathy. We hypothesize that there are physiologic and anatomic differences between small animals and humans related to size and myocardial thickness that will be best refined in the preclinical large animal model.

‘Regulation of Abdominal Aortic Aneurysm Pathogenesis by Hypoxia Inducible factors (HIF)’

Abdominal aortic aneurysm is a degenerative inflammatory disease affecting one million adult Americans. While much has been learned regarding aneurysm pathogenesis, no such discovery has been successfully translated to clinical patient care. While expansive and highly morbid, to date surgical repair is the only effective treatment. Novel targets for developing pharmacological therapy for aneurysm disease is needed.

‘T-Cell Deficiencies in Adult Congenital Heart Disease’

Patients with congenital heart disease (CHD) are now surviving into adulthood, when the patients often face challenges including those associated with aging, worsening heart function, and the need for cardiac transplantation. We have now identified 110 patients with Fontan physiology of 1000+ adult CHD patients managed over the past ~20 years at Stanford. We will test in adult CHD patients the hypothesis that early thymectomy diminishes the ability to make new T cells, causing an immune deficiency with important clinical consequences in adult life, including susceptibility to infection, increased senescence of lymphocyte populations, and increased inflammation.

‘Modeling Chronic Chagasic Cardiomyopathy Disease Mechanisms Using Human Induced Pluripotent Stem Cells’

Chagas’ disease, caused by the hemoflagellate protozoan Trypanosoma cruzi (T. cruzi), is one of the world’s most neglected tropical diseases affecting about 8 millions people in Latin America. We propose to use human pluripotent stem cell derived cardiomyocytes (PSC-CMs) to model the disease. This will allow us to gain insight into the mechanisms of T. cruzi invading human cardiomyocytes and suppressing their cellular immune response.

‘MicroRNA Regulation of Blood Brain Barrier Function and Hypoperfusion-induced Cerebrovascular Disease’

Several neuronal diseases such as ischemic and hemorrhagic stroke and vascular dementia are associated with cerebral vascular injuries or pathologies. An understanding of the molecular mechanisms regulating blood brain barrier permeability and disruption is required for establishing efficacious therapeutic strategies.

‘MicroRNA Regulation of Blood Brain Barrier Function and Hypoperfusion-induced Cerebrovascular Disease’

Several neuronal diseases such as ischemic and hemorrhagic stroke and vascular dementia are associated with cerebral vascular injuries or pathologies. An understanding of the molecular mechanisms regulating blood brain barrier permeability and disruption is required for establishing efficacious therapeutic strategies.
Scientists at the Stanford University School of Medicine and their colleagues have enabled damaged heart tissue in animals to regenerate by delivering a protein to it via a bioengineered collagen patch.

“This finding opens the door to a completely revolutionary treatment,” said Pilar Ruiz-Lozano, PhD, Associate Professor of Pediatrics at Stanford. “There is currently no effective treatment to reverse the scarring in the heart after heart attacks.”

The work is described in a paper published online Sept. 16 in Nature. Ruiz-Lozano is the senior author. Vahid Serpooshan, PhD, a postdoctoral scholar in cardiology at Stanford, and Ke Wei, PhD, a postdoctoral scholar at the University of California-San Diego, share lead authorship.

In heart attack, cardiac muscle cells, called cardiomyocytes, die from a lack of blood flow. Replacing those dead cells is vital for the organ to fully recover. Unfortunately, the adult mammalian heart does not regenerate effectively, causing scar tissue to form.

The article, titled “Epicardial FSTL1 reconstitution regenerates the adult mammalian heart”, was published in Nature. 2015 Sept. The authors include: Ke Wei, Vahid Serpooshan, Cecilia Hurtado, Marita Diez-Cuñado, Mingming Zhao, Sonomi Maruyama, Wenhong Zhu, Giovanni Fajardo, Michela Noseda, Kazuto Nakamura, Xueying Tian, Qiaozhen Liu, Andrew Wang, Yuka Matsuura, Paul Bushway, Wenqing Cai, Alex Savchenko, Morteza Mahmoudi, Michael D. Schneider, Maurice J. B. van den Hoff, Manish J. Butte, Phillip C. Yang, Kenneth Walsh, Bin Zhou, Daniel Bernstein, Mark Mercola & Pilar Ruiz-Lozano.
Tension Helps Heart Cells Develop Normally, Stanford Study Shows

By Amy Adams

Tension might not be fun for us, but it looks like it’s critical for our hearts. So much so that without a little tension heart cells in the lab fail to develop normally.

This is a finding that took a mechanical engineer looking at a biological problem to solve. For many years now scientists have been able to mature stem cells into beating clumps of cells in the lab. But although those cells could beat, they didn’t do it very well. They don’t produce much force, can’t maintain a steady rhythm and would be a failure at pumping actual blood.

Beth Pruitt, PhD, a Stanford Mechanical Engineer, realized that in our bodies heart cells are under considerable tension, and thought that might be critical to how the cells develop.

She and postdoctoral scholar Alexandre Ribeiro started investigating how heart cells matured in different shapes and under different amounts of tension. They found a combination that produces normal looking cells with strong contractions.

The work could be useful for scientists hoping to replace animal heart cells as the gold standard for identifying heart-related side effects of drugs. Those cells are quite different from our own and often fail to detect side effects that could damage hearts in people taking the drug.

“We hope this can be a drop-in replacement for animal cells, and potentially instead of having to do individual recordings from each cell we could use video analysis,” said Riberio

Article, “Contractility of single cardiomyocytes differentiated from pluripotent stem cells depends on physiological shape and substrate stiffness,” was published in Proc Natl Acad Sci U S A. 2015 Sept. Authors include: Alexandre J. S. Ribeiro, Yen-Sin Ang, Ji-Dong Fu, Renee N. Rivas, Tamer M. A. Mohamed, Gadryn C. Higgs, Deepak Srivastava, Beth Pruitt.

See more at: http://scopeblog.stanford.edu/2015/09/30/tension-helps-heart-cells-develop-normally-stanford-study-shows/

Annual Karolinska Institute Cardiovascular Program Retreat

Members of the Stanford Cardiovascular Institute were invited to the Vår Gård in Saltsjöbaden, Sweden to participate in the Annual Karolinska Institute Cardiovascular Program Retreat. The cardiovascular program at KI has the vision to work “from bedside to bench and back” in order to address relevant clinical problems and fast translate new mechanistic insights into innovative prevention, diagnostics and therapy. Presenting their latest research were Stanford faculty: Thomas Quertermous, MD, Professor in Cardiovascular Medicine; Philip Tsao, PhD, Professor of Medicine (Cardiovascular Medicine); Nicholas Leeper, MD, Assistant Professor of Surgery (Vascular Surgery); and Joseph C. Wu, MD, PhD, Director of the Stanford Cardiovascular Institute.
Lucile Packard Children’s Hospital Stanford Plans Major Expansion of its World-renowned Heart Center

By Robert Dicks

The largest, most experienced pediatric heart surgery program on the West Coast performs over 600 surgeries a year, and plans for more capacity through expansion.

It’s a very exciting time for Lucile Packard Children’s Hospital Stanford and Stanford Children’s Health.

This month marks a two-year countdown to the opening of the hospital’s $1.1 billion, 521,000 square foot expansion. Almost doubling the size of the current hospital and adding 149 patient beds, the expansion and new main building will increase access to America’s most advanced and family-friendly hospital for children and expectant mothers.

The September 2017 opening will ensure that families who need high-quality care aren’t turned away due to lack of space. It will also provide a launching pad for expanding and renovating the current hospital next door. This will include creating room to grow the nationally-ranked Pediatric Heart Center, which due to demand will premiere a new and larger space in 2018.

“This is excellent news for patients and their families,” said Stephen Roth, MD, MPH, Director of the Heart Center with famed pediatric cardiothoracic surgeon and Heart Center executive director, Frank Hanley, MD. “Expanding our Heart Center means that even more children with complex heart problems, as well as growing numbers of adult survivors of congenital heart disease, will have access to one of America’s most advanced programs. Many of these children and adult survivors have run out of options elsewhere.”


DNA Damage Seen in Patients Undergoing CT Scanning

By Tracy White

Using new laboratory technology, scientists have shown that cellular damage is detectable in patients after CT scanning, according to a new study led by researchers at the Stanford University School of Medicine.

“We now know that even exposure to small amounts of radiation from computed tomography scanning is associated with cellular damage,” said Patricia Nguyen, MD, one of the lead authors of the study and an Assistant Professor of Medicine (Cardiovascular Medicine). “Whether or not this causes cancer or any negative effect to the patient is still not clear, but these results should encourage physicians toward adhering to dose-reduction strategies.”

The article, titled “Assessment of the Radiation Effects of Cardiac CT Angiography Using Protein and Genetic Biomarkers” was published in JACC Cardiovasc Imaging. 2015 Aug. Authors include: Patricia K. Nguyen, Won Hee Lee, Yong Fuga Li, Wan Xing Hong, Shijun Hu, Charles Chan, Grace Liang, Ivy Nguyen, Sang-Ging Ong, Jared Churko, Jia Wang, Russ B. Altman, Dominik Fleischmann, Joseph C. Wu. This article received press coverage by CBS news, Fox News and other major news outlets.
As part of the mission to create a new more effective approach to clinical research, the Stanford Center for Clinical Research (SCCR) held their first training program in September. The class covered basic principles of cardiac anatomy & physiology, conduction and interpreting EKG.

Susan Fernandes, LPD, PA-C, Director of the Adult Congenital Heart program and Clinical Associate Professor of Pediatrics led the lectures along with Rhonda Larsen, PA-C, MHS, Clinical Assistant Professor, Pediatrics – Cardiology. SCCR, aims to seamlessly integrate academic expertise and business objectives to meet the needs of clinical research sponsors. Their affiliation with Stanford faculty members allows invaluable scientific leadership.

Cardiocentric Diseases

The Palo Alto Veterans Affairs (VA) hospital funded four new studies that will use genetic and other data from its Million Veteran Program (MVP) to answer key questions on heart disease, kidney disease, and substance use—high-priority conditions affecting Veterans. MVP is currently the nation’s largest biobank having enrolled over 390,000 veterans.

Cardiovascular Institute researchers Phil Tsao, PhD, and Tim Assimes, MD, PhD, as well as Stanford faculty, Hua Tang, PhD, and Jennifer Lee, MD, PhD, were awarded one of the first grants to study the genetics of cardiometabolic diseases. The consortium includes investigators from five VA hospitals (Palo Alto, Philadelphia, Phoenix, Bedford, and Albany) as well as the University of Pennsylvania. The goal is to establish an analytic pipeline to link clinical data from the VA electronic health records to genome wide genetic data generated in the first 200,000 MVP participants.

A National Program to Diagnose Difficult-to-Diagnose Patients is Taking Root

By Jennie Duscheck Medical School’s Office of Communication & Public Affairs

The National Institutes of Health’s Undiagnosed Diseases Network launched in September, and Euan Ashley, MRCP, DPhil, Associate Professor of cardiovascular medicine and of genetics at the Stanford University School of Medicine, has been named co-chair of the UDN steering committee.

The network, which seeks to provide answers for patients with mysterious conditions and to advance medical knowledge of both rare and common diseases, is an outgrowth of a smaller NIH program begun in 2008 called the Undiagnosed Disease Program. The new, expanded network inaugurates an online application gateway for patients, called the UDN Gateway, that will harness the expertise of physicians at six major medical centers across the United States, while integrating patient access, patient consent forms and patient genome and other data through a single Internet portal. Within two years, the UDN expects to handle 250 patients per year.

For more visit: https://med.stanford.edu/news/all-news/2015/09/5-questions-euan-ashley-on-diagnosing-the-undiagnosable.html

Building a Solid Foundation

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For more on SCCR visit: http://med.stanford.edu/scr.html
In the summer, the Cardiovascular Institute initiated a new postdoctoral fellow research award. The award was established to support scholars with promising research. Next deadline will be in the Winter 2016 visit cvi.stanford.edu for details.

**Postdoctoral Research Award**

**Jennifer Tremmel, MD**, Assistant Professor of Medicine, was appointed the Susan P. and Riley P. Bechtel Medical Director, an endowed position that supports her existing role as the Clinical Director of the Women’s Heart Health Program at Stanford Health Care. The focus of Dr. Tremmel’s research is sex differences in cardiovascular disease. She studies how men and women differ in coronary endothelial function, plaque deposition and the circulation of blood in the smallest blood vessels in men and women who have chest pain despite having normal-appearing coronary arteries. Dr. Tremmel is the inaugural holder of the Directorship.

**Ronald Witteles, MD**, was promoted to Associate Professor of Internal medicine. He is also Co-Director of the Stanford Amyloid Center, the largest center of its kind in the western United States. His research focuses on emerging treatments for systemic amyloidosis, cardiac complications of cancer therapy, and evolving diagnostic/therapeutic strategies for cardiac sarcoidosis.

**Notable People**

**Arjun Adhikari, PhD**  
*James Spudich lab*  
The effect of pediatric specific HCM mutations on β cardiac myosin power generation

**Jin Qian, PhD**  
*Mark Nicolls lab*  
The role of leukotriene B4 in the development of pulmonary arterial hypertension

**Mingtao Zhao, PhD**  
*Joseph C. Wu lab*  
Epigenetic mechanisms of phenotypic maturation of human iPSC-derived endothelial cells

**Guang Li, PhD**  
*Sean Wu lab*  
Characterization of atrial cardiomyocyte lineage commitment at single cell level

**Alison Marsden, PhD**, was appointed Associate Professor of Pediatrics and of Bioengineering. Marsden specializes in pediatric and congenital heart disease, using simulations of blood flow to improve medical device design and imaging, and to study the progression of heart disease. She also works with clinical researchers to develop tools for personalized medicine and treatment planning.
Recently Awarded Projects

Russ B. Altman, MD, PhD
NIH | 'Text Mining for High-fidelity Curation and Discovery of Gene-drug-phenotype Relations’

Alex Dunn, PhD
NIH | Understanding Force-dependent Binding of Alpha-catenin to Actin

Craig Levin, PhD
NIH | ‘RF-penetrable PET Ring for Acquiring Simultaneous Time-of-flight PET and MRI Data’

Daria Mochly-Rosen, PhD
NIH | Molecular Pharmacology Training Grant

Dwight G. Nishimura, PhD
NIH | Coronary Magnetic Resonance Angiography

Sanjiv Narayan, MD
NIH | ‘The Maintenance of Human Atrial Fibrillation’

Mary Frances Teruel, PhD
NIH | ‘Controlling Tissue Size by Noise and Feedback’

Seda Tierney, MD
AHA | On-line Intervention to Lower Cardiovascular Risk in Pediatric Heart Transplant Patients

Fan Yang, PhD
CIRM | ‘Injectable Macroporous Matrices to Enhance Stem Cell Engraftment and Survival’

New Clinical Trials

Jeffrey A. Feinstein, MD
Perioperative Treprostinil in Pediatric Patients Undergoing the Fontan Operation

Ronald M. Witteles, MD
A Phase 3 Multicenter, Multinational, Randomized, Double-Blind, Placebo Controlled Study to Evaluate the Efficacy and Safety of ALN-TTRSC in Patients with Transthyretin (TTR) Mediated Familial Amyloidotic Cardiomyopathy (FAC)

Richard-Tien Van Ha, MD
HeartMate® III IDE Clinical Study Protocol

Roham T. Zamanian, MD
A Phase 2, Dose-Ranging, Randomized, Double-Blind, Placebo-Controlled Study of GS-4997 in Subjects with Pulmonary Arterial Hypertension

Faculty Search

The Department of Medicine and the Cardiovascular Institute at the Stanford University School of Medicine seek a clinical investigator to join the Department as Assistant Professor or Associate Professor or Professor in the University Tenure Line (UTL) or the Medical Center line (MCL). For more information visit: http://med.stanford.edu/cvi.html
Through a generous gift, the Stanford Cardiovascular Institute established its first fund for Stanford Medical students. Students select 124 faculty at Stanford across diverse disciplines. We called it iHeart Research because it takes a passion for solving problems and dedication to the one disease that continues to be the number one cause of death. Applications will be accepted until end of 2015.

**Grant Details:**
The application includes a:

- Two-page proposal
- One letter of recommendation

**Award Perks:**
- Up to a $15,000 stipend
- Choose a mentor from a list of faculty at Stanford specializing in surgery, engineering, health policy, stem cells, and regenerative medicine etc.

**Links to:**
- » Our Members
- » Research Disciplines

Questions? Contact iibarra@stanford.edu
http://med.stanford.edu/cvi/research/i-heart-research-award.html

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**Funding Opportunities**

### POSTDOCTORAL FELLOWS

**OCTOBER**

- **K01 Mentored Research Scientist Development Awards**
  Deadline: Oct. 12, 2015
  PA-14-044

- **K08 Mentored Clinical Research Career Development Award**
  Deadline: Oct. 12, 2015
  PA-14-046

- **K23 Mentored Patient-Oriented Research Career Development Award**
  Deadline: Oct. 12, 2015
  PA-14-049

- **K99/R00 NIH Pathway to Independence Award**
  Deadline: Oct. 12, 2015
  PA-15-083

**NOVEMBER**

- **A.P. Giannini Foundation Postdoctoral Research Fellowship**
  Amount of funding: $46-50K for 3 years
  Deadline: Nov. 3, 2015
  Giannini Postdoc

- **Stanford University**
  Cardiovascular Institute
  CVI Travel & Exchange Ideas Award
  Deadline: Nov. 15, 2015

**DECEMBER**

- **National Institutes of Health POSTDOCS**
  PA-14-149 Kirschstein National Research Service Award (F32)
  Deadline: Dec. 8, 2015
  PA-14-149

This new meet-up is composed of cardiovascular and pulmonary postdoctoral fellows and students. All are welcome to join in on research discussion and collaborations over beer and light appetizers.

Organizers: Elda Dzilic, MD, Jared Churko, PhD, Jan Hennings, MD, Kiril Penov, MD

Next event: 5 p.m., Dec. 3! Lorry Lokey (SIM1) building.

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**CVI Scholars and Graduate Student Meet-up.**

Be part of the conversation!
Upcoming Cardiovascular Conferences

**OCTOBER**

**Transcatheter Cardiovascular Therapeutics (TCT) 2015**
October 11 - 15, 2015
San Francisco, CA
http://www.crf.org/tct

**Vascular Biology (NAVBO – North American Vascular Biology)**
October 18–22, 2015
Hyannis, MA

**Cardiac Safety Research Consortium (CSRC) Roundtable Discussion: Cardiovascular Safety for Cell Therapies in Development for Cardiovascular Indications**
October 23, 2015
Beltsville, MD
http://cardiac-safety.org/

**NOVEMBER**

**American Heart Association Scientific Sessions 2015**
November 7 – 11, 2015
Orlando, Florida
AHA 2015

**VEITH-Vascular Endovascular Issues Techniques Horizons**
November 17-21, 2015
New York, NY

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The Inaugural Lawrence H. & Roberta Cohn Lecture

12 - 1 p.m., Mon. Nov. 2
Li Ka Shing Center, Paul Berg Hall B & C
291 Campus Drive, Stanford, CA

**David Adams, MD,**
Professor and System Chair Cardiovascular Surgery
Mount Sinai Hospital

Dr. Adams is a leader in the field of heart valve surgery and mitral valve reconstruction. As the Marie-Josée and Henry R. Kravis Professor of Cardiovascular Surgery and Program Director of The Mount Sinai Hospital’s Mitral Valve Repair Reference Center, he has set national benchmarks with > 99% degenerative mitral valve repair rates, while running one of the largest programs in the United States.

Lunch provided.
Registration encouraged.
Register here: http://tinyurl.com/cohn2015

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The faculty and staff of the Vera Moulton Wall Center are proud to present the 15th Annual Race Against PH. A 3.1 mile race dedicated to raising funds and awareness for the fight against pulmonary hypertension (PH), a debilitating disease which affects the heart and lungs of children and adults.

From competitive runners to casual walkers, everyone is welcome. Recruit your family, friends and colleagues to join you. Support a great cause while enjoying the beautiful Stanford campus. We hope to see you on November 1st and THANK YOU for your support!

Presented by the Vera Moulton Wall Center for Pulmonary Vascular Disease at Stanford
For questions or more information 800.640.9255
wallcenter.stanford.edu
Frontiers in Cardiovascular Science

Lunch with Leaders in Cardiovascular Research and Medicine: Tuesdays | 12 - 1 p.m. | LKSC

The Frontiers in Cardiovascular Science seminar series features leaders in the cardiovascular field around the country and Stanford.

OCTOBER 20, 2015
Michael R. Bristow, MD, PhD
Professor of Medicine, Cardiology
CU Cardiovascular Institute (CU CVI)

NOVEMBER 17, 2015
Hesham Sadek, MD, PhD
Assistant Professor
UT Southwestern Medical Center

DECEMBER 01, 2015
Donald M. Bers, PhD
Professor and Chair,
Department of Pharmacology
University of California, Davis

DECEMBER 08, 2015
Anthony Rosenzweig, MD
Professor and Chief,
Cardiovascular Medicine
Harvard, Massachusetts General Hospital

DECEMBER 15, 2015
Gordon F. Tomaselli, MD
Professor and Chief, Cardiovascular Medicine
Johns Hopkins University

JANUARY 12, 2016
Stanley Hazen, MD, PhD
Department Chair, Dept. of Cellular and Molecular Medicine, Cleveland Clinic

JANUARY 19, 2016
Jonathan Seidman, PhD
Professor, Department of Genetics, Harvard Medical School

FEBRUARY 16, 2016
Eric J. Topol, MD
Director, Scripps Translational Science Institute

MARCH 1, 2016
Todd Rosengart, MD, FACS
Professor of Surgery and DeBakey-Bard Chair of Surgery, Baylor

MARCH 8, 2016
Jonathan S. Stamler, MD
Director, Harrington Discovery Institute
Case Western Reserve University

MARCH 15, 2016
Linda L. Demer, MD, PhD
Vice Chair of Cardiovascular and Vascular Medicine Director, UCLA


Available videos feature talks by: Roy P. Vagelos, MD; Jonathan Lindner, MD; Bernard Gersh, MB, ChB, D.Phil; Joseph Hill, MD, PhD; and Joseph Wu, MD, PhD; and many more.

For additional information on the Frontiers in Cardiovascular Science seminar series, and on how to attend, contact CVI Program Manager David L. M. Preston at preston@stanford.edu.

This informal meetup is meant for faculty, junior faculty and instructors to discuss collaborations or data to be submitted and receive input of aims for grant submissions. Contact Crystal Botham, PhD (cbotham@stanford.edu) to participate in the CVI Faculty Club.

November 04, 2015
“Bioengineering control of human stem cell biology”
Oscar Abilez, MD, PhD
Instructor, Medicine - Cardiovascular Medicine

December 02, 2015
Clint Miller, PhD
Instructor, Medicine-Cardiovascular Medicine
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 recently mentioned in Nature Methods news: http://www.nature.com/nmeth/journal/v12/n2/full/nmeth.3263.html.

Clinical Biomarker & Phenotyping Core Lab (BPCL)

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.

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).

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/
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.

**JULY 2015: Selected Publications**


Primary Prevention of Heart Failure in Older Adults. **Maron DJ, Hunt SA. JACC Heart Fail.** 2015 Jul;3(7):529-30.


Screening ECGs for young competitive athletes: it is complicated. **Dubin AM. Curr Opin Pediatr.** 2015 Jul 10. [Epub ahead of print]


Aortic Wall Injury Related to Endovascular Therapy for Aortic Coarctation. Trettter JT, Jones TK, McElhinney DB. Circ Cardiovasc Interv. 2015 Sep;8(9).


September 2015: Selected Publications


Assessment of left main artery stenosis with fractional flow reserve is affected by downstream stenosis in the left anterior descending artery. Bing R, Yong AS, Fearon WF. Coron Artery Dis. 2015 Aug;26 Suppl 1:e35-7.


Contractility of single cardiomyocytes differentiated from pluripotent stem cells depends on physiological shape and substrate stiffness. Ribeiro AJ, Ang YS, Fu JD, Rivas RN, Mohamed TM, Higgs GC, Srivastava D, Pruitt BL. Proc Natl Acad Sci USA. 2015 Sep 28.


Leadership

Joseph C. Wu, MD, PhD
Director, Stanford Cardiovascular Institute
Professor, Dept. of Medicine (Cardiovascular) and Radiology

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

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

Stephen J. Roth MD, MPH
Professor and Chief, Pediatric Cardiology
Chair, 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