



**STANFORD**  
SCHOOL OF MEDICINE

*Stanford University Medical Center*



**Stanford** |  **Cardiovascular  
Institute**

2013–2014



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for Learning and Knowledge  
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<b>2</b>	Letter from the Dean
<b>3</b>	Letter from the Director
<b>6</b>	Leadership
<b>7</b>	Executive Committee
<b>8</b>	Steering Committee
<b>10</b>	External Advisory Board
<b>11</b>	Consulting Professors
<b>12</b>	Staff
<b>13</b>	Vera Moulton Wall Center
<b>14</b>	Research Disciplines
<b>16</b>	Researcher Profiles
<b>83</b>	Education Committee
<b>84</b>	Mechanisms & Innovation in Vascular Disease
<b>86</b>	Research Training in Myocardial Biology
<b>88</b>	Multi-Disciplinary Training Program in Cardiovascular Imaging at Stanford (CVIS)
<b>90</b>	Seed Grants
<b>92</b>	Frontiers in Cardiovascular Science
<b>94</b>	Annual Retreat
<b>95</b>	Giving Opportunities

After my first year as dean, I remain confident that Stanford Medicine is poised to lead the biomedical revolution by advancing innovation, empowering future leaders, and transforming patient care. To advance



innovation, we must seek to protect the high-risk, high-reward science that Stanford is known for. To empower future leaders, we must provide students and trainees with the skills needed for a changing biomedical landscape. And to transform patient care, we must deliver health care that is accountable, coordinated, and patient-centered.

It has been exciting to witness the growth and development of the Stanford Cardiovascular Institute (CVI) under the new leadership of Joseph Wu, MD, PhD, Professor of Cardiovascular Medicine and of Radiology. Stanford has a long, proud history of impact on cardiovascular research and patient care, and innovations emerging from the CVI – from groundbreaking stem cell discoveries to novel methods and tools for disease detection and treatment – continue to transform cardiovascular care. I am especially impressed by the institute's commitment to education through its intensive training programs and many forums for trainees and faculty to exchange research ideas.

The CVI represents the forefront of basic, translational and clinical cardiovascular research at Stanford. It brings together the brilliant scientists, the state-of-the-art facilities, and the resources that are needed to lead the biomedical revolution in cardiovascular research and patient care. Under the leadership of Joseph Wu, I am confident that the Stanford Cardiovascular Institute will be a national leader in advancing innovation, empowering future leaders, and transforming patient care.

A handwritten signature in black ink that reads "Lloyd B. Minor". The signature is written in a cursive, professional style.

**Lloyd B. Minor, MD**

The Carl and Elizabeth Naumann

Professor for the Dean of the School of Medicine

and Professor, by courtesy, of Neurobiology and of Bioengineering



2013 was a dynamic year for the Stanford Cardiovascular Institute (CVI), with many exciting changes and new opportunities for growth. However, our mission remains the same: to deliver excellent clinical



care, offer a world-class education, and conduct cutting-edge cardiovascular research. As heart disease remains the number one killer in developed countries and its incidence is growing rapidly in developing countries, it is imperative that all disciplines of medicine and science work together to tackle this scourge. The CVI is proud to be part of this effort; our members collaborate actively with investigators worldwide to integrate knowledge from diverse disciplines, with the goal of translating basic science discoveries into improved tools for cardiovascular disease detection, prevention and treatment.

In late 2012, Dr. Robert C. Robbins, our previous CVI Director, left to become the President and Chief Executive Officer of the Texas Medical Center. In 2013, I was offered the opportunity to lead the CVI as its Director. It is a demanding role given the NIH funding crisis, yet I am excited about what we have accomplished in 2013 and what we plan to do in the years to come. The CVI, formed a decade ago in 2004, now includes more than 500 Stanford basic scientists, graduate students, clinician-scientists, and other researchers working on heart and vascular disease. A key mission of the institute is to coordinate the activities of scientists, engineers, educators, and physicians committed to improving the cardiovascular health of patients and to educate and train the next generation of leaders in this field.

One of the highest priorities for the CVI is to recruit, retain, and advance the work of premier physicians, scientists, young investigators and students. Towards this goal, we have successfully recruited Sean M. Wu, MD, PhD (see page 78), a pioneer in the discovery of multipotent cardiac progenitor cells and the recipient of an NIH Director's New Innovator Award, from the Cardiovascular Research Center at Massachusetts General Hospital/Harvard Medical School. Furthermore, the CVI has initiated two ongoing faculty searches, one in basic/translational science and one in cardiovascular imaging.

In 2013, we also recruited three outstanding Consulting Professors—a first for the CVI (see page 11): Philip Sager, MD, an expert in cardiovascular drug safety who is active in the regulatory community; Richard Lawn, MD, a former Senior Scientist at Genentech and the former Vice President of Discovery Research at CV Therapeutics; and Eran Leitersdorf, MD, founder and Chairman of the Israeli Atherosclerosis Society and former Dean of the Hebrew University

Faculty of Medicine. Finally, we assembled an external advisory board of leading cardiovascular physicians and scientists from throughout the United States to provide the institute with guidance and counsel (see page 10). We look forward to working closely with our consulting professors and external advisory board members in the coming year to advance the mission of the CVI.

In addition to the CVI's own recruits, we are excited by the recruitment of outstanding new talent to the Stanford University School of Medicine. Kenneth W. Mahaffey, MD (see page 49), an international leader in the design and conduct of large-scale cardiovascular trials, joined the Department of Medicine as the Vice Chair of Medicine for Clinical Research on August 1, 2013. Y. Joseph Woo, MD (see page 76), a nationally recognized heart surgeon and leading researcher in new approaches to cardiovascular care, started as the chair of the Department of Cardiothoracic Surgery on January 1, 2014. David J. Maron, MD (see page 50), a leader in comparative effectiveness research, joined the Division of Cardiovascular Medicine as Clinical Professor and Director of Preventative Cardiology on January 1, 2014. These recruits strengthen the foundation for our institute's goal of being the world's top cardiovascular disease program.

As the home for cardiovascular science at Stanford, one of CVI's main purposes is to fund groundbreaking cardiovascular-related research projects that bring together new collaborative and interdisciplinary groups. With partnership from the Child Health Research Institute (CHRI), the CVI was able to fund eight outstanding seed grants in 2013 that reflect the breadth and vision of the CVI (see page 91).

Education and training of future leaders in cardiovascular research and treatment continues to be central to the mission of the CVI (see page 83). This goal is reflected not only in medical student teaching but also in undergraduate and postdoctoral training, continuing medical education, and summer programs for high school students. We support the administration of three NIH-funded T32 postdoctoral fellow training programs, and in 2013 we developed an intensive K Award Course designed to help CVI-affiliated T32 trainees and postdoctoral fellows develop competitive NIH Career Development Award applications (see page 83). We also provided 18 competitive travel awards for CVI postdoctoral fellows/trainees to present their groundbreaking work at national or international conferences related to cardiovascular research.

### **OTHER HIGHLIGHTS OF THE YEAR INCLUDE THE FOLLOWING:**

- We held a successful CVI Annual Retreat in September with over 200 participants from Stanford University (see page 94). The retreat featured keynote addresses from Shaun Coughlin, MD, PhD, Director of the UCSF Cardiovascular Research Institute, and Paul Yock, MD, Director of Stanford Biodesign.
- We doubled the number of visiting distinguished speakers at our weekly seminar series "Frontiers in Cardiovascular Science" (see page 92). Some of the featured speakers included: Mark Anderson, MD, PhD, Professor and Director of the Cardiovascular Research Center at the University of Iowa Carver College of Medicine; Michael S. Lauer, MD, Director, Division of Cardiovascular Sciences, NHLBI; Jeffrey Robbins, PhD, Profes-

son and Executive Co-Director of the Heart Institute at Cincinnati's Children's Hospital Medical Center; and Norman Stockbridge, Director, Office of Drug Evaluation I - Division of Cardiovascular and Renal Products at the FDA.

- We greatly expanded our communication and outreach efforts. In addition to the monthly CVI newsletter, which primarily targets referring physicians, we now distribute a CVI Quarterly newsletter to our members and leading cardiovascular researchers around the world. This newsletter showcases the academic and research activities and accomplishments of CVI members.
- We set up the CVI Biomarker and Phenotyping Core Laboratory. This new core, led by Francois Haddad, MD (see page 33), will facilitate biomarker research in cardiovascular disease and provide imaging evaluation of cardiac and endothelial function and arterial stiffness.
- We set up the CVI Cardiovascular Pharmacology Core Laboratory. This new core, led by Jayakumar Rajadas, PhD (see page 60), will facilitate transformation of biophysical ideas into biomaterial and drug delivery technologies. These technologies include microencapsulation of drugs, vascular grafts, bio-implants, development of small molecule and protein-based drugs, and regeneration of cardiovascular tissues.
- We hired a clinical trials manager, Edward Finn, to provide support to CVI members and their interdisciplinary clinical research trials.

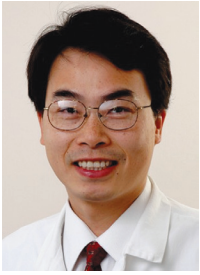
In 2014, the CVI will continue to provide organizational structure and expert resources to help coordinate the activities of scientists, engineers, educators, and physicians committed to improving cardiovascular health. I am confident that our institute will continue its history of leadership in research, clinical care, and education programs in cardiovascular medicine, and maintain our position as one of the premiere organization in cardiovascular medicine. We are determined to reduce the impact of cardiovascular diseases in our lifetime and lay the foundation for eliminating these diseases for future generations.



**Joseph C. Wu, MD, PhD**

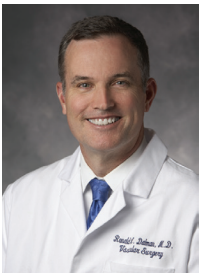
Director, Stanford Cardiovascular Institute

Professor, Department of Medicine (Cardiovascular Medicine) and of Radiology



**Joseph C. Wu, MD, PhD**

Director, Stanford Cardiovascular Institute  
Professor, Department of Medicine (Cardiovascular Medicine) and of Radiology



Ronald L. Dalman



Dominik Fleischmann



Robert A. Harrington



Kenneth W. Mahaffey



Mark R. Nicolls



Thomas Quertermous



Marlene Rabinovitch



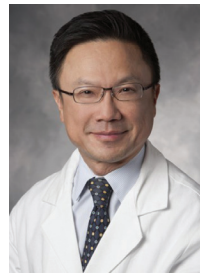
Stephen J. Roth



Michael Snyder



Y. Joseph Woo



Alan C. Yeung



Paul Yock

**Ronald L. Dalman, MD**

Dr. Walter C. Chidester Professor of Surgery  
Chief, Division of Vascular Surgery

**Dominik Fleischmann, MD**

Professor, Department of Radiology  
Chief, Cardiovascular Imaging

**Robert A. Harrington, MD**

Arthur L. Bloomfield Professor of Medicine  
Chair, Department of Medicine

**Kenneth W. Mahaffey, MD**

Professor, Department of Medicine  
Vice Chair of Medicine for Clinical Research

**Mark R. Nicolls, MD**

Associate Professor,  
Department of Medicine  
Chief, Pulmonary and Critical Care Medicine

**Thomas Quertermous, MD**

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

**Marlene Rabinovitch, MD**

Dwight and Vera Dunlevie Professor in Pediatric Cardiology

**Stephen J. Roth, MD, MPH**

Professor and Chief, Pediatric Cardiology  
Director, Children's Heart Center

**Michael Snyder, PhD**

Professor and Chair, Department of Genetics  
Director, Stanford Center for Genomics and Personalized Medicine

**Y. Joseph Woo, MD**

Chair, Cardiothoracic Surgery  
Professor, Cardiothoracic Surgery

**Alan C. Yeung, MD**

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

**Paul Yock, MD**

Martha Meier Weiland Professor  
of Bioengineering and Medicine;  
and Professor, by courtesy,  
of Mechanical Engineering  
Director of Bidesign

The Stanford Cardiovascular Institute (CVI) Executive Committee oversees CVI operations. Its members represent cardiovascular research, education, and clinical care, ensuring that the CVI remains the home for cardiovascular health at Stanford. The committee is comprised of Associate Directors in various disciplines, as listed below, that serve two-year terms.

### Associate Director in Basic Research

#### **Marlene Rabinovitch, MD**

Dwight and Vera Dunlevie Professor  
of Pediatric Cardiology  
Professor (by courtesy), Developmental  
Biology

### Associate Director in Cardiothoracic Surgery

#### **Y. Joseph Woo, MD**

Chair, Cardiothoracic Surgery  
Professor, Cardiothoracic Surgery

### Associate Directors in Cardiovascular Imaging

#### **Dominik Fleischmann, MD**

Professor, Radiology  
Chief, Cardiovascular Imaging  
Director of CT, Stanford Hospital and Clinics  
Medical Director, Stanford 3DQ Lab

#### **Michael V. McConnell, MD, MSEE**

Professor, Medicine - Cardiovascular Medicine  
Professor (by courtesy), Electrical Engineering  
and Molecular and Cellular Physiology  
Co-Director, Noninvasive Imaging Section,  
Division of Cardiovascular Medicine  
Director, Preventive Cardiology Clinic

### Associate Directors in Clinical Research

#### **William Fearon, MD**

Associate Professor,  
Medicine - Cardiovascular Medicine  
Director, Interventional Cardiology

#### **Kenneth W. Mahaffey, MD**

Professor, Medicine – Cardiovascular Medicine  
Vice Chair of Clinical Research, Medicine

### Associate Directors in Cardiovascular Medicine

#### **Alan C. Yeung, MD**

Li Ka Shing Professor of Medicine (Cardiology)  
Medical Director, Cardiovascular Health,  
Stanford Medicine  
Chief (Clinical),  
Division of Cardiovascular Medicine

#### **Thomas Quertermous, MD**

William G. Irwin Professor  
in Cardiovascular Medicine  
Chief (Research),  
Division of Cardiovascular Medicine

### Associate Director in Education and Training

#### **Daniel Bernstein, MD**

Alfred Woodley Salter and Mabel G. Salter  
Endowed Professor of Pediatrics (Cardiology)  
Stanford University

### Associate Director in Finance and Administration

#### **Jason Irwin**

Director of Finance and Administration

### Associate Director in Innovation

#### **Paul Yock, MD**

Martha Meier Weiland Professor of Medicine  
Professor, Bioengineering  
Professor, Medicine - Cardiovascular Medicine  
Professor (by courtesy), Mechanical Engineering  
and Graduate School of Business  
Director, Stanford Bidesign

### Associate Director in Junior Faculty Development

#### **Jennifer A. Tremmel, MD, MS**

Assistant Professor, Medicine -  
Cardiovascular Medicine  
Clinical Director, Women's Heart Health  
at Stanford

### Associate Directors in Outcome & Prevention

#### **Mark Hlatky, MD**

Professor, Health Research and Policy  
Professor, Medicine - Cardiovascular Medicine  
Director, Stanford-Kaiser Cardiovascular  
Outcomes Research Center  
Director, Health Services Research  
Masters Degree Program

#### **Marcia L. Stefanick, PhD**

Professor, Medicine -  
Stanford Prevention Research Center  
Professor, Obstetrics and Gynecology

#### **Paul A. Heidenreich, MD, MS**

Professor, Medicine - Cardiovascular Medicine  
Professor (by courtesy), Health Research  
and Policy  
Director of Echocardiography, VAPHCS  
Research Associate, Primary Care  
and Outcomes Research Center

### Associate Director in Program Management

#### **Janet Kalesnikoff, PhD**

Associate Director,  
Stanford Cardiovascular Institute

### Associate Director in Translational Research

#### **Philip S. Tsao, PhD**

Professor, Medicine - Cardiovascular Medicine  
Associate Chief of Staff for Research  
and Development, VAPAHCS

### Associate Director In Translational Research

#### **Sean M. Wu, MD, PhD**

Assistant Professor,  
Medicine - Cardiovascular Medicine  
Assistant Professor (by courtesy), Pediatrics  
Endowed Faculty Scholar,  
Child Health Research Institute

### Associate Director in Vascular Surgery

#### **Ronald L. Dalman, MD**

Dr. Walter C. Chidester Professor of Surgery  
Chief, Division of Vascular Surgery



The Stanford Cardiovascular Institute (CVI) Steering Committee is responsible for providing guidance on the overall strategic direction of the institute. This committee, which includes representatives from the major areas of cardiovascular disease research and clinical care, provides guidance on and oversight of CVI objectives and initiatives.

**Joseph C. Wu, MD, PhD**

Professor, Medicine -  
Cardiovascular Medicine  
Professor, Radiology  
Director, Stanford Cardiovascular  
Institute

**Euan A. Ashley, MRCP, DPhil**

Associate Professor, Medicine -  
Cardiovascular Medicine  
Associate Professor, Genetics  
Associate Professor (by courtesy),  
Pathology  
Director, Stanford Center for Inherited  
Cardiovascular Disease  
Director, Stanford Cardiopulmonary  
Exercise Testing Laboratory  
Co-Director, Clinical Genomics Service

**Daniel Bernstein, MD**

Alfred Woodley Salter and Mabel G.  
Salter Endowed Professor of Pediatrics  
(Cardiology) Stanford University

**Atul Butte, MD, PhD**

Chief, Division of Systems Medicine  
Associate Professor, Pediatrics  
Associate Professor, Genetics  
Associate Professor (by courtesy),  
Computer Science, Medicine  
and Pathology

**Michael D. Dake, MD**

Thelma and Henry Doelger Professor  
of Cardiothoracic Surgery  
Medical Director, Cath/Angio  
Laboratories

**Ronald L. Dalman, MD**

Dr. Walter C. Chidester  
Professor of Surgery  
Chief, Division of Vascular Surgery

**Alexander Dunn, PhD**

Assistant Professor,  
Chemical Engineering

**William Fearon, MD**

Associate Professor, Medicine -  
Cardiovascular Medicine  
Director, Interventional Cardiology

**Dominik Fleischmann, MD**

Professor, Radiology  
Chief, Cardiovascular Imaging  
Director of CT, Stanford Hospital and Clinics  
Medical Director, Stanford 3DQ Lab

**Francois Haddad, MD**

Clinical Assistant Professor, Medicine  
Director, Stanford CVI Biomarker and  
Phenotypic Core Laboratory

**Robert A. Harrington, MD**

Arthur L. Bloomfield  
Professor of Medicine  
Chair, Department of Medicine  
Director of Clinical Investigation,  
Stanford Cardiovascular Institute

**Sarah Heilshorn, PhD**

Assistant Professor, Materials Science  
and Engineering  
Assistant Professor (by courtesy),  
Chemical Engineering  
Assistant Professor (by courtesy),  
Bioengineering

**Paul A. Heidenreich, MD, MS**

Professor, Medicine -  
Cardiovascular Medicine  
Professor (by courtesy),  
Health Research and Policy  
Director of Echocardiography, VAPAHCS  
Research Associate, Primary Care and  
Outcomes Research Center

**Mark Hlatky, MD**

Professor, Health Research and Policy  
Professor, Medicine -  
Cardiovascular Medicine  
Director, Stanford-Kaiser Cardiovascular  
Outcomes Research Center  
Director, Health Services Research  
Masters Degree Program

**Ngan F. Huang, PhD**

Assistant Professor, Cardiothoracic  
Surgery - Adult Cardiac Surgery  
Biomedical Engineer,  
VA Palo Alto Health Care System

**Joshua W. Knowles, MD, PhD**

Instructor, Medicine -  
Cardiovascular Medicine

**Brian Kobilka, MD**

Helene Irwin Fagan Chair in Cardiology  
Professor, Molecular and Cellular  
Physiology  
Professor, Medicine -  
Cardiovascular Medicine  
Professor (by courtesy), Chemical  
and Systems Biology

**Mark A. Krasnow, MD, PhD**

Professor, Biochemistry  
Investigator, Howard Hughes  
Medical Institute  
Executive Director, Wall Center  
for Pulmonary Vascular Diseases

**Nicholas Leeper, MD**

Assistant Professor, Surgery -  
Vascular Surgery  
Assistant Professor, Medicine -  
Cardiovascular Medicine

## Steering Committee

---

**David Liang, MD, PhD**

Associate Professor, Medicine -  
Cardiovascular Medicine  
Associate Professor (by courtesy),  
Electrical Engineering  
Director, Stanford Center for Marfan  
Syndrome and Aortic Disorders

**Kenneth W. Mahaffey, MD**

Professor, Medicine -  
Cardiovascular Medicine  
Vice Chair of Clinical Research, Medicine

**Michael V. McConnell, MD, MSEE**

Professor, Medicine -  
Cardiovascular Medicine  
Professor (by courtesy), Electrical  
Engineering and Molecular  
and Cellular Physiology  
Co-Director, Noninvasive Imaging Section,  
Division of Cardiovascular Medicine  
Director, Preventive Cardiology Clinic

**Daria Mochly-Rosen, PhD**

George D. Smith  
Professor of Translational Medicine  
Professor, Chemical and Systems Biology  
Professor (by courtesy), Neurosurgery  
Co-director, SPARK - Stanford's  
Translational Research Program

**Philip E. Oyer, MD**

Roy B. Cohn-Theodore A. Falasco  
Professor in Cardiothoracic Surgery  
2013 Interim Chair, Cardiothoracic Surgery

**Thomas Quertermous, MD**

William G. Irwin  
Professor in Cardiovascular Medicine  
Chief (Research),  
Division of Cardiovascular Medicine

**Marlene Rabinovitch, MD**

Dwight and Vera Dunlevie  
Professor of Pediatric Cardiology  
Professor (by courtesy),  
Developmental Biology

**Jayakumar Rajadas, PhD**

Director, BioADD  
Assistant Director, Cardiovascular  
Pharmacology, CVI

**James Spudich, PhD**

Douglass M. and Nola Leishman  
Professor of Cardiovascular Disease  
Professor, Biochemistry

**Marcia L. Stefanick, PhD**

Professor, Medicine -  
Stanford Prevention Research Center  
Professor, Obstetrics and Gynecology

**Jennifer A. Tremmel, MD, MS**

Assistant Professor, Medicine -  
Cardiovascular Medicine  
Clinical Director, Women's Heart Health  
at Stanford

**Philip S. Tsao, PhD**

Professor, Medicine -  
Cardiovascular Medicine  
Associate Chief of Staff for Research  
and Development, VAPAHCS

**Minang 'Mintu' Turakhia, MD, MAS**

Assistant Professor, Medicine -  
Cardiovascular Medicine  
Director, Cardiac Electrophysiology  
at the VAPAHCS

**Paul J. Utz, MD**

Professor, Medicine -  
Immunology and Rheumatology  
Program Director, Medical Scientist  
Training Program (MSTP)

**Hannah A. Valentine, MD, MRCP**

Professor, Medicine -  
Cardiovascular Medicine  
Senior Associate Dean for Diversity  
and Leadership

**Paul J. Wang, MD**

Professor, Medicine -  
Cardiovascular Medicine  
Professor (by courtesy), Bioengineering  
Director, Cardiac Arrhythmia Service  
and Cardiac Electrophysiology  
Laboratory

**Y. Joseph Woo, MD**

Chair, Cardiothoracic Surgery  
Professor, Cardiothoracic Surgery

**Sean M. Wu, MD, PhD**

Assistant Professor, Medicine -  
Cardiovascular Medicine  
Assistant Professor (by courtesy),  
Pediatrics  
Endowed Faculty Scholar,  
Child Health Research Institute

**Phillip C. Yang, MD**

Associate Professor, Medicine -  
Cardiovascular Medicine  
Director, Laboratory for Cellular  
and Molecular MRI of Cardiovascular  
Stem Cells  
Director, Cardiothoracic MRI Program

**Alan C. Yeung, MD**

Li Ka Shing Professor of Medicine  
(Cardiology)  
Medical Director, Cardiovascular Health,  
Stanford Medicine  
Chief (Clinical),  
Division of Cardiovascular Medicine

**Paul Yock, MD**

Martha Meier Weiland Professor  
of Medicine  
Professor, Bioengineering  
Professor, Medicine -  
Cardiovascular Medicine  
Professor (by courtesy), Mechanical  
Engineering and Graduate School  
of Business  
Director, Stanford Biodesign

## External Advisory Board

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**C. Noel Bairey Merz, MD, FACC, FAHA**

Women's Guild Endowed Chair in Women's Health  
Director, Barbra Streisand Women's Heart Center  
Director, Preventive Cardiac Center  
Professor of Medicine  
Cedars-Sinai Medical Center



**Joseph Loscalzo MD, PhD**

Chairman, Department of Medicine  
Brigham and Women's Hospital  
Hersey Professor of the Theory  
and Practice of Medicine  
Harvard Medical School  
Editor, *Circulation*



**Roberto Bolli MD, FAHA**

Professor of Medicine, Physiology and Biophysics  
Director, Institute of Molecular Biology  
Chief, Division of Cardiology  
Vice Chairman for Research  
University of Louisville  
Editor, *Circulation Research*



**Douglas Losordo, MD**

Adjunct Professor of Medicine  
Northwestern University  
Chief Medical Officer, NeoStem, Inc.



**Michael Bristow, MD, PhD**

Professor, Medicine  
University of Colorado



**Eric Olson, PhD**

Professor and Chair, Molecular Biology  
UT Southwestern Medical Center



**Victor J. Dzau, MD**

President and CEO  
Duke University Health System



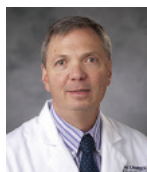
**Robert C. Robbins, MD**

President and CEO  
Texas Medical Center



**Jonathan Epstein, MD**

William Wikoff Smith Professor of Medicine  
Chair, Department of Cell  
and Developmental Biology  
Scientific Director, Penn Cardiovascular Institute  
University of Pennsylvania



**Howard Rockman, MD**

Professor, Medicine  
Duke University Medical Center  
Editor, *Journal of Clinical Investigation*



**Judith S. Hochman, MD**

Senior Associate Dean for Clinical Sciences  
Co-Director, NYU-HHC Clinical  
and Translational Science Institute  
Harold Snyder Family Professor  
and Associate Director of Cardiology  
New York University School of Medicine



**Eric J. Topol, MD**

Director, Scripps Translational  
Science Institute  
Chief Academic Officer, Scripps Health  
Professor of Genomics  
The Scripps Research Institute



**Leslie Leiwand, PhD**

Chief Scientific Officer, BioFrontiers Institute  
Professor, Department of Molecular  
Cellular and Developmental Biology  
University of Colorado



**Clyde Yancy, MD**

Magerstadt Professor of Medicine  
Professor of Medical Social Science  
Chief, Division of Cardiology  
Northwestern University Feinberg School of Medicine  
Associate Director, Bluhm Cardiovascular Institute  
Northwestern Memorial Hospital

## Consulting Professors



**Philip Sager, MD**  
Consulting Professor of Medicine  
Stanford University School of Medicine  
Chair, Scientific Programs Committee,  
Cardiac Safety Research Consortium  
Pharmaceutical/device Consultant



**Richard M. Lawn, PhD**  
Consulting Professor  
Stanford Cardiovascular Institute



**Eran Leitersdorf, MD**  
Visiting professor from the Hebrew  
University Hadassah Medical Center

### CARDIOVASCULAR INSTITUTE EXTERNAL ADVISORY BOARD



#### DID YOU KNOW?

// The external advisory board is comprised of recognized leaders in the cardiovascular field who bring a broad range of expertise to help the CVI continue to do outstanding science. The committee provides advise on initiatives and strategic directions for the Stanford CVI.



**Joseph C. Wu, MD, PhD**  
Director  
joewu@stanford.edu



**Stefan Pavlovic**  
Grants and Contracts Manager  
zakp@stanford.edu



**Janet Kalesnikoff, PhD**  
Associate Director  
jkalesni@stanford.edu



**Michal Bental Roof, PhD**  
T32 Training Grant/Med223 Coordinator  
mroof@stanford.edu



**Jason Irwin**  
Director of Finance and Administration  
jirwin@ohns.stanford.edu



**Joseph Gold, PhD**  
Assistant Director of Translational Research  
jgold@stanford.edu



**David L. M. Preston**  
Program Manager  
preston@stanford.edu



**Crystal Botham, PhD**  
Grants Specialist  
cbotham@stanford.edu



**Edward Finn**  
Clinical Trials Manager  
efinn@stanford.edu



**Danielle deLeon**  
Website Administrator  
ddeleon@stanford.edu



Established in 2001, the Vera Moulton Wall Center became part of the Stanford Cardiovascular Institute in 2010. The Wall Center seeks to enhance the lives of patients with pulmonary vascular disease by providing the highest level of clinical care, providing advanced training opportunities for physicians and other health care providers, and participating in clinical and bench-top research in pulmonary vascular disease.

A leader in clinical care, the Wall Center is one of the largest combined adult and pediatric pulmonary hypertension (PH) programs in the nation. The eBay clinical fellowship provides intensive clinical training in pulmonary vascular disease and Stanford is one of the few programs in the nation to offer this advanced training.

The Wall Center Seed Grant program was started in 2011 to foster new collaborations between programs and to promote innovative and groundbreaking research in pulmonary hypertension campus wide. To date, more than \$750k has been awarded to support promising bench, clinical, and translational research projects.

Active in the community, the Wall Center proudly hosts the annual 5k Race Against PH. With more than 2,000 participants, the event brings together patients, families, care providers, and the community to raise funds and awareness for pulmonary hypertension.

Along with the Wall Center's cutting-edge research, education, and clinical programs, Stanford boasts internationally recognized experts in pulmonary hypertension and pulmonary vascular disease which add to the wealth of collaborative and innovative opportunities within the Cardiovascular Institute. For more about the Wall Center visit: [wallcenter.stanford.edu](http://wallcenter.stanford.edu)



**Mark A. Krasnow, MD, PhD**  
Executive Director



**Jeffrey Feinstein, MD, MPH**  
Director



**Kristine Kerivan**  
Administrative Director



**Lori Barth**  
Administrative Associate



**Victoria Rodrigues**  
Administrative Associate

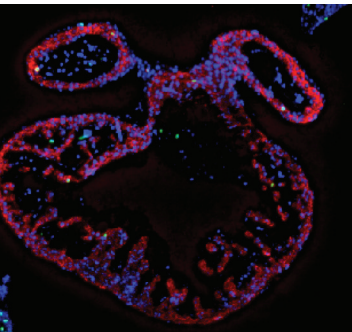


The Stanford Cardiovascular Institute (CVI) provides a home for cardiovascular research across the Stanford campus. As a center of intellectual and scientific activity, the CVI provides resources to its members to stimulate discovery, translation, and implementation of new treatments, diagnostics, and preventive medicine.

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### BIOENGINEERING:

Ramin Beygui, MD  
Alexander Dunn, PhD  
Sarah Heilshorn, PhD  
Ngan F. Huang, PhD  
Ellen Kuhl, PhD  
Nick Melosh, PhD  
Ada Poon, PhD  
Beth Pruitt, PhD  
Stephen Quake, DPhil  
Fan Yang, PhD  
Peter Yang, PhD  
Richard Zare, PhD



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### BIOMARKERS:

Themistocles Assimes, MD, PhD  
Mark M. Davis, PhD  
Francois Haddad, MD  
Holden Maecker, PhD  
Stanley G. Rockson, MD  
Paul J. Utz, MD  
Cornelia M. Weyand, MD, PhD

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### CARDIOVASCULAR

#### IMAGING:

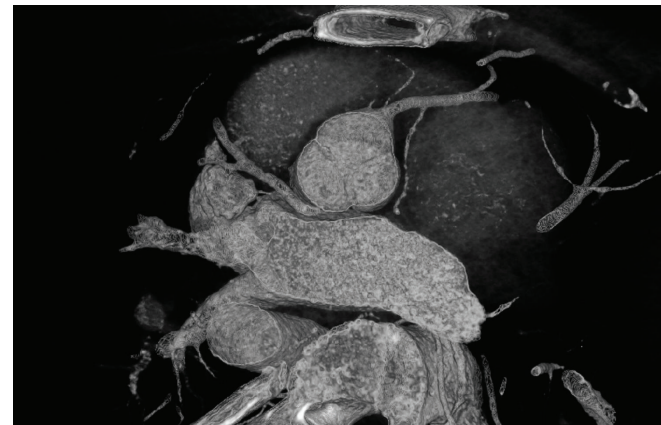
Rajesh Dash, MD, PhD  
Dominik Fleischmann, MD  
Sanjiv 'Sam' Gambhir, MD, PhD  
Craig Levin, PhD  
Michael V. McConnell, MD, MSEE  
Patricia K. Nguyen, MD  
Joseph C. Wu, MD, PhD  
Phillip C. Yang, MD

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### CELLULAR

#### & MOLECULAR BIOLOGY:

Alexander Dunn, PhD  
Brian Kobilka, MD  
Matthew Porteus, MD  
James Spudich, PhD



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### CLINICAL (ADULT):

Michael D. Dake, MD  
William Fearon, MD  
Michael Fischbein, MD, PhD  
Robert A. Harrington, MD  
Sharon Hunt, MD  
David Lee, MD  
Kenneth W. Mahaffey, MD  
David J. Maron, MD  
Philip E. Oyer, MD  
Stanley G. Rockson, MD  
Paul J. Wang, MD  
Ronald Witteles, MD  
Y. Joseph Woo, MD  
Alan C. Yeung, MD

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### CLINICAL (PEDIATRICS):

Daniel Bernstein, MD  
Anne Dubin, MD  
David Rosenthal, MD  
Stephen J. Roth, MD, MPH

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## DEVELOPMENTAL

### BIOLOGY:

Daniel Bernstein, MD  
Gerald R. Crabtree, MD  
Mark A. Krasnow, MD, PhD  
Pilar Ruiz-Lozano, PhD  
Sean M. Wu, MD, PhD

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## GENOMICS

### & BIOINFORMATICS:

Russ B. Altman, MD, PhD  
Themistocles Assimes, MD, PhD  
Euan A. Ashley, MRCP, DPhil  
Carlos Bustamante, PhD  
Atul Butte, MD, PhD  
Joshua W. Knowles, MD, PhD  
Thomas Quertermous, MD  
Michael Snyder, PhD

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## ION CHANNELS

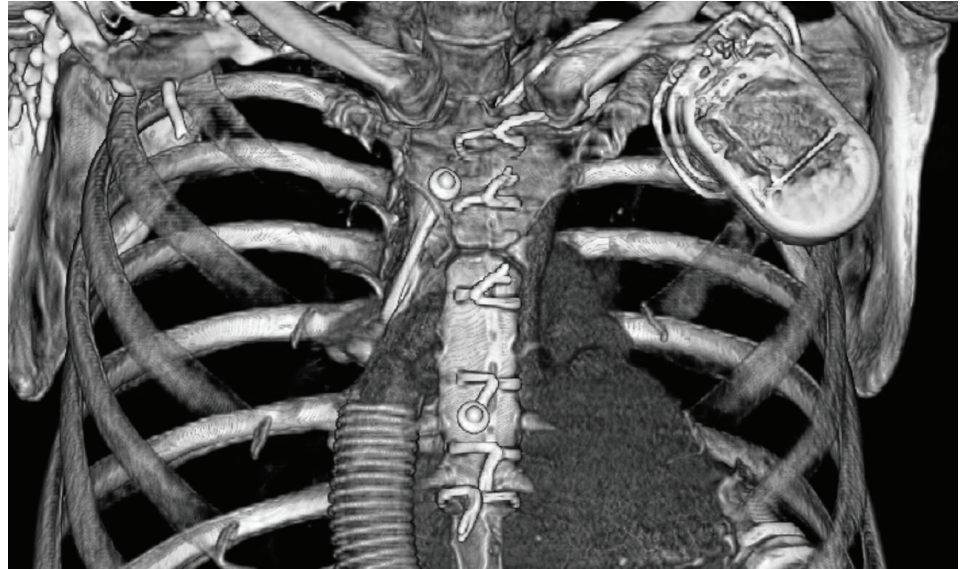
### & ARRHYTHMIAS:

Bianxiao Cui, PhD  
Ricardo Dolmetsch, PhD  
Merritt Maduke, PhD  
Paul J. Wang, MD  
Minang 'Mintu' Turakhia, MD, MAS

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## INNOVATION:

Todd Brinton, MD  
Peter J. Fitzgerald, MD, PhD  
Yasuhiro Honda, MD  
Jayakumar Rajadas, PhD  
Daria Mochly-Rosen, PhD  
Paul Yock, MD



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## METABOLIC DISEASES:

Brian Feldman, MD  
Fred Kraemer, MD  
Thomas Quertermous, MD  
Gerald Reaven, MD

---

## OUTCOMES & PREVENTION:

Themistocles Assimes, MD, PhD  
Glenn Chertow, MD, PhD  
Victor Froelicher, MD  
Christopher Gardner, PhD  
Robert A. Harrington, MD  
Paul A. Heidenreich, MD, MS  
Mark Hlatky, MD  
John P. A. Ioannidis, MD, DSc  
Philip Lavori, PhD  
Kenneth W. Mahaffey, MD  
David J. Maron, MD  
Jonathan Myers, PhD  
Marcia L. Stefanick, PhD  
Wolfgang Winkelmayr, MD, ScD  
Minang 'Mintu' Turakhia, MD, MAS

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## PULMONARY BIOLOGY:

Vinicio A. de Jesus Perez, MD  
Mark A. Krasnow, MD, PhD  
Mark R. Nicolls, MD  
Marlene Rabinovitch, MD

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## STEM CELL BIOLOGY:

Helen M. Blau, PhD  
Michael Longaker, MD  
Irving Weissman, MD  
Y. Joseph Woo, MD  
Joseph C. Wu, MD, PhD  
Sean M. Wu, MD, PhD  
Phillip C. Yang, MD

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## VASCULAR BIOLOGY:

Ronald L. Dalman, MD  
Calvin Kuo, MD, PhD  
Jason T. Lee, MD  
Nicholas Leeper, MD  
Stanley G. Rockson, MD  
Philip S. Tsao, PhD

---

## WOMEN'S HEALTH:

Kiran Khush, MD  
Marcia L. Stefanick, PhD  
Jennifer A. Tremmel, MD, MS  
Hannah A. Valentine, MD, MRCP



## RESEARCHER PROFILES



**6/1980**  
**Dr. Norman Shumway, right,**  
**performs a heart bypass**  
**surgery.**

Credit: Jose Mercado / Stanford News Service





## Euan A. Ashley, MRCP, DPhil

Associate Professor, Medicine - Cardiovascular Medicine  
 Associate Professor, Genetics  
 Associate Professor (by courtesy), Pathology  
 Director, Stanford Center for Inherited Cardiovascular Disease  
 Director, Stanford Cardiopulmonary Exercise Testing Laboratory  
 Co-Director, Clinical Genomics Service

EMAIL [euan@stanford.edu](mailto:euan@stanford.edu)

PROFILE [med.stanford.edu/profiles/Euan\\_Ashley](http://med.stanford.edu/profiles/Euan_Ashley)

LAB [ashleylab.stanford.edu](http://ashleylab.stanford.edu)

CENTER [familyheart.stanford.edu](http://familyheart.stanford.edu)

### EDUCATION/TRAINING

MD University of Glasgow

DPhil University of Oxford

### MEDICINE INTERNSHIP

University of Glasgow

### MEDICINE RESIDENCY

University of Oxford

### CARDIOLOGY FELLOWSHIP

Stanford University

### BOARD CERTIFICATION MRCP (UK)

### CLINICAL FOCUS

Cardiology  
 Heart Failure  
 Genomic Medicine  
 Inherited Cardiovascular Disease

### HONORS & AWARDS

NIH Director's New Innovator Award  
 Innovative Research Award, American Heart Association (AHA)  
 Faculty Scholar, Donald E. and Delia B. Baxter Foundation  
 NIH Career Development Award  
 Western Affiliates Young Investigator Award, AHA  
 Cardiovascular Medicine Basic Science Award, Stanford University  
**MEMBER** Institute of Medicine Roundtable on Translating Genomic-based Research for Health  
**LEADERSHIP COMMITTEE**  
 AHA Council on Functional Genomics and Translational Biology

### CURRENT RESEARCH

My lab is focused on the application of genomics to medicine. We develop methods for the interpretation of whole genome sequencing data to improve diagnosis of genetic disease and to personalize the practice of medicine. We love big data questions and are obsessed with systems approaches to biology especially analysis of network graphs. The wet bench is where we test causality of key genes and investigate the biology of network modules. It is also the focus of our translational efforts. Therapeutic development is a near term goal and several of our discoveries are the focus of patents or are being actively pursued by pharmaceutical and biotechnology partners.

If your dreams do not scare you, they are not big enough. - Ellen Johnson Sirleaf

### SELECTED PUBLICATIONS

**Abnormal Calcium Handling Properties Underlie Familial Hypertrophic Cardiomyopathy Pathology in Patient-Specific Induced Pluripotent Stem Cells.** Lan F, Lee AS, Liang P, Sanchez-Freire V, Nguyen PK, Wang L, Han L, Yen M, Wang Y, Sun N, Abilez OJ, Hu S, Ebert AD, Navarrete EG, Simmons CS, Wheeler M, Pruitt B, Lewis R, Yamaguchi Y, Ashley EA, Bers DM, Robbins RC, Longaker MT, Wu JC. *Cell Stem Cell*. 2013; 12(1): 101-13.

**Personal omics profiling reveals dynamic molecular and medical phenotypes.** Chen R, Mias GI, Li-Pook-Tham J, [+31 authors], Altman RB, Butte AJ, Ashley EA, Gerstein M, Nadeau KC, Tang H, Snyder M. *Cell*. 2012; 148(6): 1293-307

**APJ acts as a dual receptor in cardiac hypertrophy.** Scimia MC, Hurtado C, Ray S, Metzler S, Wei K, Wang J, Woods CE, Purcell NH, Catalucci D, Akasaka T, Bueno OF, Vlasuk GP, Kaliman P, Bodmer R, Smith LH, Ashley E, Mercola M, Brown JH, Ruiz-Lozano P. *Nature*. 2012; 488(7411): 394-8.

**Phased whole-genome genetic risk in a family quartet using a major allele reference sequence.** Dewey FE, Chen R, Cordero SP, [+21 authors], Rehm HL, Church GM, West JS, Bustamante CD, Snyder M, Altman RB, Klein TE, Butte AJ, Ashley EA. *PLoS Genet*. 2011; 7(9): e1002280.

**Gene coexpression network topology of cardiac development, hypertrophy, and failure.** Dewey FE, Perez MV, Wheeler MT, Watt C, Spin J, Langfelder P, Horvath S, Hannenhalli S, Cappola TP, Ashley EA. *Circ Cardiovasc Genet*. 2011; 4: 26-35.

**Clinical assessment incorporating a personal genome.** Ashley EA, Butte AJ, Wheeler MT, [+24 authors], Church GM, Greely HT, Quake SR, Altman RB. *Lancet*. 2010; 375(9725): 1525-35.





## Themistocles 'Tim' Assimes, MD, PhD

Assistant Professor, Medicine - Cardiovascular Medicine  
 Attending Cardiologist, Palo Alto VA Health Care System

EMAIL [tassimes@stanford.edu](mailto:tassimes@stanford.edu)

PROFILE [med.stanford.edu/profiles/Themistocles\\_Assimes](http://med.stanford.edu/profiles/Themistocles_Assimes)

### EDUCATION/TRAINING

MD McGill University

PhD McGill University

### MEDICINE RESIDENCY

McGill University

### CARDIOLOGY FELLOWSHIP

Stanford University

### BOARD CERTIFICATION

Cardiovascular Medicine, ABIM

### CLINICAL FOCUS

Echocardiography

General Cardiology

Primary and Secondary Prevention of  
 Coronary Artery Disease

### HONORS & AWARDS

NIDDK K23 Mentored Patient-Oriented  
 Research Career Development Award

NHLBI BAA 2012 Award, Women's  
 Health Initiative

Edwin L. Alderman award for  
 excellence in Clinical Cardiovascular  
 Research as a Fellow

### CO-CHAIR

Genetics, Proteomics & Biomarkers  
 Scientific Interest Group, Women's  
 Health Initiative

### STEERING COMMITTEE

CARDIoGRAM and CARDIoGRAM+C4D  
 Consortia

### FELLOW

Royal College of Physicians of Canada

### CURRENT RESEARCH

My investigative focus is the identification of polymorphisms that predispose to various common diseases encountered by adult cardiologists in multiple race/ethnic groups through large-scale population genetic studies. These diseases include coronary artery disease (CAD), peripheral arterial disease (atherosclerosis of the arteries in the abdomen and legs) and risk factors for atherosclerosis in general such as high cholesterol, diabetes, obesity, smoking, and insulin resistance (a pre-diabetic state that also predisposes to coronary atherosclerosis). In addition to playing an important role in the design, conduct, analysis, and interpretation of human genetic population studies of complex cardiovascular traits, I have also served as a liaison to molecular biologists in our division who wish to pursue mechanistic studies that will shed light on the biology behind these new genetic associations.

To crack the code of complex cardiovascular traits, we need collaborative networks almost as complicated as the biological networks we are trying to understand. The CVI allows such networks to seed and flourish.

### SELECTED PUBLICATIONS

**Large-scale association analysis identifies new risk loci for coronary artery disease.**

Deloukas P, Kanoni S, Willenborg C, Farrall M, Assimes TL, [+177 authors], Samani, NJ. *Nat Genet.* 2013; 45(1): 25-33.

**Trans-Ethnic Fine-Mapping of Lipid Loci Identifies Population-Specific Signals and Allelic Heterogeneity that Increases the Trait Variance Explained.**

Wu Y, Waite LL, Jackson AU, [+69 authors], Assimes TL, [+3 authors], Mohlke KL. *Plos Genet.* 2013; 9(3): e1003379.

**Trans-ethnic fine mapping identifies a novel independent locus at 3' of CDKAL1 and novel variants of several loci with type 2 diabetes in Chinese.**

Kuo JZ, Sheu WH, Assimes TL, [+20 authors], Chen YD. *Diabetologia.* 2013; 56(12): 2619-28.

**Large-scale association analysis identifies 13 new susceptibility loci for coronary artery disease.**

Schunkert H, König IR, Kathiresan S, Reilly MP, Assimes TL, [+161 authors], Samani, NJ. *Nat Genet.* 2011; 43(4): 333-8.

**Lack of association between the Trp719Arg polymorphism in kinesin-like protein 6 and coronary artery disease in 19 case-control studies.**

Assimes TL, Holm H, Kathiresan S, [+131 authors], Quertermous T. *J Am Coll Cardiol.* 2010; 56(19): 1552-63.



## Daniel Bernstein, MD

Alfred Woodley Salter and Mabel G. Salter Endowed Professor of Pediatrics (Cardiology) Stanford University  
Former Division Chief, Pediatric Cardiology  
Former Director, Children's Heart Center, Lucile Packard Children's Hospital at Stanford

EMAIL [danb@stanford.edu](mailto:danb@stanford.edu)

PROFILE [med.stanford.edu/profiles/Daniel\\_Bernstein](http://med.stanford.edu/profiles/Daniel_Bernstein)

LAB [murinecvcore.stanford.edu](http://murinecvcore.stanford.edu)

### EDUCATION/TRAINING

MD New York University

PEDIATRICS RESIDENCY  
Montefiore Medical Center

MEDICAL EDUCATION FELLOWSHIP  
Albert Einstein College of Medicine

PEDIATRIC CARDIOLOGY FELLOWSHIP  
UCSF

BOARD CERTIFICATION  
Pediatrics, ABP  
Pediatric Cardiology, ABP

### CLINICAL FOCUS

Pediatric Cardiology  
Pediatric Heart Failure and Transplantation

### HONORS & AWARDS

CHAIR  
CVI Education & Training Committee

Best Lecture Award, Stanford University Medical School (2013)

Leo M. Davidoff Society Award for excellence in teaching, Albert Einstein College of Medicine (1982)

HUME FACULTY SCHOLAR  
Stanford University (1987-88, 1989-90)

MELLON FOUNDATION FELLOW  
Stanford University (1986-87)

FORMER PRESIDENT  
Society for Pediatric Research

ELECTED MEMBER  
American Pediatric Society

### CURRENT RESEARCH

One of my laboratory's main focuses is on the role of adrenergic receptors in modulating the balance between cardiotoxicity and cardioprotection. Our recent work has examined the role of  $\beta_2$ -receptor subtypes in genetic and acquired cardiomyopathies, and the role of  $\beta_2$ -receptor signaling in the regulation of mitochondrial activation. Another focus in our lab has been on the molecular mechanisms of RV hypertrophy and its transition to heart failure, a critical issue for pediatric patients. We have developed novel models of the failing RV and have characterized unique patterns of gene and miR expression in RV failure. I am also involved in clinical research in heart failure/transplantation. Our current studies examine two novel biomarkers for post-transplant lymphoproliferative disorder in pediatric solid organ transplant recipients. Finally, I have begun working with members of the Stem Cell Institute to apply iPSC technology to the unique problems faced by pediatric heart failure patients.

Success is the ability to go from failure to failure without loss of enthusiasm. - Winston Churchill

### SELECTED PUBLICATIONS

**Deletion of the "cardioprotective"  $\beta_2$ -adrenergic receptor prevents the development of dilated cardiomyopathy in mice.** Fajardo G, Zhao M, Urashima T, Bernstein D. *J Mol Cell Cardiol.* 2013; 63C: 155-64.

**Differential regulation of ubiquitin-proteasomal system in right ventricular vs. left ventricular hypertrophy and failure.** Rajagopalan V, Fajardo G, Zhao M, Urashima T, Bernstein D. *Amer J Physiol.* 2013 [In Press].

**Combined telomere dysfunction and dystrophin deficiency lead to chronic oxidative stress and cardiac failure in Duchenne muscular dystrophy.** Mourkioti F, Kustan J, Kraft P, Zhao M, Alimova M, DePinho R, Bernstein D, Meeker AK, Blau HM. *Nat Cell Biol.* 2013; 15(8): 895-904.

**Physiologic and molecular characterization of a murine model of right ventricular volume overload.** Reddy S, Zhao MM, Hu D-Q, Fajardo G, Katznelson E, Punnett R, Spin JM, Chan FP, Bernstein D. *Am J Physiol Heart Circ Physiol.* 2013; 304(10): H1314-27.

**Dynamic microRNA expression during the transition from right ventricular hypertrophy to failure.** Reddy S, Zhao MM, Fajardo G, Hu S, Wu J, Bernstein D. *Physiol Genomics.* 2012; 44(10): 562-75.



## Helen M. Blau, PhD

Donald E. and Delia B. Baxter Foundation Professor  
 Director, Baxter Laboratory for Stem Cell Biology  
 Director, Gene Therapy Technology, Stanford University School of Medicine

EMAIL [hblau@stanford.edu](mailto:hblau@stanford.edu)

PROFILE [med.stanford.edu/profiles/Helen\\_Blau](http://med.stanford.edu/profiles/Helen_Blau)

LAB [stanford.edu/group/blau](http://stanford.edu/group/blau)

WEB [baxterlab.stanford.edu](http://baxterlab.stanford.edu)

### EDUCATION/TRAINING

PhD Harvard University

### HONORS & AWARDS

NIH MERIT Award

NIH Challenge Grant

NIH Director's Transformative Research Award

SmithKline and Beecham Junior Faculty Scholar

Senior WICB Career Recognition Award of the American Society for Cell Biology

FASEB Excellence in Science Award

Fulbright Senior Scholar Award

Yvette Mayent-Rothschild Award

Nobel Forum Lecturer, Karolinska Institute, Sweden

### HONORARY DOCTORATE

University of Nijmegen, Holland

**ELECTED MEMBER** American Academy of Arts and Sciences; American Association for the Advancement of Science; Institute of Medicine of the National Academy of Sciences

### SCIENTIFIC/NATIONAL ADVISORY

**BOARDS** Ellison Medical Foundation; Harvard Board of Overseers; Pew Scholars Program

### PRESIDENT

International Society of Differentiation; Society for Developmental Biology

**COUNCIL MEMBER** Institute of Medicine; NIH Institute on Aging

### CURRENT RESEARCH

My laboratory elucidates the molecular mechanisms that control cell fate to design treatments for human skeletal and cardiac muscle diseases. Using a cell fusion approach, we showed that the differentiated state is not fixed and irreversible. These heterokaryons are now a potent tool for determining the sequence of molecular switches that reprogram cell fates. By combining bioengineering and biochemistry, we are finding novel regulators that enhance the function of stem cells resident in our tissues, such as muscle stem cells, with the goal of restoring strength post-injury. Additionally, we have found that the lethal dilated cardiomyopathy characteristic of Duchenne muscular dystrophy is in part mediated by telomere length and are developing new strategies for treating heart disease.

We dance for laughter, we dance for tears, we dance for madness, we dance for fears, we dance for hopes, we dance for screams, we are the dancers, we create the dreams. - Albert Einstein

### SELECTED PUBLICATIONS

**Rejuvenation of the aged muscle stem cell population restores strength to injured aged muscles.** Cosgrove BD, Gilbert PM, Porpiglia E, Mourkioti F, Lee SP, Corbel SY, Llewellyn ME, Delp SL, Blau HM. *Nat Med.* 2013 [*In Press*].

**Role of telomere dysfunction in cardiac failure in Duchenne muscular dystrophy.** Mourkioti F, Kustan J, Kraft P, Day JW, Zhao M-M, Kost-Alimova M, Protopopov A, DePinho RA, Bernstein D, Meeker AK, Blau HM. *Nat Cell Biol.* 2013; 15(8): 895-904.

**Short telomeres and stem cell exhaustion model Duchenne muscular dystrophy in mdx/mTR mice.** Sacco A, Mourkioti F, Tran R, Choi J, Llewellyn M, Kraft P, Shkreli M, Delp S, Pomerantz JH, Artandi SE, Blau HM. *Cell.* 2010; 143(7): 1059-71.

**Substrate elasticity regulates skeletal muscle stem cell self-renewal in culture.** Gilbert PM, Havenstrite KL, Magnusson KEG, Sacco A, Leonardi NA, Kraft P, Nguyen NK, Thrun S, Lutolf MP, Blau HM. *Science.* 2010; 329(5995): 1078-81.

**Reprogramming towards pluripotency requires AID-dependent DNA demethylation.** Bhutani N, Brady JJ, Damian M, Sacco A, Corbel SY, Blau HM. *Nature.* 2010; 463(7284): 1042-7.

**Plasticity of the differentiated state.** Blau HM, Pavlath GK, Hardeman EC, Chiu C-P, Silberstein L, Webster SG, Miller SC, Webster C. *Science.* 1985; 230: 758-66.



## Atul Butte, MD, PhD

Chief, Division of Systems Medicine

Associate Professor, Pediatrics

Associate Professor, Genetics

Associate Professor (by courtesy), Computer Science, Medicine and Pathology

EMAIL [abutte@stanford.edu](mailto:abutte@stanford.edu)

PROFILE [med.stanford.edu/profiles/Atul\\_Butte](http://med.stanford.edu/profiles/Atul_Butte)

LAB [buttelab.stanford.edu](http://buttelab.stanford.edu)

### EDUCATION/TRAINING

MD Brown University

PhD Harvard Medical School and MIT

MS MIT

### PEDIATRICS RESIDENCY

Children's Hospital Boston

### PEDIATRIC ENDOCRINOLOGY FELLOWSHIP

Children's Hospital Boston

### HONORS & AWARDS

White House Champion of Change in Open Science, Office of Science and Technology Policy, White House (2013)

Top 10 Biotech Techies, FierceBiotech IT (2012)

Genomic Advance of the Month, National Human Genome Research Institute (NHGRI) (2011)

Young Investigator Award, Society for Pediatric Research (2010)

Outstanding Scientific Accomplishment recognized by NIH Director, National Institutes of Health (2012)

### ELECTED MEMBER

American Society of Clinical Investigation

### CURRENT RESEARCH

My laboratory builds and applies tools that convert more than 400 trillion points of molecular, clinical, and epidemiological data -- measured by researchers and clinicians over the past decade -- into diagnostics, therapeutics, and new insights into disease. The long-term research goal of my laboratory is to solve problems relevant to genomic medicine by developing new methodologies in translational bioinformatics.

Hundreds of trillions of points of data are just waiting for you...to use these data to create new diagnostics and therapeutics.

### SELECTED PUBLICATIONS

**Systematic identification of interaction effects between genome- and environment-wide associations in type 2 diabetes mellitus.** Patel CJ, Chen R, Kodama K, Ioannidis JP, Butte AJ. *Human Genetics*. 2013; 132(5): 495-508.

**Analysis of the genetic basis of disease in the context of worldwide human relationships and migration.** Corona E, Chen R, Sikora M, Morgan AA, Patel CJ, Ramesh A, Bustamante CD, Butte AJ. *PLoS Genetics*. 2013; 9(5): e1003447.

**Expression-based genome-wide association study links the receptor CD44 in adipose tissue with type 2 diabetes.** Kodama K, Horikoshi M, Toda K, Yamada S, Hara K, Irie J, Sirota M, Morgan AA, Chen R, Ohtsu H, Maeda S, Kadowaki T, Butte AJ. *Proc Natl Acad Sci USA*. 2012; 109(18): 7049-54.

**Personal Omics Profiling Reveals Dynamic Molecular and Medical Phenotypes.** Chen R, Mias GI, Li-Pook-Tham J, Jiang L, Lam HY, Chen R, Miriami E, Karczewski KJ, Hariharan M, Dewey FE, Cheng Y, Clark MJ, Im H, Habegger L, Balasubramanian S, O'Huallachain M, Dudley JT, Hillenmeyer S, Haraksingh R, Sharon D, Euskirchen G, Lacroute P, Bettinger K, Boyle AP, Kasowski M, Grubert F, Seki S, Garcia M, Whirl-Carrillo M, Gallardo M, Blasco MA, Greenberg PL, Snyder P, Klein TE, Altman RB, Butte AJ, Ashley EA, Gerstein M, Nadeau KC, Tang H, Snyder M. *Cell*. 2012; 148(6): 1293-1307.

**Performance comparison of exome DNA sequencing technologies.** Clark MJ, Chen R, Lam HY, Karczewski KJ, Chen R, Euskirchen G, Butte AJ, Snyder M. *Nat Biotechnol*. 2011; 29(10): 908-14.



## Michael D. Dake, MD

Thelma and Henry Doelger Professor of Cardiothoracic Surgery  
Medical Director, Cath/Angio Laboratories

EMAIL [mddake@stanford.edu](mailto:mddake@stanford.edu)

PROFILE [med.stanford.edu/profiles/Michael\\_Dake](http://med.stanford.edu/profiles/Michael_Dake)

DEPARTMENT [ctsurgery.stanford.edu](http://ctsurgery.stanford.edu)

### EDUCATION/TRAINING

MD Baylor College of Medicine

### INTERNAL MEDICINE RESIDENCY

Baylor College of Medicine

### PULMONARY DISEASES FELLOWSHIP

UCSF

### RADIOLOGY RESIDENCY

UCSF

### INTERVENTIONAL RADIOLOGY

FELLOWSHIP UCSF

### BOARD CERTIFICATION

Diagnostic Radiology, ABR

Internal Medicine, ABIM

Pulmonary Disease, ABIM

### CLINICAL FOCUS

Diagnostic Radiology

Interventional Radiology

Endovascular Surgery

### HONORS & AWARDS

SIR Foundation Leaders in Innovation Award

Docteur Honoris Causa (Honorary

Doctorate), Republique Francaise

Universite del a Mediterranee

### FELLOW

American College of Chest Physicians;

American College of Physicians;

American Heart Association;

Society of Interventional Radiology

### MEMBER

American College of Radiology;

American Thoracic Society;

Radiological Society of North America

### CURRENT RESEARCH

Improved endovascular procedures and devices to treat aortic lesions, peripheral arterial disease and venous abnormalities. Focused interest in drug-eluting stents and balloons, endovascular stent-grafts, including branched aortic devices and techniques for the endovascular management of aortic dissection. Current clinical research projects include drug-eluting stents for superficial femoral arterial disease and multiple device trials to evaluate stent-grafts for the treatment of aortic lesions.

I have a broad background in working with young investigators to collaboratively develop opportunities with medical devices that address unmet clinical needs or limitations of current therapeutic approaches.

### SELECTED PUBLICATIONS

**Sustained safety and effectiveness of paclitaxel-eluting stents for femoropopliteal lesions: 2-year follow-up from the Zilver PTX randomized and single-arm clinical studies.** Dake MD, Ansel GM, Jaff MR, Ohki T, Saxon RR, Smouse HB, Snyder SA, O'Leary EE, Tepe G, Scheinert D, Zeller T; Zilver PTX Investigators. *J Am Coll Cardiol.* 2013; 61(24): 2417-27.

**Diagnosis and treatment planning of acute aortic emergencies using a handheld DICOM viewer.** Choudhri AF, Norton PT, Carr TM 3rd, Stone JR, Hagspiel KD, Dake MD. *Emerg Radiol.* 2013; 20(4): 267-72.

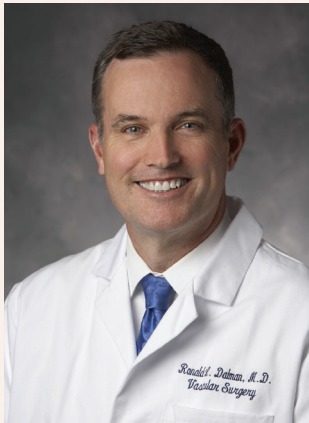
**Treatment of femoropopliteal in-stent restenosis with paclitaxel-eluting stents.** Zeller T, Dake MD, Tepe G, Brechtel K, Noory E, Beschorner U, Kultgen PL, Rastan A. *JACC Cardiovasc Interv.* 2013; 6(3): 274-81.

**Endovascular correction of cerebrovenous anomalies in multiple sclerosis: a retrospective review of an uncontrolled case series.** Dake MD, Dantzker N, Bennett WL, Cooke JP. *Vasc Med.* 2012; 17(3): 131-7.

**Incidence and outcomes after infolding or collapse of thoracic stent grafts.** Kasirajan K, Dake MD, Lumsden A, Bavaria J, Makaroun MS. *J Vasc Surg.* 2012; 55(3): 652-8.

**Paclitaxel-eluting stents show superiority to balloon angioplasty and bare metal stents in femoropopliteal disease: twelve-month Zilver PTX randomized study results.** Dake MD, Ansel GM, Jaff MR, Ohki T, Saxon RR, Smouse HB, Zeller T, Roubin GS, Burket MW, Khatib Y, Snyder SA, Ragheb AO, White JK, Machan LS; Zilver PTX Investigators. *Circ Cardiovasc Interv.* 2011; 4(5): 495-504.





## Ronald L. Dalman, MD

Dr. Walter C. Chidester Professor of Surgery  
Chief, Division of Vascular Surgery

EMAIL [rld@stanford.edu](mailto:rld@stanford.edu)

PROFILE [med.stanford.edu/profiles/Ronald\\_Dalman](http://med.stanford.edu/profiles/Ronald_Dalman)

DIVISION [vascular.stanford.edu](http://vascular.stanford.edu)

### EDUCATION/TRAINING

MD University of Michigan

GENERAL SURGERY RESIDENCY  
University of Washington

VASCULAR SURGERY FELLOWSHIP  
Oregon Health Sciences University

ENDOVASCULAR FELLOWSHIP  
Texas Tech University

BOARD CERTIFICATION  
General Vascular Surgery, ABS

### CLINICAL FOCUS

Abdominal Aortic Aneurysm Disease

### HONORS & AWARDS

ASSOCIATE DIRECTOR of  
Cardiovascular Health (CVH) for  
Quality and Outcome Assessment

CO-DIRECTOR  
CVI T32: Mechanisms and Innovation  
in Vascular Disease

MEMBER  
Accreditation Council for Graduate  
Medical Education (ACGME)

FELLOW  
American College of Surgeons;  
American Heart Association

VICE CHAIRMAN (CHAIR 2014-2017)  
Program Committee, Vascular Annual  
Meeting, Society for Vascular Surgery

MEMBER  
American Surgical Association; Society  
of University Surgeons; Western  
Vascular Society (FORMER PRESIDENT)

### CURRENT RESEARCH

Stanford Vascular Surgery is recognized worldwide for expertise in aortic aneurysm disease. My laboratory continues to focus on understanding aneurysm pathophysiology, as well as developing innovative treatment, screening and access to care strategies in abdominal aortic aneurysm (AAA) disease management.

We are on the threshold of understanding,  
and thus eliminating, the threat of premature death  
from aortic aneurysm disease worldwide.

### SELECTED PUBLICATIONS

**Peptide inhibitor of CXCL4-CCL5 heterodimer formation, MKEY, inhibits experimental aortic aneurysm initiation and progression.** Iida Y, Xu B, Xuan H, Glover KJ, Tanaka H, Hu X, Fujimura N, Wang W, Schultz JR, Turner CR, Dalman RL. *Arteriosclero Thromb Vasc Biol.* 2013; 33: 718-26.

**Efficacy and mechanism of angiotensin II receptor blocker treatment in experimental abdominal aortic aneurysms.** Iida Y, Xu B, Schultz GM, Chow V, White JJ, Sulaimon S, Hezi-Yamit A, Peterson SR, Dalman RL. *PLoS One.* 2012; 7(12): e49642.

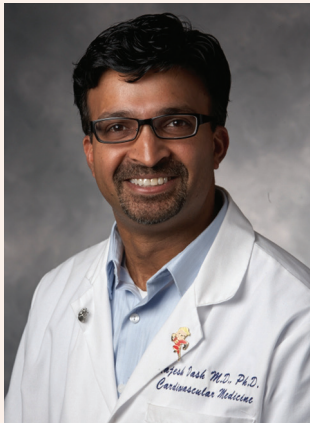
**Stanford Specialized Center of Clinically Oriented Research (SCCOR) Investigators. No increased mortality with early abdominal aortic aneurysm disease.** Mell MW, White JJ, Hill BB, Hastie T, Dalman RL *J Vasc Surg.* 2012; 56 :1246-519.

**Inhibition of MicroRNA-29b reduces murine abdominal aortic aneurysm development.** Maegdefessel L, Azuma J, Toh R, Merk DR, Deng A, Chin JT, Raaz U, Schoelmerich AM, Raiesdana A, Leeper NJ, McConnell MV, Dalman RL, Spin JM, Tsao PS. *J Clin Invest.* 2012; 122(2): 497-506.

**Early experience with the snorkel technique for juxtarenal aneurysms.** Lee JT, Greenberg JI, Dalman RL. *J Vasc Surg.* 2012; 55: 935-46.

**Influences of aortic motion and curvature on vessel expansion in murine experimental aneurysms.** Goergen CJ, Azuma J, Barr KN, Maegdefessel L, Kallop DY, Gogineni A, Grewall A, Weimer RM, Connolly AJ, Dalman RL, Taylor CA, Tsao PS, Greve JM. *Arteriosclero Thromb Vasc Biol.* 2011; 31(2): 270-9.

**Effects of exercise training in patients with abdominal aortic aneurysm: Preliminary results from a randomized trial.** Myers JN, White JJ, Narasimhan B, Dalman RL. *J Cardiopulm Rehabil Prev.* 2010; 30: 374-83.



## Rajesh Dash, MD, PhD

Assistant Professor, Medicine – Cardiovascular Medicine  
Medical and Scientific Director, Stanford South Asian Translational Heart Initiative (SSATHI)  
Director, Falk Cardiovascular MRI Facility

EMAIL [rhombus@stanford.edu](mailto:rhombus@stanford.edu)

PROFILE [med.stanford.edu/profiles/Rajesh\\_Dash/](http://med.stanford.edu/profiles/Rajesh_Dash/)

### EDUCATION/TRAINING

MD University of Cincinnati

PhD University of Cincinnati

### MEDICINE RESIDENCY

University of Washington Medical Center

### CARDIOLOGY FELLOWSHIP

UCSF

### BOARD CERTIFICATION

Cardiovascular Medicine, ABIM  
Echocardiography, NBE  
Nuclear Cardiology, CBNC

### CLINICAL FOCUS

Non-Invasive Cardiac Imaging  
Preventive Cardiology

### HONORS & AWARDS

Best Poster Award, American College of Cardiology (ACC) Scientific Sessions (2013)

CVI Seed Grant (2012)

Finalist, Jeremiah Stamler Distinguished Young Investigator Award, Northwestern University (2012)

Melvin Judkins Young Investigator Award, American Heart Association (AHA) Scientific Sessions (2009)

AHA Cardiovascular Radiology and Intervention Travel Award (2009)

Finalist, Society of Cardiovascular Magnetic Resonance (SCMR) Young Investigator Award (2008)

### CURRENT RESEARCH

My research focuses on molecular imaging of cell signaling in the heart. I develop molecular imaging probes that track to injured heart tissue, such that non-invasive techniques, like cardiac MRI, can visualize these injury signals in real-time. The translational goal of my research is to develop new ways to detect early cardiac injury before permanent damage occurs, so that preventive medical therapy can be started. I am applying some of these imaging strategies in select high-risk patients, such as chemotherapy patients. I also lead the research efforts of the Stanford South Asian Translational Heart Initiative, or SSATHI. SSATHI's mission is to detect, treat, and prevent the onset of coronary disease, insulin resistance, and dyslipidemia of young South Asians through early screening, education, and lifestyle management.

There is nothing like returning to a place that remains unchanged to find the ways in which you yourself have altered. - Nelson Mandela  
A Long Walk to Freedom

### SELECTED PUBLICATIONS

**A Novel Stress Echocardiography Pattern for Myocardial Bridge with Invasive Structural and Hemodynamic Correlation.** Lin S, Tremmel JA, Yamada R, Rogers IS, Yong CM, Turcott R, McConnell MV, Dash R, Schnittger I. *J Am Heart Assoc.* 2013; 2: e000097.

**Synthesis of an MRI-Detectable Apoptosis Probe.** Lam JT, Simpson PC, Yang PC, Dash R. *J Vis Exp.* 2012; (65).

**Dual Manganese-Enhanced and Delayed Gadolinium Enhancement MRI Detects Myocardial Border Zone Injury in a Pig Ischemia-Reperfusion Model.** Dash R, Chung J, Ikeno F, Hahn-Windgassen A, Matsuura Y, Lyons J, Teramoto T, Robbins RC, McConnell MV, Yeung A, Brinton T, Harnish P, Yang PC. *Circ Cardiovasc Imaging.* 2011; 4(5): 574-82.

**MRI of an Iron-Oxide Molecular Probe Detects Early Cardiac Cell Injury In Vitro and In Vivo.** Dash R, Chung J, Chan T, Barral J, Yamada M, Paningbatan M, Swigart PM, Myagmar B, Nishimura D, Yang PY, Simpson PC. *Magn Res Med.* 2011; 66(4): 1152-61.

**Interactions between phospholamban and Beta-adrenergic drive may lead to cardiomyopathy and early mortality.** Dash R, Kadambi VJ, Schmidt AG, Tepe NM, Canning AM, Hoit BD, Dorn II GW, Liggett SB, Lorenz JN, Kranias EG. *Circulation.* 2001; 103(6): 889-96.



## Mark M. Davis, PhD

Burt and Marion Avery Family Professor  
 Professor, Microbiology and Immunology  
 Investigator, Howard Hughes Medical Institute  
 Director, Stanford Institute for Immunity, Transplantation and Infection (ITI)

EMAIL [mmdavis@stanford.edu](mailto:mmdavis@stanford.edu)

PROFILE [med.stanford.edu/profiles/Mark\\_Davis](http://med.stanford.edu/profiles/Mark_Davis)

LAB [stanford.edu/group/davislab/cgi-bin/drpl](http://stanford.edu/group/davislab/cgi-bin/drpl)

INSTITUTE [iti.stanford.edu](http://iti.stanford.edu)

### EDUCATION/TRAINING

PhD Caltech

### HONORS & AWARDS

Paul Ehrlich and Ludwig  
 Darmstaedter Prize, Paul Ehrlich  
 Institute, Germany

Ellison Medical Foundation Senior  
 Scholars in Aging Award

Rose Payne Award, American  
 Society for Histocompatibility and  
 Immunogenetics

Behring-Heidelberger Prize, American  
 Association of Immunologists

Novartis Prize for Basic Immunology

### ELECTED MEMBER

American Academy of Arts and  
 Sciences; Institute of Medicine,  
 National Academy of Sciences

### FORMER CHAIR

Department of Microbiology and  
 Immunology, Stanford University

### FORMER DIRECTOR

Doctoral Program in Immunology

### CHAIRMAN, SCIENTIFIC ADVISORY BOARD

La Jolla Institute for Allergy and  
 Immunology

### SCIENTIFIC ADVISORY BOARD

Affymetrix; ForteBio; Novartis;  
 University of Texas M.D. Anderson  
 Cancer Center

### EXTERNAL ADVISORY BOARD

Weatherall Institute of Molecular  
 Medicine, Oxford

### CURRENT RESEARCH

My laboratory is interested in the molecular basis of T and B lymphocyte recognition, as well as the control of differentiation and functional responses in these cells. These studies have ranged from analyzing the inherent diversity of these highly diverse molecules and relating it to their function and specificity, to basic aspects of TCR biochemistry and cell biology. We also developed peptide-MHC tetramers which are useful for staining and isolating specific T cells in both basic science and clinical applications. We also try to relate what we have learned in basic immunology using mouse models to understanding the human immune system. Here we have employed systems biology approaches to understand vaccine responses, twin studies to understand the relative influence of environment versus genetics, and T cell repertoire studies to understand self vs non-self capabilities and the origin of memory T cell responses.

By identifying markers that could tell us how a particular person's immune system is functioning, we could both understand immune system-related and infectious diseases better and formulate new and more efficacious interventions.

### SELECTED PUBLICATIONS

**A Single Peptide-Major Histocompatibility Complex Ligand Triggers Digital Cytokine Secretion in CD4+ T Cells.** Huang J, Brameshuber M, Zeng X, Xie J, Li QJ, Chien YH, Valitutti S, Davis MM. *Immunity*. 2013; 39(5): 846-57.

**Dietary gluten triggers concomitant activation of CD4+ and CD8+  $\alpha\beta$  T cells and  $\gamma\delta$  T cells in celiac disease.** Han A, Newell EW, Glanville J, Fernandez-Becker N, Khosla C, Chien YH, Davis MM. *Proc Natl Acad Sci U S A*. 2013 Aug 6;110(32):13073-8.

**Combinatorial tetramer staining and mass cytometry analysis facilitate T-cell epitope mapping and characterization.** Newell EW, Sigal N, Nair N, Kidd BA, Greenberg HB, Davis MM. *Nat Biotechnol*. 2013; 31(7): 623-U81.

**Virus-specific CD4(+) memory-phenotype T cells are abundant in unexposed adults.** Su LF, Kidd BA, Han A, Kotzin JJ, Davis MM. *Immunity*. 2013; 38(2): 373-83.

**Apoptosis and other immune biomarkers predict influenza vaccine responsiveness.** Furman D, Jovic V, Kidd B, Shen-Orr S, Price J, Jarrell J, Tse T, Huang H, Lund P, Maecker HT, Utz PJ, Dekker CL, Koller D, Davis MM. *Mol Sys Biol*. 2013; 9: 659.



## Vinicio A. de Jesus Perez, MD

Assistant Professor, Medicine - Pulmonary and Critical Care Medicine  
Staff Physician, Stanford Adult Pulmonary Hypertension Clinic

EMAIL [vdejesus@stanford.edu](mailto:vdejesus@stanford.edu)

PROFILE [med.stanford.edu/profiles/Vinicio\\_de Jesus Perez](http://med.stanford.edu/profiles/Vinicio_de_Jesus_Perez)

WEB [pulmonary.stanford.edu](http://pulmonary.stanford.edu); [wallcenter.stanford.edu](http://wallcenter.stanford.edu)

LAB [dejesusperezlabforph.com](http://dejesusperezlabforph.com)

### EDUCATION/TRAINING

MD University of Puerto Rico

### MEDICINE RESIDENCY

Massachusetts General Hospital

### PULMONARY DISEASES FELLOWSHIP

University of Colorado  
Stanford University

### PULMONARY VASCULAR FELLOWSHIP

Stanford University

### BOARD CERTIFICATION

Internal Medicine, ABIM  
Pulmonary Diseases, ABIM  
Critical Care Medicine, ABIM

### CLINICAL FOCUS

Pulmonary Hypertension  
Scleroderma Related Lung Diseases  
Drug Induced Pulmonary Hypertension  
Pulmonary Fibrosis

### HONORS & AWARDS

Pulmonary Hypertension Association  
Award for Outstanding K08

Be Heard Rare Challenge Disease  
International Award

Best Basic Science Abstract Award,  
American Heart Association (AHA)

### FELLOW

American College of Chest Physicians;  
AHA; Pulmonary Vascular Research  
Institute; Robert Wood Johnson Foundation

### EDITORIAL BOARD

*American Journal of Respiratory  
and Critical Care Medicine*;  
*Pulmonary Circulation*

### CURRENT RESEARCH

My lab focuses on understanding the genetic, cellular and molecular mechanisms involved in the pathogenesis of pulmonary arterial hypertension (PAH). We are interested in understanding how pulmonary arteries respond to injury and identify novel genetic modifiers whose dysfunction can trigger small vessel loss and vascular remodeling in PAH patients. In particular, we are currently focused on exploring how the Wnt signaling pathways regulate the behavior of pulmonary artery endothelial cells (PAECs), smooth muscle cells (PASMCs) and pericytes in response to injury and whether mutations related to these pathway can affect signaling via other pathways relevant to PAH resulting in development of clinical disease. The overarching goal of our work is to identify potential biomarkers and drug targets that can be used in the development of novel diagnostic and treatment approaches to offer patients afflicted with this devastating disease.

Life is too unpredictable to plan ahead: You should be prepared to be surprised every step of the way.

### SELECTED PUBLICATIONS

**MicroRNAs: promising therapeutic targets for the treatment of pulmonary arterial hypertension.** Yuan K, Orchofski M, Tian X, Liao X, de Jesus Perez VA. *Expert Opin Ther Targets*. 2013; 17(5): 557-64.

**Loss of adenomatous poliposis coli-a3 integrin interaction promotes endothelial apoptosis in mice and humans.** de Jesus Perez VA, Yuan K, Orchofski ME, Sawada H, Zhao M, Li CG, Tojais NF, Nickel N, Rajagopalan V, Spiekerkoetter E, Wang L, Dutta R, Bernstein D, Rabinovitch M. *Circ Res*. 2012; 111(12): 1551-64.

**Safety and efficacy of transition from systemic prostanoids to inhaled treprostinil in pulmonary arterial hypertension.** de Jesus Perez VA, Rosenzweig E, Rubin LJ, Poch D, Bajwa A, Park M, Jain M, Bourge RC, Kudelko K, Spiekerkoetter E, Liu J, Hsi A, Zamanian RT. *Amer J Cardiol*. 2012; 110(10): 1546-50.

**The Intersection of Genes and Environment Development of Pulmonary Arterial Hypertension in a Patient With Hereditary Hemorrhagic Telangiectasia and Stimulant Exposure.** Ayala E, Kudelko KT, Haddad F, Zamanian RT, de Jesus Perez V. *Chest*. 2012; 141(6): 1598-600.

**BMP promotes motility and represses growth of smooth muscle cells by activation of tandem Wnt pathways.** Perez VA, Ali Z, Alastalo T, Ikeno F, Sawada H, Lai Y, Kleisli T, Spiekerkoetter E, Qu X, Rubinos LH, Ashley E, Amieva M, Dedhar S, Rabinovitch M. *J Cell Biol*. 2011; 192 (1): 171-88.



## Alexander Dunn, PhD

Assistant Professor, Chemical Engineering

EMAIL [alex.dunn@stanford.edu](mailto:alex.dunn@stanford.edu)

LAB [openwetware.org/wiki/Dunn](http://openwetware.org/wiki/Dunn)

### EDUCATION/TRAINING

PhD California Institute of Technology

### HONORS & AWARDS

NIH Director's New Innovator Award

Burroughs Wellcome Career Award at the Scientific Interface

CVI Seed Grant (2013)

Terman Fellowship, Stanford University

James H. Clark Faculty Fellowship

American Heart Association  
Postdoctoral Fellowship

Jane Coffin Childs Fellowship

Herbert Newby McCoy Award (Caltech,  
outstanding chemistry PhD thesis)

Barry Goldwater Scholarship

### GRADUATE ADMISSIONS COMMITTEE

Stanford Biophysics Program

### SCIENTIFIC DIRECTOR

Cell Science Imaging Facility Cost  
Center for Building 4

### FELLOW

Stanford Chemical Biology Institute

### MEMBER

Department of Chemical Engineering  
undergraduate teaching committee

### FACULTY ADVISOR

Stanford AIChE student chapter

### STEERING COMMITTEE MEMBER

Stanford Cardiovascular Institute

### CURRENT RESEARCH

Observers have noted the central importance of tissue mechanics in health and disease since ancient times. We now know that intrinsically mechanical stimuli such as fluid flow, mechanical stretch, and tissue stiffness play central roles in cardiovascular development, homeostasis, and disease. However, the molecular mechanisms by which cells sense mechanical cues remain poorly understood, due largely to a lack of tools that measure forces inside living cells and tissues. Our laboratory uses genetically encoded molecular sensors to directly visualize mechanical tension in living cells, with the goal of uncovering how mechanical cues regulate stem cell differentiation and self-renewal. In addition, we study how the endothelial cells that line the vascular system sense fluid flow, a fundamental and unsolved question in vascular biology.

The hard and stiff will be broken. The soft and supple will prevail. - Tao Te Ching (trans. Stephen Mitchell)

### SELECTED PUBLICATIONS

**Molecular tension sensors report forces generated by single integrin molecules in living cells.** Morimatsu M, Mekhdjian AH, Adhikari AS, Dunn AR. *Nano Lett.* 2013; 13(9): 3985-9.

**E-cadherin is under constitutive actomyosin-generated tension that is increased at cell-cell contacts upon externally applied stretch.** Borghi N, Sorokina M, Shcherbakova OG, Weis WI, Pruitt BL, Nelson WJ, & Dunn AR. *Proc Natl Acad Sci USA.* 2012; 109: 12568-73.

**Conformational dynamics accompanying the proteolytic degradation of trimeric collagen I by collagenases.** Adhikari AS, Glassey E, Dunn AR. *J Am Chem Soc.* 2012; 134: 13259-65.

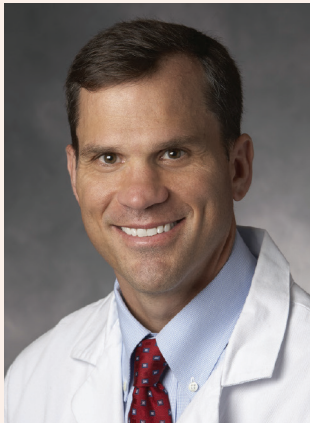
**Multiplexed single-molecule force proteolysis measurements using magnetic tweezers.** Adhikari AS, Chai J, Dunn AR. *J Visualized Exp.* 2012; 65: 3520.

**Strain tunes proteolytic degradation and diffusive transport in fibrin networks.** Adhikari AS, Mekhdjian AH, Dunn AR. *BioMacromolecules.* 2012; 13: 499-506.

**Mechanical force induces a 100-fold increase in the rate of collagen proteolysis by MMP-1.** Adhikari AS, Chai J, Dunn AR. *J Am Chem Soc.* 2011; 133: 1686-9.

**Nucleotide Pocket Thermodynamics Measured by EPR Reveal How Energy Partitioning Relates Myosin Speed to Efficiency.** Purcell TJ, Naber N, Franks-Skiba K, Dunn AR, Eldred CC, Berger CL, Málnási-Csizmadia A, Spudich JA, Swank DM, Pate E, Cooke RJ. *Mol Biol.* 2011; 407: 79-91.





## William Fearon, MD

Associate Professor, Medicine - Cardiovascular Medicine  
Director, Interventional Cardiology

EMAIL [wfearon@stanford.edu](mailto:wfearon@stanford.edu)

PROFILE [med.stanford.edu/profiles/William\\_Fearon](http://med.stanford.edu/profiles/William_Fearon)

WEB [stanfordhospital.org/cardiovascularhealth/interventionalCardiology](http://stanfordhospital.org/cardiovascularhealth/interventionalCardiology)

### EDUCATION/TRAINING

MD Columbia University, College of Physicians and Surgeons

### MEDICINE RESIDENCY & INTERNSHIP

Stanford University

### CARDIOLOGY FELLOWSHIP

Stanford University

### INTERVENTIONAL CARDIOLOGY FELLOWSHIP

Stanford University

### BOARD CERTIFICATION

Cardiovascular Medicine, ABIM  
Interventional Cardiology, ABIM

### CLINICAL FOCUS

Interventional Cardiology:  
Percutaneous Coronary Intervention  
and Transcatheter Aortic Valve  
Replacement

### HONORS & AWARDS

American Heart Association, Scientific Sessions Poster Competition, Best Science Award (2009)

E. William Hancock, MD,  
Cardiovascular Medicine Teaching  
Award (2004, 2009)

Division of Cardiovascular Medicine  
Mentoring Award (2008)

Division of Cardiovascular Medicine  
Teaching Award (2004)

### FELLOW

American College of Cardiology;  
Society of Cardiac Angiography  
and Interventions

### CURRENT RESEARCH

My research group focuses on the invasive assessment of coronary physiology. In particular, we use coronary wire-based methods to evaluate which coronary artery narrowings are responsible for myocardial ischemia and warrant stenting. We have helped to perform multicenter, international clinical trials examining the role of fractional flow reserve in guiding percutaneous coronary intervention in various patient populations. Through NIH sponsored research, we have also applied these wire-based methods to understand better coronary microvascular function and its role in patient outcomes. In collaboration with other members of the Cardiovascular Institute, we are investigating the effect of ACE inhibition early after cardiac transplantation on coronary physiology and endothelial function.

The saying 'Don't judge a book by its cover' applies to coronary angiography. By invasively assessing coronary physiology, we have learned how misleading the angiogram can be.

### SELECTED PUBLICATIONS

**Cost-Effectiveness of Percutaneous Coronary Intervention in Patients with Stable Coronary Disease and Abnormal Fractional Flow Reserve.** Fearon WF, Shilane D, Pijls NH, Boothroyd DB, Tonino PA, Barbato E, Juni P, De Bruyne B, Hlatky MA; on behalf of the FAME 2 Investigators. *Circulation*. 2013; 128(12):1335-40.

**Prognostic Value of the Index of Microcirculatory Resistance Measured after Primary Percutaneous Coronary Intervention.** Fearon WF, Low AF, Yong AC, McGeoch R, Berry C, Shah MG, Ho M, Kim HS, Loh JP, Oldroyd KG. *Circulation*. 2013; 127: 2436-41.

**Fractional flow reserve-guided PCI versus medical therapy in stable coronary disease.** De Bruyne B, Pijls NH, Kalesan B, Barbato E, Tonino PA, Piroth Z, Jagic N, Mobius-Winckler S, Rioufol G, Witt N, Kala P, MacCarthy P, Engström T, Oldroyd KG, Mavromatis K, Manoharan G, Verlee P, Frobert O, Curzen N, Johnson JB, Juni P, Fearon WF; FAME 2 Trial Investigators. *N Engl J Med*. 2012; 367: 991-1001.

**Economic Evaluation of Fractional Flow Reserve-Guided Percutaneous Coronary Intervention in Patients with Multivessel Disease.** Fearon WF, Bornschein B, Tonino PAL, Gothe RM, De Bruyne B, Pijls NHJ, Siebert U. *Circulation*. 2010; 122: 2545-50.

**Fractional flow reserve versus angiography for guiding percutaneous coronary intervention in patients with multivessel coronary artery disease.** Tonino PAL, De Bruyne B, Pijls NHJ, [+9 authors], Fearon WF; FAME Study Investigators. *New Engl J Med*. 2009; 360: 213-24.



## Peter J. Fitzgerald, MD, PhD

Professor, Medicine - Cardiovascular Medicine  
Professor (by courtesy), Electrical Engineering  
Director, Center for Cardiovascular Technology and Innovation  
Director, Core Cardiovascular Analysis Laboratory (CCAL)

EMAIL [pfitz@stanford.edu](mailto:pfitz@stanford.edu)

PROFILE [med.stanford.edu/profiles/Peter\\_Fitzgerald/](http://med.stanford.edu/profiles/Peter_Fitzgerald/)

WEB [crci.stanford.edu](http://crci.stanford.edu)

### EDUCATION/TRAINING

MD Dartmouth Medical School

PhD Dartmouth College

### MEDICINE RESIDENCY

UCSF

### CARDIOLOGY FELLOWSHIP

UCSF

### BOARD CERTIFICATION

Diplomate, ABIM

Interventional Cardiovascular  
Medicine, ABIM

### CLINICAL FOCUS

Interventional Cardiology

### HONORS & AWARDS

FDA Medical Device Advisory Panel

### CO-FOUNDER

Latterall Venture Partners;  
Tri-Ventures

### FELLOW

American College of Cardiology

### MEMBER

American Medical Association;  
American Federation of Clinical  
Research; American Society of  
Echocardiography

### CURRENT RESEARCH

My laboratory includes 17 postdoctoral fellows and graduate engineering students focusing on state-of-the-art technologies in Cardiovascular Medicine. I have led or participated in over 150 clinical trials and published over 450 manuscripts/chapters. In addition, I head the Stanford/Asia MedTech innovation program. I have been principle/founder of eighteen medical device companies in the San Francisco Bay Area; twelve of these start-ups have transitioned to large medical device companies. I serve on several boards of directors and have advised dozens of medical device startups as well as multinational healthcare companies in the design and development of new diagnostic and therapeutic devices in the cardiovascular arena.

Technology in medicine is very important, and is ultimately going to be important for patients.

### SELECTED PUBLICATIONS

**Intravascular ultrasound analysis of small vessel lesions treated with the sparrow coronary stent system: Results of the CARE II trial.** Kume T, Waseda K, Koo BK, Yock PG, Botelho R, Verheye S, Whitbourn R, Meredith I, Worthley S, Hai KT, Honda Y, Abizaid A, Fitzgerald PJ. *Catheter Cardiovasc Interv.* 2014; 83(1): 19-24.

**Histological characteristics of myocardial bridge with an ultrasonic echolucent band.** Yamada R, Turcott RG, Connolly AJ, Ikeno F, McConnell MV, Schnittger I, Fitzgerald PJ, Honda Y. *Circ J.* 2013; 78(2): 502-4.

**Variability in quantitative and qualitative analysis of intravascular ultrasound and frequency domain optical coherence tomography.** Abnoui F, Waseda K, Kume T, Otake H, Kawarada O, Yong CM, Fitzgerald PJ, Honda Y, Yeung AC, Fearon WF. *Catheter Cardiovasc Interv.* 2013; 82(3): E192-9.

**Impact of diabetes mellitus on vessel response in the drug-eluting stent era: pooled volumetric intravascular ultrasound analyses.** Sakata K, Waseda K, Kume T, Otake H, Nakatani D, Yock PG, Fitzgerald PJ, Honda Y. *Circ Cardiovasc Interv.* 2012; 5(6): 763-71.

**Comparison of vascular response to the everolimus-eluting stent versus the paclitaxel-eluting stent: intravascular ultrasound results from the SPIRIT III trial.** Yamasaki M, Tsujino I, Lima-Filho MO, Ako J, Shimohama T, Hasegawa T, Sakurai R, Sudhir K, Stone GW, Waseda K, Honda Y, Fitzgerald PJ. *EuroIntervention.* 2012; 8(6): 724-31.



## Dominik Fleischmann, MD

Professor, Radiology  
 Chief, Cardiovascular Imaging  
 Director of CT, Stanford Hospital and Clinics  
 Medical Director, Stanford 3DQ Lab

EMAIL [d.fleischmann@stanford.edu](mailto:d.fleischmann@stanford.edu)

PROFILE [med.stanford.edu/profiles/Dominik\\_Fleischmann](http://med.stanford.edu/profiles/Dominik_Fleischmann)

WEB [radiology.stanford.edu/patient/clinical\\_sections/cardiovascular](http://radiology.stanford.edu/patient/clinical_sections/cardiovascular)  
[radiology.stanford.edu/patient/clinical\\_sections/computedtomography](http://radiology.stanford.edu/patient/clinical_sections/computedtomography)  
[3dradiology.stanford.edu](http://3dradiology.stanford.edu)

### EDUCATION/TRAINING

MD University of Vienna

### MEDICINE RESIDENCY

University of Vienna

### RESEARCH RADIOLOGY FELLOWSHIP

Stanford University

### BOARD CERTIFICATION

Diagnostic Radiology (EU)

### CLINICAL FOCUS

Non-Invasive Cardiovascular Imaging  
 Clinical Image Processing  
 Diagnostic Radiology

### HONORS & AWARDS

Senior Faculty of the Year Award,  
 Stanford Radiology (2011, 2012)

### CHAIR

Refresher Course Subcommittee  
 (Vascular), Radiological Society of  
 North America (RSNA)

### FELLOW

Society of Computed Body  
 Tomography and MR (SCBT/MR)

### MEMBER

American Heart Association; North  
 American Society for Cardiovascular  
 Imaging; RSNA Scientific Program  
 Committee

### ASSOCIATE EDITOR

*Radiology* (Cardiac Imaging)

### EXECUTIVE & STEERING COMMITTEE MEMBER

Stanford Cardiovascular Institute

### CURRENT RESEARCH

My research focuses on how to generate the best images to provide clinically important anatomic and functional information for cardiac and vascular diseases. This includes evaluation of new CT technology with improved temporal and spatial resolution, to enable and improve surgical and endovascular treatment planning of e.g. aortic diseases, and developing and optimizing clinical cardiac and vascular imaging strategies, and sophisticated 3D and 4D image post-processing. We are also working on new MR techniques for improved myocardial tissue characterization on a cellular level, as well as visualization of complex flow in adult congenital heart diseases.

A picture says more than a thousand words;  
 now imagine what three-, four- and more dimensional  
 visualization can do.

### SELECTED PUBLICATIONS

**Evaluation of two new iterative techniques for reducing metal artifacts in computed tomography.** Boas FE, Fleischmann D. *Radiology*. 2011; 259(3): 894-902.

**Computed tomography – old ideas and new technology.** Fleischmann D, Boas FE. *Europ Radiol*. 2011; 21: 510-7.

**Angiography: Injection and Acquisition Technique.** Fleischmann D. *Radiol Clin North Am*. 2010; 48(2): 237-47.

**Optimal vascular and parenchymal contrast enhancement: the current state of the art.** Fleischmann D, Kamaya A. *Radiol Clin North Am*. 2009; 47: 13-26.

**Pre- and postoperative imaging of the aortic root for valve-sparing aortic root repair (V-SARR).** Fleischmann D, Liang DH, Mitchell RS, Miller DC. *Semin Thorac Cardiovasc Surg*. 2008; 20: 365-73.

**Acute aortic syndromes: new insights from electrocardiographically gated computed tomography.** Fleischmann D, Mitchell RS, Miller DC. *Semin Thorac Cardiovasc Surg*. 2008; 20: 340-7.

**Dual-energy CT discrimination of iodine and calcium: experimental results and implications for lower extremity CT angiography.** Tran DN, Straka M, Roos JE, Napel S, Fleischmann D. *Acad Radiol*. 2009; 16: 160-71.



## Victor Froelicher, MD

Professor Emeritus, Medicine - Cardiovascular Medicine  
 Professor (by courtesy), Orthopedics  
 Director, ECG and Exercise Laboratories VAPAHSC  
 Cardiologist Consultant, Sports Medicine

EMAIL [vicmdatg@gmail.com](mailto:vicmdatg@gmail.com)

PROFILE [med.stanford.edu/profiles/Victor\\_Froelicher](http://med.stanford.edu/profiles/Victor_Froelicher)

WEB [cardiology.org](http://cardiology.org)

### EDUCATION/TRAINING

MD University of Pittsburg

### MEDICINE RESIDENCY & INTERNSHIP

Wilford Hall USAFMC Medical Center

### CARIOLOGY FELLOWSHIP

University of Alabama

### BOARD CERTIFICATION

Internal Medicine, ABIM  
 Cardiology, ABIM

### CLINICAL FOCUS

Electrocardiography  
 Sports Medicine  
 Assesment of the Diagnostic/  
 Prognostic/Exercise Capacity  
 Information from Clinical Testing

### HONORS & AWARDS

#### FORMER CHIEF AND ASSISTANT CHIEF OF CARDIOLOGY (1983-1992)

Long Beach VAMC and UC Irvine

Military Service – Lt Col USAFMC (1963-1977):

FORMER ASSISTANT CHIEF OF CARDIOLOGY Wilford Hall USAFMC

FORMER DIRECTOR Cardiac Catheterization Lab and Exercise testing School of Aerospace Medicine

#### FELLOW

American College of Cardiology (ACC);  
 American Heart Association; American College of Sports Medicine

#### SESSION CHAIR

ACC Scientific Session 2013; Sudden Cardiac Death In Athletes Symposium 2012

### CURRENT RESEARCH

My research and clinical interests include J wave Patterns and Syndrome, “Early Repolarization”, cardiovascular screening of athletes, Phenotyping for Genomists, and the Diagonal Line Rule.

Some call it an obsession, others call it a reason not to retire, but I've been concentrating on the clinical significance of research emanating from the unprecedented interest in phenomena occurring on the downslope of the R wave (i.e., the general area where ventricular depolarization and repolarization overlap).

### SELECTED PUBLICATIONS

**Symposium on the J wave patterns and a J wave syndrome.** Froelicher V, Wagner G. *J Electrocardiol.* 2013; 46(5): 381-2.

**The electrocardiogram at a crossroads.** Yong CM, Froelicher V, Wagner G. *Circulation.* 2013; 128(1): 79-82.

**Race differences in ventricular remodeling and function among college football players.** Haddad F, Peter S, Hulme O, Liang D, Schnittger I, Puryear J, Gomari FA, Finocchiaro G, Myers J, Froelicher V, Garza D, Ashley EA. *Am J Cardiol.* 2013; 112(1): 128-34.

**Electrocardiographic interpretation in athletes: the ‘Seattle criteria’.** Drezner JA, Ackerman MJ, Anderson J, Ashley E, Asplund CA, Baggish AL, Börjesson M, Cannon BC, Corrado D, DiFiori JP, Fischbach P, Froelicher V, Harmon KG, Heidbuchel H, Marek J, Owens DS, Paul S, Pelliccia A, Prutkin JM, Salerno JC, Schmied CM, Sharma S, Stein R, Vetter VL, Wilson MG. *Br J Sports Med.* 2013; 47(3): 122-4.

**The prognostic value of early repolarization with ST-segment elevation in African Americans.** Perez MV, Uberoi A, Jain NA, Ashley E, Turakhia MP, Froelicher V. *Heart Rhythm.* 2012; 9(4): 558-65.

**Early repolarization redux: the devil is in the methods.** Froelicher V. *Ann Noninvasive electrocardiol.* 2012; 17(1): 63-4.

**Early repolarization in an ambulatory clinical population.** Uberoi A, Jain NA, Perez M, Weinkopff A, Ashley E, Hadley D, Turakhia MP, Froelicher V. *Circulation.* 2011; 124(20): 2208-14.



## Sanjiv Sam Gambhir, MD, PhD

Virginia and DK Ludwig Professor for Clinical Investigation in Cancer Research Chair, Department of Radiology  
 Professor (by courtesy), Bioengineering and Materials Science and Engineering  
 Director, Canary Center for Cancer Early Detection at Stanford  
 Director, Molecular Imaging Program at Stanford (MIPS)

EMAIL [sgambhir@stanford.edu](mailto:sgambhir@stanford.edu)

PROFILE [med.stanford.edu/profiles/Sanjiv\\_Gambhir](http://med.stanford.edu/profiles/Sanjiv_Gambhir)

DEPARTMENT [radiology.stanford.edu](http://radiology.stanford.edu)

PROGRAM [mips.stanford.edu](http://mips.stanford.edu)

### EDUCATION/TRAINING

MD UCLA

PhD UCLA

MEDICINE RESIDENCY & INTERNSHIP  
 UCLA

FELLOWSHIP  
 UCLA

BOARD CERTIFICATION  
 Nuclear Medicine, ABNM

### CLINICAL FOCUS

Nuclear Medicine  
 Radiology  
 Positron Emission Tomography (PET)  
 Imaging

### HONORS & AWARDS

Georg Charles de Hevesy Nuclear  
 Pioneer Award, Society of Nuclear  
 Medicine (SNM)

Radiology Society of Northern  
 America (RSNA) Outstanding  
 Researcher of the Year Award (2009)

Paul C. Abersold Award, Society of  
 Nuclear Medicine

Parmley Prize, American College of  
 Cardiology Foundations

Tesla Medal, United Kingdom Royal  
 College of Radiologists

Hounsfield Medal, Imperial College of  
 London

### ELECTED MEMBER

Institute of Medicine of the US  
 National Academies

### CURRENT RESEARCH

My laboratory is developing imaging assays to monitor fundamental cellular/molecular events in living subjects including patients. Technologies such as micro positron emission tomography (microPET), bioluminescence optical imaging, fluorescence optical imaging, micro computerized axial tomography (microCAT), ultrasound, photoacoustics, Raman imaging are all being actively investigated in small animal models. Our goals are to marry fundamental advances in molecular/cell biology with those in biomedical imaging to advance the field of molecular imaging. We have a particular interest in cancer biology and gene therapy. Research in early cancer detection and pharmacological therapy assessment is also being performed. Assays to interrogate cells for mRNA levels, cell surface antigens, intracellular proteins and protein-protein interactions are under active development. We are also extending many of these approaches for human clinical applications using optical and PET-CT technologies.

Why should surgery be limited to what the human eye sees? You should be able to be guided by microscopic cellular and molecular events.

### SELECTED PUBLICATIONS

**Intracellular Aggregation of Multimodal Silica Nanoparticles for Ultrasound-Guided Stem Cell Implantation.** *Sci Transl Med.* 2013; 5(177): 177ra35.

**Preclinical Efficacy of the Anti-Hepatocyte Growth Factor Antibody Ficlatazumab in a Mouse Brain Orthotopic Glioma Model Evaluated by Bioluminescence, PET, and MRI.** Mitttra ES, Fan-Minogue H, Lin FI, Karamchandani J, Sriram V, Han M, Gambhir SS. *Clin Cancer Res.* 2013; 19(20): 5711-21.

**Activatable oligomerizable imaging agents for photoacoustic imaging of furin-like activity in living subjects.** Dragulescu-Andrasi A, Kothapalli SR, Tikhomirov GA, Rao J, Gambhir SS. *J Am Chem Soc.* 2013; 135(30): 11015-22.

**A small animal Raman instrument for rapid, wide-area, spectroscopic imaging.** Bohndiek SE, Wagadarikar A, Zavaleta CL, Van de Sompel D, Garai E, Jokerst JV, Yazdanfar S, Gambhir SS. *Proc Natl Acad Sci U S A.* 2013; 110(30): 12408-13.

**A Raman-based endoscopic strategy for multiplexed molecular imaging.** Zavaleta CL, Garai E, Liu JT, Sensarn S, Mandella MJ, Van de Sompel D, Friedland S, Van Dam J, Contag CH, Gambhir SS. *Proc Natl Acad Sci U S A.* 2013; 110(25): E2288-97.





## François Haddad, MD

Clinical Assistant Professor, Medicine  
 Director, Stanford CVI Biomarker and Phenotypic Core Laboratory

EMAIL [fhaddad@stanford.edu](mailto:fhaddad@stanford.edu)

PROFILE [med.stanford.edu/profiles/Francois\\_Haddad](http://med.stanford.edu/profiles/Francois_Haddad)

### EDUCATION/TRAINING

MD University of Montreal

PhD(c) University of Montreal

### MEDICINE RESIDENCY

Montreal University

### CARDIOVASCULAR IMAGING FELLOWSHIP

Montreal Heart Institute

### HEART FAILURE/TRANSPLANT & PULMONARY VASCULAR DISEASE FELLOWSHIP

Stanford University

### BOARD CERTIFICATION

Cardiology, Royal College of Physicians  
 Internal Medicine, Royal College of Physicians

### CLINICAL FOCUS

Cardiology  
 Right Heart Failure  
 Heart Transplantation

### HONORS & AWARDS

Governor General's Medal of Excellence, Government of Canada

Faculty Teacher Award, University of Montreal

### FELLOW & SCIENTIFIC STEERING COMMITTEE MEMBER

American Heart Association

### TASK FORCE

World Health Organization, Pulmonary Hypertension

### RESEARCH ASSOCIATE

Pulmonary Hypertension Group, Paris University

### CURRENT RESEARCH

My research focuses on better understanding right heart failure and pulmonary hypertension. We are currently investigating the value of novel imaging and inflammatory biomarkers that can lead to earlier diagnosis and better risk stratification of patients with right heart failure. Our Core Laboratory is also facilitating translational discoveries in the field of heart failure, hypertension and stem cell therapy.

Before answering complex questions, one has to start by better understanding normal variant. We hope to achieve this through comprehensive physiological phenotyping and a focused approach to biomarker discovery.

### SELECTED PUBLICATIONS

**Non-invasive indices of right ventricular function are markers of ventriculo-arterial coupling rather than ventricular contractility: insights from a porcine model of Chronic Pulmonary Hypertension.** Haddad F\*, Guihaire J\*, Boulate D, Decante B, Denault AY, Wu JC, Herve P, Humbert M, Dartevielle P, Verhoye JP, Mercier O, Fadel E. *Eur Heart J Cardiovasc Imaging.* 2013; 14(12): 1140-9. \*Co-first authorship.

**Race differences in ventricular remodeling and function among college football players.** Haddad F, Peter S, Hulme O, Liang D, Schnittger I, Puryear J, Gomari FA, Finocchiaro G, Myers J, Froelicher V, Garza D, Ashley EA. *Amer J Cardiol.* 2013; 112(1): 128-34.

**Effects of intracoronary cd34+ stem cell transplantation in nonischemic dilated cardiomyopathy patients: 5-year follow-up.** Vrtovec B, Poglajen G, Lezaic L, Sever M, Domonovic D, Cernelc P, Socan A, Schrepfer S, Torre-Amione G, Haddad F, Wu JC. *Circ Res.* 2013; 112: 165-73.

**Right-ventricular failure following left ventricle assist device implantation.** Patlolla B, Beygui R, Haddad F. *Curr Opin Cardiol.* 2013; 28: 223-33.

**Characteristics and outcome after hospitalization for acute right heart failure in patients with pulmonary arterial hypertension.** Haddad F, Peterson T, Fuh E, Kudelko KT, de Jesus Perez V, Skhiri M, Vagelos R, Schnittger I, Denault AY, Rosenthal DN, Doyle RL, Zamanian RT. *Circ Heart Fail.* 2011; 4(6): 692-9.

**Right ventricular function in cardiovascular disease, part I: Anatomy, physiology, aging, and functional assessment of the right ventricle.** Haddad F, Hunt SA, Rosenthal DN, Murphy DJ. *Circulation.* 2008; 117(11): 1436-48.



## Robert A. Harrington, MD

Arthur L. Bloomfield Professor of Medicine  
 Chair, Department of Medicine  
 Director of Clinical Investigation, Stanford Cardiovascular Institute

EMAIL [robert.harrington@stanford.edu](mailto:robert.harrington@stanford.edu)

PROFILE [med.stanford.edu/profiles/Robert\\_Harrington](http://med.stanford.edu/profiles/Robert_Harrington)

DEPARTMENT [medicine.stanford.edu](http://medicine.stanford.edu)

### EDUCATION/TRAINING

MD Tufts University

### MEDICINE RESIDENCY

University of Massachusetts

### INTERVENTIONAL

### CARDIOLOGY FELLOWSHIP

Duke University

### BOARD CERTIFICATION

Internal Medicine, ABIM  
 Cardiovascular Disease, ABIM  
 Interventional Cardiology, ABIM

### CLINICAL FOCUS

Cardiovascular Disease

### HONORS & AWARDS

#### CHAIR

American Heart Association  
 Committee on Scientific Sessions  
 Program (2013-2014)

#### MEMBER

American College of Cardiology Board  
 of Trustees

#### MEMBER

Association of American Physicians

#### FORMER CHAIR

FDA Cardiovascular and Renal Drugs  
 Advisory Committee

#### FORMER CO-CHAIR

NHLBI Workshop on the Electronic  
 Health Record in Clinical Trials

FORMER MEMBER NHLBI Clinical  
 Trials Review Committee

### CURRENT RESEARCH

My research focuses on redefining the care of patients with acute ischemic heart disease while building local, national and international collaborations for the efficient conduct of innovative clinical research and trying to better understand and improve upon the methodology of clinical trials.

Society needs academic centers to step up and figure out how we are going to deliver health care while also advancing science and educating the next generation of clinical leaders.

### SELECTED PUBLICATIONS

**Cardiac troponin after percutaneous coronary intervention and 1-year mortality in non-ST-segment elevation acute coronary syndrome using systematic evaluation of biomarker trends.** Tricoci P, Leonardi S, White J, White HD, Armstrong PW, Montalescot G, Giugliano RP, Gibson CM, Van de Werf F, Califf RM, Harrington RA, Braunwald E, Mahaffey KW, Newby LK. *J Am Coll Cardiol.* 2013; 62(3): 242-51.

**Effect of platelet inhibition with cangrelor during PCI on ischemic events.** Bhatt DL, Stone GW, Mahaffey KW, Gibson CM, Steg PG, Hamm CW, Price MJ, Leonardi S, Gallup D, Bramucci E, Radke PW, Widimský P, Tousek F, Tauth J, Spriggs D, McLaurin BT, Angiolillo DJ, Généreux P, Liu T, Prats J, Todd M, Skerjanec S, White HD, Harrington RA. *N Engl J Med.* 2013; 368 (14): 1303-13.

**Ticagrelor in patients with acute coronary syndromes and stroke: Interpretation of subgroups in clinical trials.** James SK, Pieper KS, Cannon CP, Storey RF, Becker RC, Steg PG, Wallentin L, Harrington RA; PLATO study group. *Stroke.* 2013; 44(5): 1477-9.

**Rescuing clinical trials in the United States and beyond: A call for action.** Eapen ZJ, Vavalle JP, Granger CB, Harrington RA, Peterson ED, Califf RM. *Am Heart J.* 2013; 165(6): 837-47.

**Stent Thrombosis with ticagrelor versus clopidogrel in patients with acute coronary syndromes: An analysis from the prospective randomized PLATO trial.** Steg PG, Harrington RA, Emanuelsson H, Katus HA, Mahaffey KW, Meier B, Storey RF, Wojdyla DM, Lewis BS, Maurer G, Wallentin L, James SK; for the PLATO study group. *Circulation.* 2013; 128(10): 1055-65.

**Assessing research results in the medical literature: Trust but verify.** Califf RM, McCall J, Harrington RA. *JAMA intern Med.* 2013; 173(12): 1053-5.



## Paul A. Heidenreich, MD, MS

Professor, Medicine - Cardiovascular Medicine  
Professor (by courtesy), Health Research and Policy  
Director of Echocardiography, VA Palo Alto Health Care System  
Research Associate, Primary Care and Outcomes Research Center

EMAIL [heiden@stanford.edu](mailto:heiden@stanford.edu)

PROFILE [med.stanford.edu/profiles/Paul\\_Heidenreich](http://med.stanford.edu/profiles/Paul_Heidenreich)

WEB [healthpolicy.stanford.edu/people/paul\\_a\\_heidenreich](http://healthpolicy.stanford.edu/people/paul_a_heidenreich)

### EDUCATION/TRAINING

MD University of Chicago

MS Health Services Research,  
Stanford University

INTERNAL MEDICINE RESIDENCY  
UCSF

CARDIOVASCULAR IMAGING  
FELLOWSHIP UCSF

CLINICAL CARDIOLOGY FELLOWSHIP  
UCSF

BOARD CERTIFICATION  
Cardiovascular Disease, ABIM  
Internal Medicine, ABIM  
Transthoracic plus Transesophageal  
Certification in Adult  
Echocardiography, NBE

### CLINICAL FOCUS

Cardiac Imaging

### HONORS & AWARDS

Simon Dack Award for Outstanding  
Scholarship, American College of  
Cardiology Foundation

Anna and Harry Borun Visiting  
Professor, UCLA (2011)

### ELITE REVIEWER

Journal of the American College of  
Cardiology (ACC)

### FELLOW

ACC; American Heart Association

### MEMBER

American College of Physicians;  
American Society of Echocardiography

### CURRENT RESEARCH

My current research interests include: 1) the cost-effectiveness of new cardiovascular technologies (for example, tests to screen asymptomatic patients for left ventricular systolic dysfunction); 2) interventions to improve the quality of care of patients with heart disease (for example, clinical reminders and home monitoring); 3) outcomes research using existing clinical and administrative datasets; and 4) use of echocardiography to predict prognosis.

Both heart failure and atrial fibrillation impose an important economic and health burden on western societies that is only going to worsen as their populations age.

### SELECTED PUBLICATIONS

**Association of single- vs. dual-chamber ICDs with mortality, readmissions, and complications among patients receiving an ICD for primary prevention.** Peterson PN, Varosy PD, Heidenreich PA, Wang Y, Dewland TA, Curtis JP, GoAS, Greenlee RT, Magid DJ, Normand SL, Masoudi FA. *JAMA*. 2013; 309(19): 2025-34.

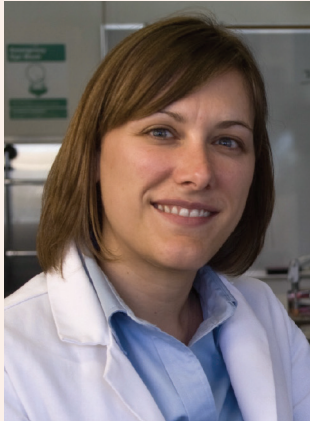
**Divergent trends in survival and readmission following a hospitalization for heart failure in the VA Health Care System 2002-2006.** Heidenreich PA, Sahay A, Kapoor J, Pham MX, Massie B. *J Am Coll Cardiol*. 2010; 56(5): 362-8.

**Cost-effectiveness of chlorthalidone, amlodipine, and lisinopril as first-step treatment for patients with hypertension: an analysis of the Antihypertensive and Lipid-Lowering Treatment to Prevent Heart Attack Trial (ALLHAT).** Heidenreich PA, Davis BR, Cutler JA, Furberg CD, Lairson DR, Shlipak MG, Pressel SL, Nwachuku C, Goldman L. *J Gen Intern Med*. 2008; 23(5): 509-16.

**Statin use in patients with extremely low low-density lipoprotein levels is associated with improved survival.** Leeper NJ, Ardehali, R, deGoma EM, Heidenreich PA. *Circulation*. 2007 Aug; 116(6): 613-8.

**Clinical reminders attached to echocardiography reports of patients with reduced left ventricular ejection fraction increase use of beta-blockers: a randomized trial.** Heidenreich PA, Gholami P, Sahay A, Massie B, Goldstein MK. *Circulation*. 2007; 115(22): 2829-34.

**Health status identifies heart failure outpatients at risk for hospitalization or death.** Heidenreich PA, Spertus, JA, Jones PG, Weintraub WS, Rumsfeld JS, Rathore SS, Peterson ED, Masoudi FA, Krumholz HM, Havranek EP, Conard MW, Williams RE. *J Am Coll of Cardiol*. 2006; 47(4): 752-6.



## Sarah Heilshorn, PhD

Assistant Professor, Materials Science and Engineering  
 Assistant Professor (by courtesy), Chemical Engineering  
 Assistant Professor (by courtesy), Bioengineering

EMAIL [heilshorn@stanford.edu](mailto:heilshorn@stanford.edu)

PROFILE [med.stanford.edu/profiles/Sarah\\_Heilshorn](http://med.stanford.edu/profiles/Sarah_Heilshorn)

LAB [stanford.edu/group/heilshorn](http://stanford.edu/group/heilshorn)

### EDUCATION/TRAINING

PhD California Institute of Technology

RESEARCH FELLOWSHIP UC Berkeley

MS California Institute of Technology

### HONORS & AWARDS

NIH Director's New Innovator Award

National Science Foundation  
 Career Award

American Chemical Society,  
 Petroleum Research Fund,  
 Doctoral New Investigator Award

UK-US Stem Cell Collaboration  
 Development Award

Colburn Lectureship,  
 University of Delaware

### EDITORIAL BOARD

*Biomaterials Science; Molecular Therapy:  
 Methods and Clinical Development*

### GUEST EDITOR

*Acta Biomaterialia*

### MEMBER

American Chemical Society; American  
 Institute of Chemical Engineers;  
 Materials Research Society; Society  
 for Biomaterials; Tissue Engineering  
 and Regenerative Medicine  
 International Society

### FELLOW

Stanford Institute for Chemical  
 Biology

### CURRENT RESEARCH

I combine my diverse training in engineering, chemistry, and biology to design new materials that mimic those found in our own bodies for applications in tissue engineering and regenerative medicine. Current topics of investigation include the design of injectable materials to improve stem cell transplantation, protein engineered materials for regenerative medicine scaffolds, and peptide-based self-assembly materials for enhanced drug delivery.

I have advised PhD students from six different academic programs at Stanford: chemistry, chemical engineering, bio engineering, materials science, mechanical engineering, and MD/PhD.

### SELECTED PUBLICATIONS

**Protein-engineered injectable hydrogel to improve retention of transplanted adipose-derived stem cells.** Parisi-Amon A, Mulyasmita W, Chung C, Heilshorn SC. *Adv Healthcare Mater.* 2013; 2: 428-32.

**Photoreactive elastin-like proteins for use as versatile bioactive materials and surface coatings.** Raphael J, Parisi-Amon A, Heilshorn SC. *J Mater Chem.* 2012; 22: 19429-37.

**Hydrogel crosslinking density regulates temporal contractility of human embryonic stem cell-derived cardiomyocytes in 3D cultures.** Chung C, Anderson E, Reijo Pera R, Pruitt BL, Heilshorn SC. *Soft Matter.* 2012; 8: 10141-8.

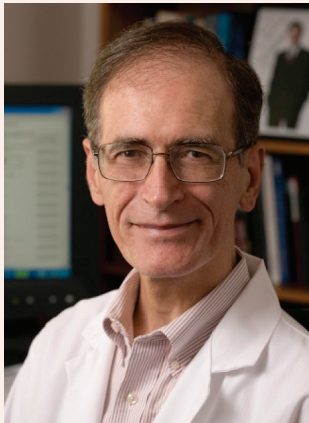
**Improving viability of stem cells during syringe needle flow through the design of hydrogel cell carriers.** Aguado BA, Mulyasmita W, Su J, Lampe KJ, Heilshorn SC. *Tissue Eng Part A.* 2012; 18: 806-15.

**Mechanisms of VEGF-induced path-finding by endothelial sprouts in biomaterials.** Shamloo A, Hui X, Heilshorn SC. *Tissue Eng Part A.* 2012; 18: 320-30.

**Building stem cell niches from the molecule up through engineered peptide materials.** Lampe KJ, Heilshorn SC. *Neurosci Lett.* 2012; 519: 138-46.

**Essential regulation of CNS angiogenesis by the orphan G protein-coupled receptor GPR124.** Kuhnert F, Mancuso MR, Shamloo A, Wang HT, Choksi V, Florek M, Su H, Fruttiger M, Young WL, Heilshorn SC, Kuo CJ. *Science.* 2010; 330: 985-9.





## Mark Hlatky, MD

Professor, Health Research and Policy  
Professor, Medicine - Cardiovascular Medicine  
Director, Stanford-Kaiser Cardiovascular Outcomes Research Center  
Director, Health Services Research Masters Degree Program

EMAIL [hlatky@stanford.edu](mailto:hlatky@stanford.edu)

PROFILE [med.stanford.edu/profiles/Mark\\_Hlatky](http://med.stanford.edu/profiles/Mark_Hlatky)

### EDUCATION/TRAINING

MD University of Pennsylvania

### MEDICINE RESIDENCY

University of Arizona

### CARDIOLOGY FELLOWSHIP

Duke University

### ROBERT WOOD JOHNSON CLINICAL SCHOLAR UCSF

### BOARD CERTIFICATION

Internal Medicine, ABIM

Cardiovascular Disease, ABIM

### CLINICAL FOCUS

General Cardiology

### HONORS & AWARDS

#### DIRECTOR

Health Services Research Graduate Degree Program

#### FELLOW

American College of Cardiology;  
American Heart Association (AHA)

#### MEMBER

AHA Epidemiology and Prevention Council; AHA Quality of Care and Outcomes Research Interdisciplinary Working Group

#### ADVISORY COMMITTEE MEMBER

Technology Evaluation Center, Blue Cross Blue Shield Association; Medicare Evidence Development and Coverage; AHA Research Committee

#### FORMER CHAIR

Department of Health Research and Policy

### CURRENT RESEARCH

My major interests are in cardiovascular health services research, outcomes research, evidence-based medicine, and cost-effectiveness analysis. I introduce data collection about economic and quality of life endpoints in several randomized trials, principally trials of therapies for cardiovascular disease (coronary angioplasty, stents, and bypass surgery; diabetes management).

I am interested in determining what 'works' in medical care, whether it provides enough value to be worth the money we spend on it, and how to foster the adoption of effective and efficient practices.

### SELECTED PUBLICATIONS

**Adoption and Effectiveness of Internal Mammary Artery Grafting in Coronary Artery Bypass Surgery Among Medicare Beneficiaries.** Hlatky MA, Boothroyd DB, Reitz BA, Shilane DA, Baker LC, Go AS. *J Am Coll Cardiol.* 2013; 63(1): 33-9.

**Fearon WF, Shilane D, Pijls NHJ, Boothroyd DB, Tonino PAL, Barbato E, Juni P, De Bruyne B, Hlatky MA.** Cost-effectiveness of percutaneous coronary intervention in patients with stable coronary disease and abnormal fractional flow reserve. *Circulation.* 2013; 128; 1335-40.

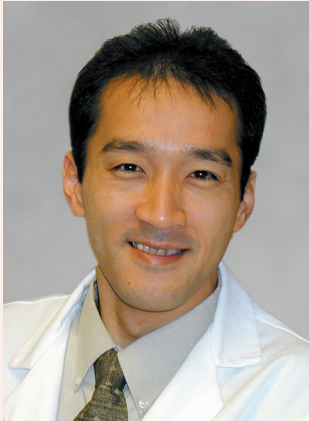
**Comparative effectiveness of multivessel coronary bypass surgery and multivessel percutaneous coronary intervention. A cohort study.** Hlatky MA, Boothroyd DB, Baker L, Kazi DS, Solomon MD, Chang TI, Shilane D, Go AS. *Ann Intern Med.* 2013; 158(10): 727-34.

**Physician procedure volume and complications of cardioverter-defibrillator implantation.** Freeman JV, Wang Y, Curtis JP, Heidenreich PA, Hlatky MA. *Circulation.* 2012; 125: 57-64.

**Cost-effectiveness of genetic testing in family members of patients with long QT syndrome.** Perez MV, Kumarasamy NA, Owens DK, Wang PJ, Hlatky MA. *Circ Cardiovasc Qual Outcomes.* 2011; 4: 76-84.

**Association of coronary CT angiography or stress testing with subsequent utilization and spending among Medicare beneficiaries.** Shreibati JB, Baker LC, Hlatky MA. *JAMA.* 2011; 30(6): 2128 -36.

**Coronary artery bypass surgery compared with percutaneous coronary interventions for multivessel disease: A collaborative analysis of individual patient data from ten randomised trials.** Hlatky MA, Boothroyd DB, Bravata DM, [+20 authors], Pocock SJ. *Lancet.* 2009; 373(9670): 1190 -7.



## Yasuhiro Honda, MD

Clinical Associate Professor, Medicine - Cardiovascular Medicine  
Co-Director, Stanford Cardiovascular Core Analysis Laboratory (CCAL)

EMAIL [yshonda@stanford.edu](mailto:yshonda@stanford.edu)

PROFILE [med.stanford.edu/profiles/Yasuhiro\\_Honda](http://med.stanford.edu/profiles/Yasuhiro_Honda)

WEB [crci.stanford.edu](http://crci.stanford.edu)

### EDUCATION/TRAINING

MD Kyoto University

### MEDICINE RESIDENCY

Kobe General Hospital

### CARDIOLOGY FELLOWSHIP

Kobe General Hospital

### RESEARCH FELLOWSHIP

Stanford University

### CLINICAL FOCUS

Advanced Cardiovascular Imaging  
Interventional Cardiology  
Intravascular Diagnostics

### HONORS & AWARDS

#### INTERNATIONAL COMMITTEE & TASK FORCE

International Working Group for Intravascular Optical Coherence Tomography Standardization and Validation

#### STEERING COMMITTEE MEMBER

Stanford Trans-Pacific Cardiovascular Research Scholarship Program

#### FELLOW

American College of Cardiology;  
American Heart Association

#### EDITORIAL BOARD

*Cardiovascular Intervention and Therapeutics*

### CURRENT RESEARCH

My laboratory is recognized worldwide as a leading centralized resource of image analysis in the conduct of research studies and clinical trials in the field of cardiovascular medicine. Specifically, we have served as a core laboratory for over 135 national or international multi-center trials of new medical devices or pharmacological treatments, utilizing advanced cardiovascular imaging techniques, such as intravascular ultrasound (IVUS), catheter-based optical coherence tomography (OCT)/frequency domain imaging (OFDI), and intravascular near-infrared spectroscopy (NIRS). The data provided from my laboratory have contributed not only to the FDA's approval process of new treatment technologies, but also academically to our understanding of cardiovascular disease by generating over 380 scientific articles published in peer-reviewed journals.

Advances in diagnostic technologies will enable us to better understand pathophysiology and will pave the way for new treatment strategies for our patients.

### SELECTED PUBLICATIONS

**First-in-man study of the low-dose paclitaxel utilizing the COBRA-P drug-eluting coronary stent system with a novel biodegradable coating in de novo coronary lesions: IVUS results from the PLUS-ONE trial.** Nakatani D, Waseda K, Ako J, Calderas C, Condado JA, Condado JF, Honda Y, Fitzgerald PJ. *Catheter Cardiovasc Interv.* 2014 [In Press].

**Improved automated lumen contour detection by novel multifrequency processing algorithm with current intravascular ultrasound system.** Kume T, Kim BK, Waseda K, Sathyanarayana S, Li W, Teo TJ, Yock PG, Fitzgerald PJ, Honda Y. *Catheter Cardiovasc Interv.* 2013; 81(3): E173-7.

**Histological Characteristics of Myocardial Bridge With an Ultrasonic Echolucent Band.** Yamada R, Turcott RG, Connolly AJ, Ikeno F, McConnell MV, Schnittger I, Fitzgerald PJ, Honda Y. *Circ J.* 2013 [Epub ahead of print].

**Impact of diabetes mellitus on vessel response in the drug-eluting stent era: pooled volumetric intravascular ultrasound analyses.** Sakata K, Waseda K, Kume T, Otake H, Nakatani D, Yock PG, Fitzgerald PJ, Honda Y. *Circ Cardiovasc Interv.* 2012; 5(6): 763-71.

**Impact of polymer formulations on neointimal proliferation after zotarolimus-eluting stent with different polymers: insights from the RESOLUTE trial.** Waseda K, Ako J, Yamasaki M, Koizumi T, Sakurai R, Hongo Y, Koo BK, Ormiston J, Worthley SG, Whitbourn RJ, Walters DL, Meredith IT, Fitzgerald PJ, Honda Y. *Circ Cardiovasc Interv.* 2011. 4(3): 248-55.



## Ngan F. Huang, PhD

Assistant Professor, Cardiothoracic Surgery - Adult Cardiac Surgery  
Biomedical Engineer, VA Palo Alto Health Care System

EMAIL [ngantina@stanford.edu](mailto:ngantina@stanford.edu)

PROFILE [med.stanford.edu/profiles/Ngan\\_Huang](http://med.stanford.edu/profiles/Ngan_Huang)

LAB [huanglab.stanford.edu](http://huanglab.stanford.edu)

### EDUCATION/TRAINING

PhD UC Berkeley and UCSF

MS UC Berkeley and UCSF

### HONORS & AWARDS

Society for Vascular Medicine Jay D. Coffman Young Investigator Award

First Place in Basic Science American Heart Association Council on Peripheral Vascular Disease

Robert W Hobson II MD Early Career Investigator Award

NIH Career Development Award

CVI Seed Grant (2012)

### STEERING COMMITTEE MEMBER

Stanford Cardiovascular Institute

### MEMBER

Bio-X; Child Health Research Institute

### CURRENT RESEARCH

My research laboratory aims to quantify the chemical and biophysical interactions between cells and extracellular matrix (ECM) proteins that regulate cell fate specification into cardiovascular lineages. Using high-throughput ECM-microarrays, tunable hydrogels, and nanofibrillar scaffolds, we are studying how the ECM influences lineage commitment processes such as differentiation, transdifferentiation, and nuclear reprogramming. The fundamental insights of cell-ECM interactions are applied towards translational applications with respect to improving the survival and regenerative capacity of transplanted cells, as well as for engineering vascularized cardiovascular tissues. We are also collaborating with industry partners to develop bioengineered devices that improve lymphangiogenesis and angiogenesis in preclinical studies.

I believe that a fully functional tissue-engineered heart can be realized in my lifetime.

### SELECTED PUBLICATIONS

**Conversion of human fibroblasts to functional endothelial cells by defined factors.** Li J, Huang NF\* (\*co-first author), Zou J, Laurent TJ, Lee JC, Okogbaa J, Cooke JP, Ding S. *Arterioscler Thromb Vasc Biol.* 2013; 33: 1366-75.

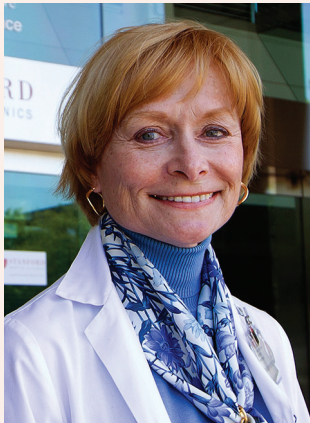
**The modulation of endothelial cell morphology, function, and survival using anisotropic nanofibrillar collagen scaffolds.** Huang NF, Okogbaa JN, Lee JC, Paukshto M, Zaitseva T, Cooke JP. *Biomaterials.* 2013; 34: 4038-47.

**Spatial patterning and shear stress modulate endothelial cell morphology, gene expression, and function: implications for vascular tissue engineering.** Huang NF, Lai E, Ribeiro AS, Pan S, Pruitt BL, Fuller GG, Cooke JP. *Biomaterials.* 2013; 34: 2928-37.

**Multi-functional in vivo vascular imaging using near-infrared II fluorescence.** Hong G, Lee JC, Robinson JT, Raaz U, Xie L, Huang NF# (#co-corresponding author), Cooke JP, Dai H. *Nat Med.* 2012; 18: 1841-6.

**Endothelial cells derived from human iPSCs increase capillary density and improve perfusion in a mouse model of peripheral arterial disease.** Abdul Jalil R, Huang NF\* (\*co-first author), Jame S, Lee J, Nguyen HN, Byers B, De A, Okogbaa J, Rollins MD, Reijo-Pera R, Gambhir SS, Cooke JP. *Arterioscler Thromb Vasc Biol.* 2011; 31: e72-9.

**Embryonic stem cell-derived endothelial cells engraft into the ischemic hindlimb and restore perfusion.** Huang NF, Niiyama H, Peter C, De A, Natkunam Y, Fleissner F, Li Z, Rollins MD, Wu JC, Gambhir SS, Cooke JP. *Arterioscler Thromb Vasc Biol.* 2010; 30: 984-91.



## Sharon Hunt, MD

Professor, Medicine - Cardiovascular Medicine  
Medical Director, Post-Heart Transplant Programs

EMAIL [hunts@stanford.edu](mailto:hunts@stanford.edu)

PROFILE [med.stanford.edu/profiles/Sharon\\_Hunt](http://med.stanford.edu/profiles/Sharon_Hunt)

### EDUCATION/TRAINING

MD Stanford University

**MEDICINE RESIDENCY & INTERNSHIP**  
Stanford University

**CARIOLOGY FELLOWSHIP**  
Stanford University

**BOARD CERTIFICATION**  
Advanced Heart Failure Transplant  
Cardiology, ABIM  
Core Cardiology, ABIM  
Internal Medicine, ABIM

### CLINICAL FOCUS

Clinical Heart Transplant

### HONORS & AWARDS

**LIFETIME ACHIEVEMENT AWARD**  
International Society for Heart and  
Lung Transplantation (ISHLT; 2012)

American Society of Transplantation  
Senior Achievement Award in Clinical  
Transplantation

Laennec Master Clinician Award,  
American Heart Association

David A Rytand Clinical Teaching  
Award, Stanford University

**FORMER CHAIR (1999-2006)**  
ACC/AHA Committee to rewrite heart  
failure guidelines

**FORMER CHAIR (2008-12)**  
ABIM Test Committee on Advanced  
Heart Failure and Transplant Cardiology

**FORMER CO-CHAIR (2011-12)**  
ISHLT Guidelines for post transplant  
patient management

### CURRENT RESEARCH

My research and clinical work focus on advancing long-term postoperative care for heart transplant recipients. I truly enjoy both taking care of patients and the opportunity to mentor cardiology fellows at Stanford.

My favorite things include old Porsches,  
Siamese cats, orchids, and travel.

### SELECTED PUBLICATIONS

**Heart transplant recipient selection issues: limited assets, infinite possibilities.**  
Hunt SA. *J Heart Lung Transplant.* 2012; 31: 675-6.

**A bridge far enough?** Stevenson LW, Hunt SA. *Circulation.* 2012; 125: 3069-72.

**The changing face of heart transplantation.** Hunt SA, Haddad F. *J Amer Coll Cardiol.* 2008; 52: 587-98.

**2009 Focused update incorporated into the ACC/AHA 2005 Guidelines for the Diagnosis and Management of Heart Failure in Adults: A Report of the American College of Cardiology Foundation/American Heart Association Task Force on Practice Guidelines Developed in Collaboration With the International Society for Heart and Lung Transplantation.** Hunt SA, Abraham WT, Chin MH, [+11 authors], Yancy CW; American College of Cardiology Foundation; American Heart Association. *J Am Coll Cardiol.* 2009; 53(15): e1-e90.

**ACC/AHA Practice Guidelines: ACC/AHA Guidelines for the Evaluation and Management of Chronic Heart Failure in the Adult: Executive Summary: A report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines (Committee to Revise the 1995 Guidelines for the Evaluation and Management of Heart Failure).** Hunt SA, Baker DW, Chin MH, Cinquegrani MP, Feldman AM, Francis GS, Ganiats TG, Goldstein S, Gregoratos G, Jessup ML, Noble RJ, Packer M, Silver MA, Stevenson LW. *J Am Coll Cardiol.* 2001; 38(7): 2102- 13.

**A fair way of donating hearts for transplantation.** Hunt SA. *BMJ.* 2000; 321: 526.

**Cardiac Transplantation: Current Status.** Hunt SA. *JAMA.* 1998; 280: 1692-8.

**Cardiac transplantation, update 1987.** Schroeder JS, Hunt SA. *JAMA.* 1997; 258: 3142-5.

**Cardiac transplantation: Where are we?** Schroeder JS, Hunt SA. *New Engl J Med.* 1986; 315: 961-3.





## John P. A. Ioannidis, MD, DSc

C.F. Rehnberg Professor in Disease Prevention  
 Professor, Medicine - Stanford Prevention Research Center  
 Professor, Health Research and Policy  
 Professor (by courtesy), Statistics  
 Director, Stanford Prevention Research Center

EMAIL [jioannid@stanford.edu](mailto:jioannid@stanford.edu)

PROFILE [med.stanford.edu/profiles/John\\_Ioannidis](http://med.stanford.edu/profiles/John_Ioannidis)

SPRC [prevention.stanford.edu](http://prevention.stanford.edu)

### EDUCATION/TRAINING

MD University of Athens

DSc University of Athens

### INTERNAL MEDICINE RESIDENCY

Harvard University

### INFECTIOUS DISEASE FELLOWSHIP

Tufts University

### BOARD CERTIFICATION

Internal Medicine (Europe)  
 Infectious Disease (Europe)

### HONORS & AWARDS

European Award for Excellence in Clinical Science

### ELECTED MEMBER

Association of American Physicians;  
 European Academy of Cancer Sciences

### FORMER PRESIDENT

Society for Research Synthesis  
 Methodology

### SENIOR ADVISOR FOR KNOWLEDGE INTEGRATION

National Cancer Institute

### EXECUTIVE BOARD MEMBER & CENTER DIRECTOR

Human Genome Epidemiology Network

### AFFILIATED FACULTY

Woods Institute for the Environment

### EDITOR-IN-CHIEF

*European Journal of Clinical Investigation*

### EDITORIAL BOARD MEMBER

26 major international journals

### CURRENT RESEARCH

I have worked in the fields of evidence-based medicine, clinical and molecular epidemiology, human genome epidemiology, statistical methods and mathematical modeling, predictive and personalized medicine and health, and the sociology of science. I have a strong interest in large-scale evidence (in particular randomized trials and meta-analyses) and empirical evaluation of bias in biomedical research. I am interested in how research is reported, and in the interdisciplinary enhancement of existing research methods for study design and analysis in biomedicine.

I am privileged to have learned and to continue to learn from interactions with students and scientists from all over the world and to be constantly reminded that I know next to nothing.

### SELECTED PUBLICATIONS

**US studies may overestimate effect sizes in softer research.** Fanelli D, Ioannidis JP. *Proc Natl Acad Sci U S A*. 2013; 110(37): 15031-6.

**Evaluation of excess significance bias in animal studies of neurological diseases.** Tsilidis KK, Panagiotou OA, Sena ES, Aretouli E, Evangelou E, Howells DW, Al-Shahi Salman R, Macleod MR, Ioannidis JP. *PLoS Biology*. 2013; 11(7): e1001609.

**Practices and impact of primary outcome adjustment in randomized controlled trials: meta-epidemiologic study.** Saquib N, Saquib J, Ioannidis JP. *BMJ*. 2013; 347: f4313.

**The power of meta-analysis in genome-wide association studies.** Panagiotou OA, Willer CJ, Hirschhorn JN, Ioannidis JP. *Annu Rev Genomics Hum Genet*. 2013; 14: 441-65.

**Optimal type I and type II error pairs when the available sample size is fixed.** Ioannidis JP, Hozo I, Djulbegovic B. *J Clin Epidemiol*. 2013; 66(8): 903-910.e2.

**Meta-analysis methods for genome-wide association studies and beyond.** Evangelou E, Ioannidis JP. *Nat Rev Genet*. 2013; 14(6): 379-89.

**Bias in associations of emerging biomarkers with cardiovascular disease.** Tzoulaki I, Siontis KC, Evangelou E, Ioannidis JP. *JAMA Intern Med*. 2013; 173(8): 664-71.

**Patient safety strategies targeted at diagnostic errors: a systematic review.** McDonald KM, Matesic B, Contopoulos-Ioannidis DG, Lonhart J, Schmidt E, Pineda N, Ioannidis JP. *Ann Intern Med*. 2013; 158(5 Pt 2): 381-9.



## Joshua W. Knowles, MD, PhD

Instructor, Medicine - Cardiovascular Medicine

EMAIL [knowlej@stanford.edu](mailto:knowlej@stanford.edu)

PROFILE [med.stanford.edu/profiles/Joshua\\_Knowles](http://med.stanford.edu/profiles/Joshua_Knowles)

FOUNDATION [thefhfoundation.org](http://thefhfoundation.org)

WEB [familyheart.stanford.edu](http://familyheart.stanford.edu)

### EDUCATION/TRAINING

MD UNC-Chapel Hill

PhD UNC-Chapel Hill

### MEDICINE RESIDENCY & INTERNSHIP

Stanford University

### CARDIOLOGY FELLOWSHIP

Stanford University

### BOARD CERTIFICATION

Internal Medicine, ABIM

Cardiovascular Disease, ABIM

### CLINICAL FOCUS

Genetic forms of heart disease

Familial Hypercholesterolemia

Lipidology

### HONORS & AWARDS

#### CHIEF MEDICAL OFFICER

The Familial Hypercholesterolemia (FH) Foundation

American Heart Association National Fellow to Faculty Transition Award

Future Leaders in CV Medicine Fellowship Award

#### FELLOW

American College of Cardiology;

American Heart Association

#### DIPLOMATE

American Board of Clinical Lipidology

#### INTERNATIONAL ADVISORY BOARD

Canadian FH registry

#### STEERING COMMITTEE

Stanford Cardiovascular Institute

### CURRENT RESEARCH

The fundamental theme of my work is the application of genetics to improve human health. I view this as a continuum from Discovery -> to the development of Model Systems -> to clinical Translation -> to larger Public Health efforts. Much of my work focuses on discovery of genetic variants underlying cardiovascular disease. We are translating these findings to the clinic in a randomized trial where we are asking if we can improve an individual's risk by giving them information about their inherited risk of heart disease. We are also creating human induced pluripotent stem cell (iPSC) lines to model the genetic networks that produce disease. Finally, as the Chief Medical Officer for a patient-led, non-profit (The FH Foundation), we are attempting to raise the profile of familial hypercholesterolemia (FH), an inherited disease that causes extremely elevated LDL cholesterol levels and risk of coronary disease. We have partnered with patients and organizations like the CDC, ACC and AHA to increase public health awareness of FH and have recently launched a national patient registry called "CASCADE FH".

Stanford is contributing at all levels to using the tools of human genetics to improve human health.

### SELECTED PUBLICATIONS

**Large-scale association analysis identifies new risk loci for coronary artery disease.** CARDIoGRAMplusC4D Consortium. *Nat Genet.* 2013; 45(1): 25-33.

**Role of international registries in enhancing the care of familial hypercholesterolaemia.** Hammond E, Watts GF, Rubinstein Y, Farid W, Livingston M, Knowles JW, Lochmüller H, Bellgard M, Dawkins HJ. *Int J Evid Based Healthc.* 2013; 11(2): 134-9.

**Genetic variants associated with glycine metabolism and their role in insulin sensitivity and type 2 diabetes.** Xie W, Wood AR, Lyssenko V, Weedon MN, Knowles JW, Alkayali S, Assimes TL, Quertermous T, [+ 14 authors], Walker M. *Diabetes.* 2013; 62(6): 2141-50.

**Measurement of insulin-mediated glucose uptake: Direct comparison of the modified insulin suppression test and the euglycemic, hyperinsulinemic clamp.** Knowles JW, Assimes TL, Tsao PS, Natali A, Mari A, Quertermous T, Reaven GM, Abbasi F. *Metabolism.* 2012; 62(4): 548-53.

**Randomized trial of personal genomics for preventive cardiology: design and challenges.** Knowles JW, Assimes TL, Kiernan M, Pavlovic A, Goldstein BA, Yank V, McConnell MV, Absher D, Bustamante C, Ashley EA, Ioannidis JP. *Circ Cardiovasc Genet.* 2012; 5(3): 368-76.



## Brian Kobilka, MD

Helene Irwin Fagan Chair in Cardiology  
 Professor, Molecular and Cellular Physiology  
 Professor, Medicine - Cardiovascular Medicine  
 Professor (by courtesy), Chemical and Systems Biology

EMAIL [kobilka@stanford.edu](mailto:kobilka@stanford.edu)

PROFILE [med.stanford.edu/profiles/Brian\\_Kobilka](http://med.stanford.edu/profiles/Brian_Kobilka)

LAB [med.stanford.edu/kobilkalab](http://med.stanford.edu/kobilkalab)

### EDUCATION/TRAINING

MD Yale University

### INTERNAL MEDICINE RESIDENCY

Washington University

### RESEARCH FELLOWSHIP

Duke University

### BOARD CERTIFICATION

Internal Medicine, ABIM

### HONORS & AWARDS

#### NOBEL PRIZE IN CHEMISTRY (2012)

Earl and Thressa Stadtman  
 Distinguished Scientist Award, ASBMB

Ariëns Award, Dutch Pharmacological  
 Society

#### ELECTED HONORARY MEMBER

Royal Irish Academy

#### ELECTED MEMBER

National Academy of Sciences

#### GUEST PROFESSOR

Tsinghua University, Beijing, China

#### ADJUNCT PROFESSOR

Monash University, Melbourne, Australia

#### DOCTEUR HONORIS CAUSA

Free University, Brussels, Belgium

John Daly Memorial Lecture, NIH

#### MEMBER

American Chemical Society;  
 American Society for Pharmacology  
 and Experimental Therapeutics;  
 American Society for Biochemistry  
 and Molecular Biology; American  
 Society of Clinical Investigation;  
 British Pharmacological Society

### CURRENT RESEARCH

The goal of research in my lab is to characterize the structure and mechanism of activation of G protein coupled receptors (GPCRs). GPCRs represent the largest group of cellular receptors for hormones and neurotransmitters in the human body. They play central roles in the network of cellular communication that orchestrates the physiological processes essential for life. Disruption of one or more components of this complex communication network can lead to a broad spectrum of diseases ranging from cardiovascular and metabolic disorders, to neuropsychiatric and neurodegenerative disorders. GPCRs are therefore important targets for drug discovery. We apply a spectrum of biochemical and biophysical tools to investigate the molecular mechanism of GPCR signaling in cells, and the structural basis for regulation of GPCR function by drugs. We are also working to discover new approaches for the more efficient and economical development of safer and more effective therapeutics targeting these receptors.

It has been a great privilege to be part of the Stanford community, which provides a unique environment for interdisciplinary collaborations, and attracts the most talented and innovative students and fellows.

### SELECTED PUBLICATIONS

**Activation and allosteric modulation of a muscarinic acetylcholine receptor.** Kruse AC, Ring AM, Manglik A, Hu J, Hu K, Eitel K, Hübner K, Pardon E, Valant C, Sexton PM, Christopoulos A, Felder CC, Gmeiner P, Steyaert J, Weis WI, Garcia KC, Wess J, Kobilka BK. *Nature*. 2013; 504(7478): 101-6.

**The dynamic process of  $\beta(2)$ -adrenergic receptor activation.** Nygaard R, Zou Y, Dror RO, Mildorf TJ, Arlow DH, Manglik A, Pan AC, Liu CW, Fung JJ, Bokoch MP, Thian FS, Kobilka TS, Shaw DE, Mueller L, Prosser RS, Kobilka BK. *Cell*. 2013; 152(3): 532-42.

**High-resolution crystal structure of human protease-activated receptor 1.** Zhang C, Srinivasan Y, Arlow DH, Fung JJ, Palmer D, Zheng Y, Green HF, Pandey A, Dror RO, Shaw DE, Weis WI, Coughlin SR, Kobilka BK. *Nature*. 2012; 492(7429): 387.

**Crystal structure of the  $\beta(2)$  adrenergic receptor-Gs protein complex.** Rasmussen SG, Devree BT, Zou Y, Kruse AC, Chung KY, Kobilka TS, Thian FS, Chae PS, Pardon E, Calinski D, Mathiesen JM, Shah ST, Lyons JA, Caffrey M, Gellman SH, Steyaert J, Skiniotis G, Weis WI, Sunahara RK, Kobilka BK. *Nature*. 2011; 477: 549-55.



## Mark A. Krasnow, MD, PhD

Professor, Biochemistry  
 Investigator, Howard Hughes Medical Institute  
 Executive Director, Wall Center for Pulmonary Vascular Diseases

EMAIL [krasnow@stanford.edu](mailto:krasnow@stanford.edu)

PROFILE [med.stanford.edu/profiles/Mark\\_Krasnow](http://med.stanford.edu/profiles/Mark_Krasnow)

LAB [cmgm.stanford.edu/krasnow](http://cmgm.stanford.edu/krasnow)

### EDUCATION/TRAINING

MD University of Chicago

PhD University of Chicago

HELEN HAY WHITNEY FELLOW  
 Stanford University

### CLINICAL FOCUS

Lung Development and Stem Cells  
 Neural Control of Breathing  
 Lung Diseases  
 Genetic Model Organisms for Medicine

### HONORS & AWARDS

Lucille P. Markey Scholar Award

NSF Presidential Young Investigator Award

Kaiser Family Foundation Award for Preclinical Teaching

### ELECTED FELLOW

American Academy of Arts and Sciences; American Association for the Advancement of Science

### FOUNDING EDITORIAL BOARD

*Public Library of Science Journals*

### SCIENTIFIC ADVISORY BOARD

Centre ValBio, Madagascar; Pediatric Research Center, Hannover Medical School; Vesalius Research Center

### FORMER CHAIR

Department of Biochemistry, Stanford University

### FORMER PRESIDENT

North American *Drosophila* Board of Directors

### CURRENT RESEARCH

My laboratory uses genetic, genomic, and biochemical approaches to map the development of the lung and identify stem and progenitor cells and the molecular pathways that control them. We are also mapping the neural circuit and the genetic and molecular basis of breathing. We are interested in understanding the normal processes and how they go awry in devastating human diseases such as lung cancer, pulmonary fibrosis, pulmonary hypertension and Sudden Infant Death Syndrome.

The tube is a fundamental unit of organ design. Understanding how tubes form and are maintained could unlock the secrets of many pulmonary and cardiovascular diseases and suggest new ways of treating them.

### SELECTED PUBLICATIONS

**Alveolar progenitor and stem cells in lung development, renewal, and cancer.** Desai T, Brownfield D, Krasnow MA. *Nature*. 2013 [Accepted].

**Progenitor outgrowth from the niche in *Drosophila* trachea is guided by FGF from decaying branches.** Chen F, Krasnow MA. *Science*. 2013; 343(6167): 186-9.

**Myb promotes centriole amplification and later steps of the multiciliogenesis program.** Tan FE, Vldar EK, Ma L, Fuentealba LC, Hoh R, Espinoza FH, Axelrod JD, Alvarez-Buylla A, Stearns T, Kintner C, Krasnow MA. *Development*. 2013; 140(20): 4277-86.

**Radial construction of an arterial wall.** Greif DM, Kumar M, Lighthouse JK, Hum J, An A, Ding L, Red-Horse K, Espinoza FH, Olson L, Offermanns S, Krasnow MA. *Dev Cell*. 2012; 23(3): 482-93.

**A systematic screen for tube morphogenesis and branching genes in the *Drosophila* tracheal system.** Ghabrial AS, Levi BP, Krasnow MA. *PLoS Genet*. 2011; 7(7): e1002087.

**Coronary arteries form by developmental reprogramming of venous cells.** Red-Horse K, Ueno H, Weissman IL, Krasnow MA. *Nature*. 2010; 464(7288): 549-U100.

**Dual origin of tissue-specific progenitor cells in *Drosophila* tracheal remodeling.** Weaver M, Krasnow MA. *Science*. 2008; 321(5895): 1496-9.

**The branching programme of mouse lung development.** Metzger RJ, Klein OD, Martin GR, Krasnow MA. *Nature*. 2008; 453(7196): 745-U1.





## Calvin Kuo, MD, PhD

Professor, Medicine - Hematology  
 Professor, Chemical and Systems Biology  
 Co-Lead, Cancer Biology Program, Stanford Cancer Institute

EMAIL [cjkuo@stanford.edu](mailto:cjkuo@stanford.edu)

PROFILE [med.stanford.edu/profiles/Calvin\\_Kuo/](http://med.stanford.edu/profiles/Calvin_Kuo/)

LAB [kuolab.stanford.edu](http://kuolab.stanford.edu)

### EDUCATION/TRAINING

MD Stanford University

PhD Stanford University

### INTERNAL MEDICINE RESIDENCY

Brigham and Women's Hospital

### MEDICAL ONCOLOGY FELLOWSHIP

Dana-Farber/Partners

### BOARD CERTIFICATION

Medical Oncology, ABIM

### CLINICAL FOCUS

Hematology

### HONORS & AWARDS

NIH Transformative R01 Award

Burroughs Wellcome Foundation  
 New Investigator in Pharmacological  
 Sciences

Kimmel Foundation Scholar in  
 Translational Science

American Heart Association  
 Innovative Science Award

**SAMANTHA JANOWER RESEARCH  
 CHAIR** Brain Tumor Society

**RESEARCH COMMITTEE CHAIR**  
 NIH Intestinal Stem Cell Consortium

**ADVISORY BOARD**  
 American Heart Association Silicon  
 Valley Chapter

**ELECTED MEMBER**  
 American Society for Clinical Investigation

**CONSULTING EDITOR**  
*Journal of Clinical Investigation*

### CURRENT RESEARCH

A major focus of my laboratory is the definition of molecular mechanisms of central nervous system angiogenesis, using knockout mouse and adenoviral approaches. In particular, we have generated conditional floxed alleles for the orphan G-protein coupled receptor GPR124 expressed in brain endothelial cells, revealing embryonic lethality from highly specific developmental CNS angiogenesis phenotypes, and allowing testing of essential requirements of this receptor during adulthood and diseases such as stroke or brain tumors. My group has substantial interests in other aspects of angiogenesis including generation of floxed mouse alleles for the endothelial-expressed miR-126/Egfl7 locus, in which the microRNA miR-126 is nested within intron 7 of the Egfl7 locus, and an evolving interest in endothelial-hepatocyte interactions in vivo with regulation of hepatic insulin signaling. Another focus of my laboratory is the study of gastrointestinal malignancies, intestinal stem cell (ISC) biology and relevant niches using in vivo and in vitro organoid culture approaches. In other activities, we have further collaborated with numerous groups to analyze stem cell niches in muscle and bone marrow using systemic Wnt and VEGF inhibition.

The future belongs to the discontented.  
 - Robert W. Woodruff

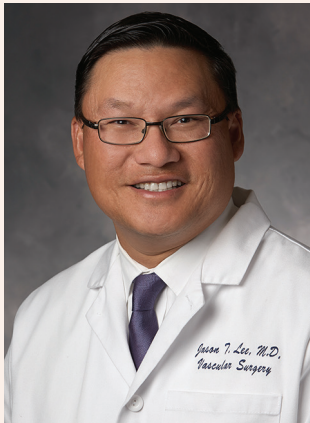
### SELECTED PUBLICATIONS

**A liver Hif-2a-Irs2 pathway sensitizes hepatic insulin signaling and is modulated by Vegf inhibition.** Wei K, Pieciewicz SM, McGinnis LM, Taniguchi CM, Wiegand SJ, Anderson K, Chan CW, Mulligan KX, Kuo D, Yuan J, Vallon M, Morton LC, Lefai E, Simon MC, Maher JJ, Mithieux G, Rajas F, Annes JP, McGuinness OP, Thurston G, Giaccia AJ, Kuo CJ. *Nat Med.* 2013; 19(10): 1331-7.

**Cross-talk between hypoxia and insulin signaling through Phd3 regulates hepatic glucose and lipid metabolism and ameliorates diabetes.** Taniguchi CM, Finger EC, Krieg AJ, Wu C, Diep AN, Lagory EL, Wei K, McGinnis LM, Yuan J, Kuo CJ, Giaccia AJ. *Nat Med.* 2013; 19(10): 1325-30.

**Restriction of intestinal stem cell expansion and the regenerative response by YAP.** Barry ER, Morikawa T, Butler BL, Shrestha K, Fuchs CS, de la Rosa, Yan KS, Magness ST, Ogino S, Kuo CJ, and Camargo FD. *Nature.* 2013; 493(7430): 106-10.

**Essential regulation of CNS angiogenesis by the orphan G protein-coupled receptor GPR124.** Kuhnert F, Mancuso MR, Wang H, Shamloo A, Choksi V, Su H, Young WL, Heilshorn S and Kuo CJ. *Science.* 2010; 330(6006): 985-9.



## Jason T. Lee, MD

Associate Professor, Surgery  
Director, Endovascular Surgery  
Program Director, Vascular Surgery Residency/Fellowship

EMAIL [jtlee@stanford.edu](mailto:jtlee@stanford.edu)

PROFILE [med.stanford.edu/profiles/Jason\\_Lee](http://med.stanford.edu/profiles/Jason_Lee)

WEB [vascular.stanford.edu](http://vascular.stanford.edu)

### EDUCATION/TRAINING

MD UCSD

### GENERAL SURGERY RESIDENCY

Harbor-UCLA Medical Center

### VASCULAR SURGERY FELLOWSHIP

Stanford University

### BOARD CERTIFICATION

Vascular Surgery, ABS

### CLINICAL FOCUS

Complex Endovascular Aneurysm Repair  
Surgical Simulation and Education  
Thoracic Outlet Syndrome

### HONORS & AWARDS

United States National Principal Investigator-Medtronic Abdominal Branch Trial

CVI Seed Grant (2013)

### PRESIDENT

Northern California Vascular Surgery Society

### PROGRAM CHAIR

Western Vascular Society

### PROGRAM COMMITTEE

Vascular Annual Meeting

### COUNCILOR-AT-LARGE

Association for Program Directors in Vascular Surgery (APDVS)

### SIMULATION COMMITTEE CHAIR

APDVS

### MEMBERSHIP CHAIR

Peripheral Vascular Surgery Society

### CURRENT RESEARCH

My clinical research interests focus on developing and refining endovascular techniques to treat complex aortic pathology, particularly as Stanford's local principal investigator for numerous endograft trials and having accumulated one of the largest series of fenestrated and snorkel/chimney procedures for aortic aneurysms in the country. As a surgical educator and former Robert Wood Johnson Faculty Physician Scholar, my lab has demonstrated that endovascular simulation for students and trainees translates to increased learner interest, more efficient surgical training, and improved operative performance. We are currently collaborating with multiple institutions designing national standards for technical skills assessment.

Don't bet against technology - continued device innovation and technical improvements will provide patients with much less invasive ways to cure their vascular diseases.

### SELECTED PUBLICATIONS

**Validated assessment tool paves the way for standardized evaluation of trainees on anastomotic models.** Duran C, Shames M, Bismuth J, Lee JT. *Ann Vasc Surg.* 2014; 28: 115-21.

**Improved efficiency and safety with utilization of a hybrid room for EVAR.** Varu V, Greenberg JI, Lee JT. *Eur J Vasc Endovasc Surg.* 2013; 46: 675-9.

**EVAR deployment in short angulated necks outside the IFU.** Lee JT, Ullery B, Zarins CK, Olcott C, Harris EJ, Dalman RL. *Eur J Vasc Endovasc Surg.* 2013; 46: 65-74.

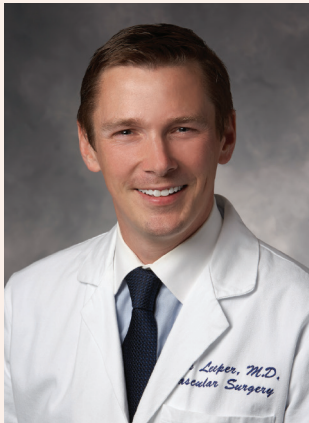
**Results of a double-barrel technique with commercially available devices for hypogastric preservation during aortoiliac EVAR.** DeRubertis BG, Quinones-Baldrich WJ, Greenberg JI, Jimenez JC, Lee JT. *J Vasc Surg.* 2012; 56: 1252-9.

**The vascular surgery trainee pool: A comparison of 0+5 versus 5+2 applicants.** Zayed M, Dalman RL, Lee JT. *J Vasc Surg.* 2012; 56: 1448-52.

**Early experience with the snorkel technique for juxtarenal aneurysms.** Lee JT, Greenberg JI, Dalman RL. *J Vasc Surg.* 2012; 55: 935-46.

**Fenestrate what you can't snorkel? A case report and review of the literature.** Zayed M, Chowdhury M, Casey K, Dalman RL, Lee JT. *Ann Vasc Surg.* 2012; 26: e15-22.

**Early results of a highly selective algorithm for surgery on patients with neurogenic thoracic outlet syndrome.** Chandra V, Olcott C, Lee JT. *J Vasc Surg.* 2011; 54: 1698-705.



## Nicholas Leeper, MD

Assistant Professor, Surgery - Vascular Surgery  
Assistant Professor, Medicine - Cardiovascular Medicine

EMAIL [nleeper@stanford.edu](mailto:nleeper@stanford.edu)

PROFILE [med.stanford.edu/profiles/Nicholas\\_Leeper](http://med.stanford.edu/profiles/Nicholas_Leeper)

### EDUCATION/TRAINING

MD University of Chicago

INTERNAL MEDICINE RESIDENCY  
UCSF

CARDIOLOGY FELLOWSHIP  
Stanford University

VASCULAR MEDICINE FELLOWSHIP  
Stanford University

BOARD CERTIFICATION  
Internal Medicine, ABIM  
Cardiovascular Disease, ABIM  
Vascular Medicine, ABVM

### CLINICAL FOCUS

Vascular Medicine

### HONORS & AWARDS

#### PRESIDENT

American Heart Association, Silicon Valley Board

Jeremiah Stamler Distinguished Young Investigator Research Award, Northwestern Cardiovascular Young Investigators' Forum (2013)

Jay D. Coffman Young Investigator Award, Society for Vascular Medicine

CVI Seed Grant (2013)

#### EEC MEMBER

ATVB Steering Committee

#### STEERING COMMITTEE

Stanford Cardiovascular Institute

### CURRENT RESEARCH

As much as half of an individual's lifetime risk for cardiovascular disease is genetic in nature. My laboratory is focused on defining and understanding the heritable factors which account for this risk. Specifically, we employ agnostic, genome-wide approaches such as the genome-wide association study (GWAS) platform to prioritize candidates for molecular investigation. Currently, we focus on the chromosome 9p21 locus, which is well recognized as the most important heritable locus for heart attack, stroke and aneurysm. We employ genetically targeted mouse models and molecular assays to define the biology responsible for risk at this locus and 'reverse translate' the GWAS findings. We aim to fully translate our findings from bench to bedside through our translational Vascular Medicine research group and have the ultimate goal of developing novel cardiovascular therapeutics - designed specifically for carriers of genetic risk variants.

...I found the task so truly arduous...that I was almost tempted to think...that the movement of the heart was only to be comprehended by God... - William Harvey (On the Motion of the Heart and Blood, 1628)

### SELECTED PUBLICATIONS

**Loss of CDKN2B promotes p53-dependent smooth muscle cell apoptosis and aneurysm formation.** Leeper NJ, Raisedana A, Kojima Y, Kundu R, Putnam K, Tsao P, Cheng H, Schadt E, Owen GK, Quertermous T. *ATVB*. 2013; 33(1): e1-e10.

**Disease-related growth factor and embryonic signaling pathways modulate an enhancer of TCF21 expression at the 6q23.2 coronary heart disease locus.** Miller CL, Anderson DR, Raiesdana A, Leeper NJ, Diaz RC, Goldstein BA, Assimes T, Quertermous T. *PLoS Genetics*. 2013; 9(7): e1003652.

**Alternative ankle-brachial index method accurately identifies additional at-risk individuals.** Nead KT, Zhou M, Caceres R, Olin J, Cooke JP and Leeper NJ. *J Am Coll Cardiol*. 2013; 62(6): 553-9

**Practice-based evidence: profiling the safety of Cilostazol using free-text clinical notes.** Leeper NJ, Bauer-Mehren A, Iyer S, LePendou P, Cliff O, Shah NH. *PLoS One*. 2013; 8(5): e63499.

**Genetics of peripheral artery disease.** Leeper NJ, Kullo I, Cooke JP. *Circulation*. 2012; 125(25): 3220-8.



## Lawrence Leung, MD

Maureen Lyles D'Ambrogio Professor of Medicine  
Chief of Staff, VA Palo Alto Health Care System

EMAIL [lawrence.leung@stanford.edu](mailto:lawrence.leung@stanford.edu)

PROFILE [med.stanford.edu/profiles/Lawrence\\_Leung](http://med.stanford.edu/profiles/Lawrence_Leung)

DIVISION [hematology.stanford.edu](http://hematology.stanford.edu)

### EDUCATION/TRAINING

MD Columbia University

### MEDICINE RESIDENCY

Cornell University Medical Center

### HEMATOLOGY-ONCOLOGY FELLOWSHIP

Cornell University Medical Center

### BOARD CERTIFICATION

Hematology, ABIM

Internal Medicine, ABIM

Oncology, ABIM

### CLINICAL FOCUS

Bleeding and Thrombotic Disease

### HONORS & AWARDS

#### EDITOR-IN-CHIEF

UpToDate - Hematology

American Board of Internal Medicine (ABIM), Hematology subspecialty board (2003-2010)

#### ELECTED MEMBER

American Society for Clinical Investigation; Association of American Physicians

#### FORMER CHIEF

Division of Hematology, Stanford University (1995-2004)

#### FORMER CHIEF

Medical Service, VA Palo Alto Health Care System (2004-2011)

#### FORMER DIRECTOR

Vascular Biology and Medicine, Gilead Sciences (1992-1994)

### CURRENT RESEARCH

My laboratory studies how thrombin, the key enzyme in the coagulation cascade, interacts with its various substrates to regulate hemostasis, inflammation, and innate immunity. Thrombin interacts with the endothelial cell cofactor thrombomodulin to activate protein C and procarboxypeptidase B (pCPB). Activated CPB inactivates a number of proinflammatory mediators and regulates the proinflammatory activities of thrombin in a homeostatic fashion.

Our long-term goal is to define the molecular links important in the crosstalk between hemostasis, thrombosis, inflammation and innate immunity, thereby developing clinically useful diagnostic and therapeutic reagents.

### SELECTED PUBLICATIONS

**Thrombin-cleaved fragments of osteopontin are overexpressed in malignant glial tumors and provide a molecular niche with survival advantage.** Yamaguchi Y, Sharif S, Du XY, Myles T, Merchant M, Harsh G, Glantz M, Recht L, Morser J, Leung LLK. *J Biol Chem.* 2013; 288: 3097-111.

**Chemerin158K protein is the dominant chemerin isoform in synovial and cerebrospinal fluids but not in plasma.** Zhao L, Yamaguchi Y, Sharif S, Du XY, Lee DM, Recht LD, Robinson WH, Song JJ, Morser J, Leung LLK. *J Biol Chem.* 2011; 286: 39520-7.

**Proteolytic cleavage of chemerin protein is necessary for activation to the active form, chem157S, which functions as a signaling molecule in glioblastoma.** Yamaguchi Y, Du XY, Zhao L, Morser J and Leung LLK. *J Biol Chem.* 2011; 286: 39510-9.

**Plasma carboxypeptidase B downregulates inflammatory responses in autoimmune arthritis.** Song JJ, Hwang I, Cho KH, Garcia MA, Kim AJ, Wang TH, Lee AT, Nishimura T, Zhao L, Morser J, Nesheim M, Goodman SB, Lee DM, Bridges SL Jr, CLEAR Investigators, Gregersen PK, Leung LLK, Robinson WH. *J Clin Invest.* 2011; 121: 3517-27.

**Enhanced abdominal aortic aneurysm formation in thrombin-activatable procarboxypeptidase B (thrombin-activatable fibrinolysis inhibitor) deficient mice.** Schultz G, Tedesco MM, Sho E, Nishimura T, Sharif S, Du XY, Myles T, Morser J, Dalman RL, Leung LL. *Arterioscler. Thromb Vasc Biol.* 2010; 30: 1363-70.





## Kenneth W. Mahaffey, MD

Professor, Medicine – Cardiovascular Medicine  
Vice Chair of Clinical Research, Medicine

EMAIL [kenneth.mahaffey@stanford.edu](mailto:kenneth.mahaffey@stanford.edu)

PROFILE [med.stanford.edu/profiles/Kenneth\\_Mahaffey](http://med.stanford.edu/profiles/Kenneth_Mahaffey)

### EDUCATION/TRAINING

MD University of Washington

### MEDICINE RESIDENCY

University of Arizona Health Sciences

### CHIEF RESIDENT

University of Arizona Health Sciences

### CARDIOLOGY FELLOWSHIP

Duke University

### BOARD CERTIFICATION

Cardiovascular Medicine, ABIM

### CLINICAL FOCUS

Adult Cardiology

### HONORS & AWARDS

#### CHAIR

MI and Death Definitions Working Group, Standardized Data Collection of Cardiovascular Trials Initiative (FDA)

#### CONSULTANT

Endocrinologic and Metabolic Drugs Advisory Committee

#### ADVISORY BOARD MEMBER

Brazilian Clinical Research Institute

#### CONTRIBUTOR

European Society of Cardiology, Task Force of Guidelines for the Management of Acute Myocardial Infarction in Patients with Persistent ST-segment Elevation

#### FELLOW

American College of Cardiology; American Heart Association

#### FORMER ASSOCIATE DIRECTOR

Duke Clinical Research Institute (DCRI)

### CURRENT RESEARCH

My primary research focus is the design and conduct of multicenter clinical trials and analyses of important clinical cardiac issues using large patient databases. My research focuses on novel anticoagulation agents for the treatment of acute coronary syndromes and atrial fibrillation, the study of agents targeted to protect the myocardium during reperfusion therapy for acute myocardial infarction, and the evaluation of cardiovascular safety of diabetic therapies. I am also interested in the methodology of clinical trials. Current research activities include standardization of the definition of myocardial infarction used in clinical trials, the adjudication of suspected clinical endpoint events, and evaluation of evidence-based operations in the conduct of large multinational clinical trials.

We need to bring the key stakeholders together—academia, industry, regulatory agencies and other important bodies—to do research more efficiently.

### SELECTED PUBLICATIONS

**Effect of platelet inhibition with cangrelor during PCI on ischemic events.** Bhatt DL, Stone GW, Mahaffey KW, Gibson CM, Steg PG, Hamm CW, Price MJ, Leonardi S, Gallup D, Bramucci E, Radke PW, Widimsky P, Tousek F, Tauth J, Spriggs HD, McLaurin BT, Angiolillo DJ, Genereux P, Liu T, Prats J, Todd M, Skerjanec S, White HD, Harrington RA, the CHAMPION PHOENIX Investigators. *N Engl J Med.* 2013; 368(14): 1303-13.

**Results of a reevaluation of cardiovascular outcomes in the RECORD trial.** Mahaffey KW, Hafley G, Dickerson S, Burns S, Tourt-Uhlig S, White J, Newby LK, Komajda M, McMurray J, Bigelow R, Home PD, Lopes RD. *Am Heart J.* 2013; 166(2): 240-9.

**Thrombin-receptor antagonist vorapaxar in acute coronary syndromes.** Tricoci P, Huang Z, Held C, Moliterno DJ, Armstrong PW, Van de Werf F, White HD, Aylward PE, Wallentin L, Chen E, Lokhnygina Y, Pei J, Leonardi S, Rorick TL, Kilian AM, Jennings LH, Ambrosio G, Bode C, Cequier A, Cornel JH, Diaz R, Erkan A, Huber K, Hudson MP, Jiang L, Jukema JW, Lewis BS, Lincoff AM, Montalescot G, Nicolau JC, Ogawa H, Pfisterer M, Prieto JC, Ruzyllo W, Sinnaeve PR, Storey RF, Valgimigli M, Whellan DJ, Widimsky P, Strony J, Harrington RA, Mahaffey KW; TRACER Investigators. *N Engl J Med.* 2012; 366(1): 20-33.

**Ticagrelor compared with clopidogrel by geographic region in the PLATelet inhibition and patient Outcomes (PLATO) trial.** Mahaffey KW, Wojdyla DM, Carroll K, Becker RC, Storey RF, Angiolillo DJ, Held C, Cannon CP, James S, Pieper KS, Horrow J, Harrington RA, Wallentin L; on behalf of the PLATO investigators. *Circulation.* 2011; 124(5): 544-54.



## David J. Maron, MD

Clinical Professor, Medicine - Cardiovascular Medicine  
Director, Preventive Cardiology

EMAIL [david.maron@stanford.edu](mailto:david.maron@stanford.edu)

WEB [stanfordhospital.org/cardiovascularhealth/preventiveCardiology](http://stanfordhospital.org/cardiovascularhealth/preventiveCardiology)

### EDUCATION/TRAINING

MD University of Southern California

MEDICINE RESIDENCY  
UCLA

CARDIOVASCULAR DISEASE  
EPIDEMIOLOGY FELLOWSHIP  
Stanford University

ROBERT WOOD JOHNSON CLINICAL  
SCHOLAR Stanford University

CARDIOLOGY FELLOWSHIP  
Stanford University

BOARD CERTIFICATION  
Internal Medicine, ABIM  
Cardiovascular Disease, ABIM  
Clinical Lipidology, ABCL

### CLINICAL FOCUS

Preventive Cardiology  
Lipid Disorders  
Ischemic Heart Disease

### HONORS & AWARDS

Alpha Omega Alpha  
Vanderbilt Emergency Department  
Patient Advocate Award

Vanderbilt Five Star Award for patient  
satisfaction (2010, 2013)

MIDDLE TENNESSEE LEADERSHIP  
COUNCIL American Diabetes Association

### FELLOW

American College of Cardiology;  
AHA; National Lipid Association

FORMER DIRECTOR  
(VANDERBILT UNIVERSITY)

Dayani Center for Health and  
Wellness; Emergency Cardiology;  
Vanderbilt Chest Pain Unit

### CURRENT RESEARCH

My research is devoted to the application of evidence-based medicine for the prevention and treatment of coronary artery disease. As a follow-up to my work on the COURAGE trial, I am the Study Co-Chair of the ISCHEMIA trial, an NIH/NHLBI-funded trial that compares the effectiveness of two initial management strategies—a conservative (optimal medical therapy alone) versus an invasive (optimal medical therapy plus cardiac catheterization and revascularization)—in patients with stable ischemic heart disease and at least moderate ischemia.

We need to focus on prevention to shrink the burden of disease, and perform only those procedures that are shown to improve prognosis and quality of life.

### SELECTED PUBLICATIONS

**Baseline stress myocardial perfusion imaging results and outcomes in stable ischemic heart disease patients randomized to optimal medical therapy with or without percutaneous coronary intervention.** Shaw LJ, Weintraub WS, Maron DJ, [+18 authors], Berman DS. *Am Heart J.* 2012. 164: 243-250.

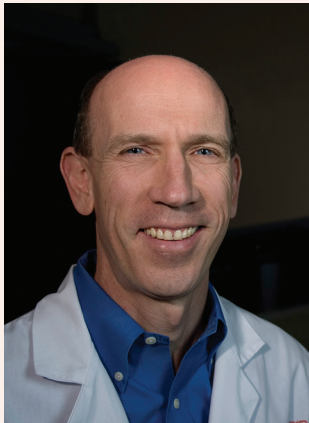
**Is cardiac catheterization necessary prior to initial management of patients with stable ischemic heart disease? Results from a web-based survey of cardiologists.** Maron DJ, Stone GW, Berman DS, Mancini GBJ, Scott TA, Byrne DW, Harrell FE, Shaw LJ, Hachamovitch R, Boden WE, Weintraub WS, Spertus JA. *Am Heart J.* 2011. 162: 1034-1043.

**Impact of metabolic syndrome and diabetes on prognosis and outcomes with early percutaneous coronary intervention in the clinical outcomes utilizing revascularization and aggressive drug evaluation [COURAGE] trial.** Maron DJ, Boden WE, Spertus JA, [+10 authors], O'Rourke RA. *J Am Coll Cardiol.* 2011. 58:131-137.

**Intensive multifactorial intervention for stable coronary artery disease: optimal medical therapy in the COURAGE trial.** Maron DJ, Boden WE, O'Rourke RA, [+20 authors], Teo KK. *J Am Coll Cardiol.* 2010. 55: 1348-58.

**Effect of PCI on quality of life in patients with stable coronary disease.** Weintraub WS, Spertus JA, Kolm P, Maron DJ, [+14 authors], Boden WE, on behalf of the Department of Veterans Affairs Cooperative Studies Program No.424 (COURAGE Trial) Investigators and Study Coordinators. *N Engl J Med.* 2008; 359: 677-87.

**Optimal medical therapy with or without PCI for stable coronary disease.** Boden WE, O'Rourke RA, Teo KK, Hartigan PM, Maron DJ, [+17 authors], Weintraub WS. *N Engl J Med.* 2007; 356: 1503-16.



## Michael V. McConnell, MD, MSEE

Professor, Medicine - Cardiovascular Medicine  
 Professor (by courtesy), Electrical Engineering and Molecular and Cellular Physiology  
 Co-Director, Noninvasive Imaging Section, Division of Cardiovascular Medicine  
 Director, NIH/NIBIB Multi-Disciplinary Training Program in Cardiovascular  
 Imaging @ Stanford (CVIS)  
 Director, Preventive Cardiology Clinic

EMAIL [mcconnell@stanford.edu](mailto:mcconnell@stanford.edu)

PROFILE [med.stanford.edu/profiles/Michael\\_McConnell](http://med.stanford.edu/profiles/Michael_McConnell)

CLINIC [stanfordhospital.org/pcc](http://stanfordhospital.org/pcc)

CVIS [cvmedicine.stanford.edu/education/cvis](http://cvmedicine.stanford.edu/education/cvis)

### EDUCATION/TRAINING

MD Stanford University

#### MSEE

Massachusetts Institute of Technology

#### MEDICINE RESIDENCY & INTERNSHIP

Brigham and Women's Hospital

#### CARDIOLOGY/CARDIOVASCULAR IMAGING FELLOWSHIP

Brigham and Women's Hospital

#### BOARD CERTIFICATION

Cardiovascular Disease, ABIM  
 Echocardiography, NBE

### CLINICAL FOCUS

Cardiovascular Imaging  
 Atherosclerosis  
 Prevention  
 Mobile Health

### HONORS & AWARDS

Doris Duke Clinical Scientist Award

Fulbright Scholar

#### PROGRAM CHAIR & FOUNDING MEMBER

Society for Cardiovascular Magnetic  
 Resonance

#### FORMER CHAIR

American Heart  
 Association (AHA) Grant Review Panel

#### EDITORIAL BOARD

*Journal of  
 Cardiovascular Magnetic Resonance*

#### FELLOW

AHA; American College of Cardiology

### CURRENT RESEARCH

My research focus is the development and clinical translation of advanced non-invasive methods to detect, characterize, and prevent diseases of the blood vessel wall, including coronary atherosclerosis, carotid, and aortic disease. These include novel MRI, ultrasound, and molecular imaging techniques, as well as leveraging mobile health technologies to enhance disease prevention. Integral to this research has been ongoing collaboration with engineers, radiologists, surgeons, biologists, and chemists.

We need to transform cardiovascular care toward early disease detection and prevention, particularly as risk factors continue to increase worldwide.

### SELECTED PUBLICATIONS

**Integrin-targeted molecular imaging of experimental abdominal aortic aneurysms by 18F-FPPRGD2 positron emission tomography.** Kitagawa T, Kosuge H, Chang E, James ML, Yamamoto T, Shen B, Chin FT, Gambhir SS, Dalman RL, McConnell MV. *Circ Cardiovasc Imaging*. 2013; 6(6): 950-6.

**Respiratory-mode display of echocardiographic images highlights effects of pericardial disease.** McConnell MV, Wu HH. *JACC Cardiovasc Imaging*. 2013; 6(8): 917-9.

**A novel stress echocardiography pattern for myocardial bridge with invasive structural and hemodynamic correlation.** Lin S, Tremmel JA, Yamada R, Rogers IS, Yong CM, Turcott R, McConnell MV, Dash R, Schnittger I. *J Am Heart Assoc*. 2013; 2(2): e000097.

**Free-breathing multiphase whole-heart coronary MR angiography using image-based navigators and three-dimensional cones imaging.** Wu HH, Gurney PT, Hu BS, Nishimura DG, McConnell MV. *Magn Reson Med*. 2013; 69(4): 1083-93.

**Near infrared imaging and photothermal ablation of vascular inflammation using single-walled carbon nanotubes.** Kosuge H, Sherlock SP, Kitagawa T, Dash R, Robinson JT, Dai H, McConnell MV. *J Am Heart Assoc*. 2012; 1(6): e002568.

**Physical activity in older subjects is associated with increased coronary vasodilation: the ADVANCE study.** Nguyen PK, Terashima M, Fair JM, Varady A, Taylor-Piliae RE, Iribarren C, Go AS, Haskell WL, Hlatky MA, Fortmann SP, McConnell MV. *JACC Cardiovasc Imaging*. 2011; 4: 622-9.

**FeCo/Graphite nanocrystals for multi-modality imaging of experimental vascular inflammation.** Kosuge H, Sherlock SP, Kitagawa T, Terashima M, Barral JK, Nishimura DG, Dai H, McConnell MV. *PLoS ONE*. 2011; 6: e14523.



## Daria Mochly-Rosen, PhD

George D. Smith Professor of Translational Medicine  
 Professor, Chemical and Systems Biology  
 Professor (by courtesy), Neurosurgery  
 Co-director, SPARK - Stanford's Translational Research Program

EMAIL [mochly@stanford.edu](mailto:mochly@stanford.edu)

PROFILE [med.stanford.edu/profiles/Daria\\_Mochly-Rosen](http://med.stanford.edu/profiles/Daria_Mochly-Rosen)

LAB [stanford.edu/group/mochly-rosen](http://stanford.edu/group/mochly-rosen)

WEB [sparkmed.stanford.edu](http://sparkmed.stanford.edu)

### EDUCATION/TRAINING

PhD Weizmann Institute of Science

### HONORS & AWARDS

NIH Merit award

Janice Pfeffer Distinguished Lecturer

### FOUNDER AND DIRECTOR

SPARK Translational Research Program

### FOUNDING MEMBER

International Society for Heart Research (ISHR)

### ADVISORY BOARD

Stanford University Office of Technology Licensing

### LEADERSHIP

Senior Associate Dean for Research, Stanford University (2006-13); Child Health Initiative, Stanford University; Council of Councils, NIH; Council on Basic Cardiovascular Sciences, American Heart Association (AHA); Peer Review Advisory Committee to the Director of the NIH

### PRECEPTOR

Sarnoff Cardiovascular Research Foundation Fellowship Program

### PRESIDENTIAL LECTURE

International Symposium on Cerebral Blood Flow, Metabolism and Function

### FORMER ELECTED MEMBER

Council of the ISHR

### MEMBER

American Society for Biochemistry and Molecular Biology; Council on Stroke, AHA; Heart Failure Society of America; ISHR; Society for Neuroscience

### CURRENT RESEARCH

Our basic research focuses on elucidating molecular events that contribute to heart diseases, generating tools to interfere with these pathologies and the translation of them into drug leads. We have used both rationally designed peptides and small molecules to regulate key signaling events and metabolism in the myocardium. Our research has led to several clinical trials using drugs that were developed in our laboratory at Stanford. My passion for translational research led me to create and co-direct SPARK that helps scores of inventors at Stanford move their early research discoveries to clinical trials and/or to licensing for drug development.

I believe that it is our social responsibility to ensure that basic and clinical discoveries are translated into products that benefit patients. By providing the knowhow and the tools, together with industry experts we are making it happen.

### SELECTED PUBLICATIONS

**Acute inhibition of excessive mitochondrial fission after myocardial infarction prevents long-term cardiac dysfunction.** Disatnik MH, Ferreira JC, Campos JC, Gomes KS, Dourado PM, Qi X, Mochly-Rosen D. *J Am Heart Assoc.* 2013; 2(5): e000461.

**A novel Drp1 inhibitor diminishes aberrant mitochondrial fission and neurotoxicity.** Qi X, Qvit N, Su YC, Mochly-Rosen D. *J Cell Sci.* 2013; 126(Pt 3): 789-802.

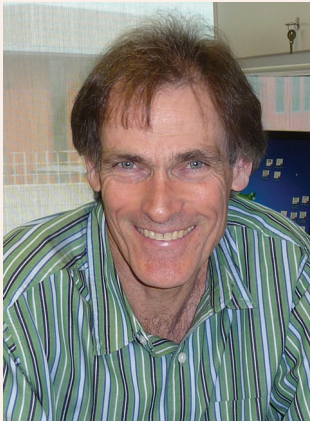
**Glyceraldehyde-3-phosphate dehydrogenase (GAPDH) phosphorylation by protein kinase Cd (PKCd) inhibits mitochondria elimination by lysosomal-like structures following ischemia and reoxygenation-induced injury.** Yogalingam G, Hwang S, Ferreira JC, Mochly-Rosen D. *J Biol Chem.* 2013; 288(26): 18947-60.

**Protein kinase C, an elusive therapeutic target?** Mochly-Rosen D, Das K, Grimes KV. *Nat Rev Drug Discov.* 2012; 11(12): 937-57.

**ALDH2 activator inhibits increased myocardial infarction injury by nitroglycerin tolerance.** Sun L, Ferreira JC, Mochly-Rosen D. *Sci Trans Med.* 2011; 3: 107ra111.

**Aberrant mitochondrial fission in neurons induced by protein kinase C{delta} under oxidative stress conditions in vivo.** Qi X, Disatnik MH, Shen N, Sobel RA, Mochly-Rosen D. *Mol Biol Cell.* 2011; 22: 256-65.





## Jonathan Myers, PhD

Clinical Professor, Medicine - Cardiovascular Medicine

Research Coordinator, Exercise Physiology Lab, VA Palo Alto Health Care System

EMAIL [drj993@aol.com](mailto:drj993@aol.com)

WEB [cardiology.org](http://cardiology.org)

### EDUCATION/TRAINING

PhD University of Southern California

MS San Diego State University

BA UC Santa Barbara

### HONORS & AWARDS

Michael L. Pollock Established Investigator Award, American Association of Cardiovascular and Pulmonary Rehabilitation (2007)

Research Career Scientist Award, Veterans Administration Rehabilitation Research and Development Service (2004, 2009)

### ADVISORY BOARD

American Heart Association (AHA)  
National Fitness Registry

### FELLOW

AHA; American Association of Cardiovascular and Pulmonary Rehabilitation; American College of Cardiology; American College of Sports Medicine

### MEMBER

AHA Council on Epidemiology and Prevention; AHA Council on Nutrition, Physical Activity and Metabolism

### CURRENT RESEARCH

Our research group focuses on clinical applications of exercise testing and training in patients with cardiovascular disease. We provide collaborators with the means to use exercise as a medium to study mechanisms of disease and improve outcomes. Current projects include the effects of training on peripheral vascular disease, renal failure, coronary disease, mild cognitive impairment, gene expression, and abdominal aortic aneurysm disease.

If we could give every individual the right amount of nourishment and exercise, not too little and not too much, we would have found the safest way to health. - Hippocrates

### SELECTED PUBLICATIONS

**A randomized trial of exercise training in abdominal aortic aneurysm disease: The AAA STOP Trial.** Myers J, McElrath M, Jaffe A, Smith A, Fonda H, Vu A, Hill B, Dalman R. *Med Sci Sports Exerc.* 2014; 46(1): 2-9.

**A neural network approach to predicting outcomes in heart failure using cardiopulmonary exercise testing.** Myers J, de Souza CR, Borghi Silva A, Guazzi M, Chase P, Bensimhon D, Peberdy MA, Ashley EA, West E, Cahalin LP, Forman DE, Arena R. *Int J Cardiol.* [In Press].

**Validation of a cardiopulmonary exercise test score in heart failure.** Myers J, Oliveira R, Dewey R, Arena R, Guazzi M, Chase P, Bensimhon D, Peberdy MA, Ashley E, West E, Cahalin L, Forman D. *Circ Heart Fail.* 2013; 6(2): 211-8.

**Cardiopulmonary and non-invasive hemodynamic responses to exercise predict outcomes in heart failure.** Myers J, Wong M, Adhikarla C, Boga M, Challa S, Abella J, Ashley EA. *J Card Fail.* 2013; 19(2): 101-7.

**Effects of high-intensity training on indices of ventilatory efficiency in chronic heart failure.** Myers J, Gademan M, Brunner K, Kottman W, Boesch C, Dubach P. *J Cardiopulm Rehabil Prev.* 2012; 32(1): 9-16.

**Interactive effects of fitness and statin treatment on mortality risk in veterans with dyslipidemia: A cohort study.** Kokkinos P, Myers J, Faselis C, Panagiotakos D, Doumas M. *Lancet.* 2012; 381(9864): 394-9.



## Patricia K. Nguyen, MD

Assistant Professor, Medicine - Cardiovascular Medicine

EMAIL [pknguyen@stanford.edu](mailto:pknguyen@stanford.edu)

PROFILE [med.stanford.edu/profiles/Patricia\\_Nguyen](http://med.stanford.edu/profiles/Patricia_Nguyen)

### EDUCATION/TRAINING

MD Johns Hopkins Medical School

### MEDICINE RESIDENCY

Columbia University

### CARDIOLOGY FELLOWSHIP

Stanford University

### BOARD CERTIFICATION

Internal Medicine, ABIM

Cardiovascular Medicine, ABIM

### CLINICAL FOCUS

Cardiovascular Imaging

### HONORS & AWARDS

American Heart Association Research Award, Western States Affiliates

American College of Cardiology Foundation/GE Healthcare Award

American College of Cardiology Foundation/Merck Fellow

### FELLOW

American College of Cardiology

### MEMBER

American Heart Association

### CURRENT RESEARCH

My research applies imaging technology to translate promising basic science findings into clinical application and to better understand the pathophysiology of coronary artery disease in men and women.

[Humans] love to wonder, and that is the seed of science... - Ralph Waldo Emerson

### SELECTED PUBLICATIONS

**Drug screening using a library of human induced pluripotent stem cell-derived cardiomyocytes reveals disease-specific patterns of cardiotoxicity.** Liang P, Lan F, Lee AS, Gong T, Sanchez-Freire V, Wang Y, Diecke S, Sallam K, Knowles JW, Wang PJ, Nguyen PK, Bers DM, Robbins RC, Wu JC. *Circulation*. 2013; 127(16): 1677-91.

**Abnormal Calcium Handling Properties Underlie Familial Hypertrophic Cardiomyopathy Pathology in Patient-Specific Induced Pluripotent Stem Cells.** Lan F, Lee AS, Liang P, Sanchez-Freire V, Nguyen PK, Wang L, Han L, Yen M, Wang Y, Sun N, Abilez O. J., Hu S, Ebert AD, Navarrete EG, Simmons CS, Wheeler M, Pruitt B, Lewis R, Yamaguchi Y, Ashley EA, Bers DM, Robbins RC, Longaker MT, Wu JC. *Cell Stem Cell*. 2013; 12(1): 101-13.

**Safe Genetic Modification of Cardiac Stem Cells Using a Site-Specific Integration Technique.** Lan F, Liu J, Narsinh KH, Hu S, Han L, Lee AS, Karow M, Nguyen PK, Nag D, Calos MP, Robbins RC, Wu JC. *Circulation*. 2012; 126(11): S20.

**Microfluidic single cell analysis show porcine induced pluripotent stem cell-derived endothelial cells improve myocardial function by paracrine activation.** Gu M\*, Nguyen PK\*, Xu D, Hu S, Plews JR, Leng H, Lee S, Huber B, Lee WH, Gong Y, Almeida PE, Lyons J, Ikeno F, Pacharinsak C, Connolly A, Robbins R, Longaker M, Wu J. *Circ Res*. 2012; 111: 882-93.

**Physical activity in older subjects is associated with increased coronary vasodilation in the ADVANCE study.** Nguyen P, Terashima M, Fair JM, Varady A, Taylor-Pilae, Iribarren C, Go AS, Haskell W, Fortmann SP, McConnell MV. *JACC Cardiovasc Imaging*. 2011; 4(6): 622-9.

**Sex differences in the noninvasive evaluation of cardiovascular disease.** Nguyen PK, Wu J. *J Nucl Med*. 2011; 18(1) 144-52.

**Radiation exposure from cardiac imaging tests: Should we be concerned?** Nguyen PK, Wu J. *Expert Rev Cardiovasc Ther*. 2011; 9(2): 177-83.

**Imaging: Guiding the clinical translation of cardiac stem cell therapy.** Nguyen PK, Lan F, Wang Y, Wu J. *Circ Res*. 2011; 109: 962-79.



## Mark R. Nicolls, MD

Associate Professor, Medicine - Pulmonary and Critical Care and  
Immunology and Rheumatology  
Chief, Division of Pulmonary and Critical Care Medicine  
Director, Lung Immunology

EMAIL [mnicolis@stanford.edu](mailto:mnicolis@stanford.edu)

PROFILE [med.stanford.edu/profiles/Mark\\_Nicolls](http://med.stanford.edu/profiles/Mark_Nicolls)

LAB [nicollslab.stanford.edu](http://nicollslab.stanford.edu)

DIVISION [pulmonary.stanford.edu](http://pulmonary.stanford.edu)

### EDUCATION/TRAINING

MD Stanford University

MEDICINE RESIDENCY & INTERNSHIP  
Stanford University

PULMONARY AND CRITICAL CARE  
MEDICINE FELLOWSHIP  
University of Colorado

BOARD CERTIFICATION  
Critical Care Medicine, ABIM  
Internal Medicine, ABIM  
Pulmonary Disease, ABIM

### CLINICAL FOCUS

Heart/Lung Transplantation  
Lung Transplantation  
Pulmonary Hypertension

### HONORS & AWARDS

DIRECTOR  
Stanford University Remodeled  
Airways Tissue Bank

Sullivan SPARK Scholar for  
Translational Research

CO-FOUNDER  
Northern California Scleroderma  
Research Consortium

EXTERNAL ADVISORY BOARD  
Howard Hughes Medical Institute,  
Virginia Commonwealth University

EXECUTIVE STEERING COMMITTEE  
Vera Moulton Wall Center for  
Pulmonary Vascular Disease

EDITORIAL BOARD  
*European Respiratory Journal*

### CURRENT RESEARCH

My laboratory focuses primarily on the contribution of the immune response to lung disease. We are specifically examining the contribution of inflammation to the development of pulmonary hypertension. We also study how airway remodeling occurs in transplantation with specific respect to the microvascular circulation and to the initiation of fibroproliferation.

The marriage between pulmonary and cardiac medicine is such a natural one and our disciplines can learn so much from each other.

### SELECTED PUBLICATIONS

**Promotion of airway anastomotic microvascular regeneration and alleviation of airway ischemia by deferoxamine nanoparticles.** Jiang X, Malkovskiy AV, Tian W, Sung, YK, Sun W, Hsu JL, Manickam, S, Wagh D, Joubert L, Semenza, GL, Rajadas J, Nicolls MR. *Biomaterials*. 2013; 35(2): 803-13.

**Blocking macrophage leukotriene B4 prevents endothelial injury and reverses pulmonary hypertension.** Tian W, Jiang X, Tamosiuniene R, Sung YK, Qian J, Dhillon G, Gera L, Farkas L, Rabinovitch M, Zamanian RT, Inayathullah M, Fridlib M, Rajadas J, Peters-Golden M, Voelkel NF, Nicolls MR. *Sci Transl Med*. 2013; 5(200): 200ra117.

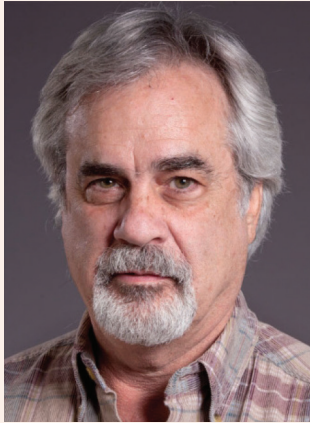
**Targeting C5a promotes vascular integrity and limits airway remodeling.** Khan MA, Maasch C, Vater A, Klussman S, Morser J, Leung LL, Atkinson C, Tomlinson, S, Heeger, PS, Nicolls MR. *Proc Natl Acad Sci USA*. 2013; 110(15): 6061-6.

**Temporal response of the human virome to immunosuppression and antiviral therapy.** De Vlaminc I, Khush KK, Strehl C, Kohli B, Luikart H, Neff NF, Okamoto J, Snyder TM, Cornfield DN, Nicolls MR, Weill D, Bernstein D, Valentine HA, Quake SR. *Cell*. 2013; 155(5): 1178-87.

**Adenovirus-mediated HIF-1a gene transfer promotes repair of mouse airway allograft microvasculature and attenuates chronic rejection.** Jiang X, Khan MA, Tian W, Beilke J, Natarajan R, Yoder MC, Semenza GL, Nicolls MR. *J Clin Invest*. 2011; 121: 2336-49.

**Regulatory T cells limit vascular endothelial injury and prevent pulmonary hypertension.** Tamosiuniene R, Tian W, Dhillon G, Wang L, Sung YK, Gera L, Patterson AJ, Agrawal R, Rabinovitch M, Ambler K, Long CS, Voelkel NF, Nicolls. *Circ Res*. 2011; 109: 867-79.

**CD4+ T cells and complement independently mediate graft ischemia in the rejection of mouse orthotopic tracheal transplants.** Khan MA, Jiang X, Dhillon G, Beilke J, Holers VM, Atkinson C, Tomlinson S, Nicolls MR. *Circ Res*. 2011; 109: 1290-301.



## Philip E. Oyer, MD

Roy B. Cohn-Theodore A. Falasco Professor in Cardiothoracic Surgery  
2013 Interim Chair, Cardiothoracic Surgery

EMAIL [oyer@stanford.edu](mailto:oyer@stanford.edu)

PROFILE [med.stanford.edu/profiles/Philip\\_Oyer](http://med.stanford.edu/profiles/Philip_Oyer)

DEPARTMENT [ctsurgery.stanford.edu](http://ctsurgery.stanford.edu)

### EDUCATION/TRAINING

MD University of Chicago

PhD University of Chicago

CARDIOVASCULAR SURGERY  
RESIDENCY & INTERNSHIP

Stanford University

CHIEF RESIDENT

Stanford University

CARDIOTHORACIC SURGERY FELLOWSHIP

Stanford University

### CLINICAL FOCUS

Cardiothoracic Surgery

Heart and Lung Transplantation

### HONORS & AWARDS

FELLOW

American College of Cardiology

FOUNDING MEMBER

Implants Association

MEMBER

American Association for Thoracic Surgery; American Federation for Clinical Research; American Medical Association; International Society for Artificial Organs; International Society for Heart and Lung Transplantation; Society of Thoracic Surgeons

### CURRENT RESEARCH

I am interested in the development of artificial heart assist devices. I am also interested in heart transplantation, heart-lung transplantation, cardiothoracic surgery, valvular surgery, thoracic aortic surgery, and ventricular assist device insertion.

### SELECTED PUBLICATIONS

**Heart Transplant graft survival is improved after a reduction in panel reactive antibody activity.** Schaffer JM, Singh SK, Reitz BA, Oyer PE, Robbins RC, Mallidi HR. *J Thorac Cardiovasc Surg.* 2013; 145(2): 555-64.

**Late profound muscle weakness following heart transplantation due to danon disease.** van der Starre P, Deuse T, Pritts C, Brun C, Vogel H, Oyer P. *Muscle & Nerve.* 2013; 47 (1): 135-7.

**Ventricular assist devices: history, patient selection, and timing of therapy.** Tang DG, Oyer PE, Mallidi HR. *J Cardiovascular Transl Res.* 2009; 2(2): 159-67.

**Trends in invasive disease due to Candida species following heart and lung transplantation.** Schaenman JM, RossoF Austin JM, Baron EJ, Gamberg P, Miller J, Oyer PE, Robbins RC, Montoya JG. *Transpl Infect Dis.* 2009; 11(2): 112-21.

**Twenty-year survivors of heart transplantation at Stanford University.** Deuse T, Haddad F, Pham M, Hunt S, Valantine H, Bates MJ, Mallidi HR, Oyer OE, Robbins RC, Reitz BA. *Am J Transplant.* 2008; 8(9): 1769-74.

**Outcome analysis of donor gender in heart transplantation.** Al-Khaldi A, Oyer PE, Robbins RC. *J Heart Lung Transplant.* 2006; 25(4): 461-8.

**Acute type A aortic dissection complicated by aortic regurgitation: composite valve graft versus separate valve graft versus conservative valve repair.** Lai DT, Miller DC, Mitchell RS, Oyer PE, Moore KA, Robbins RC, Shumway NE, Reitz BA. *J Thorac Cardiovasc Surgery.* 2003; 126(6): 1978-86.

**The impact of brain death on survival after heart transplantation: Time is of the essence.** Cantin B, Kwok BW, Chan MC, Valantine HA, Oyer PE, Robbins RC, Hunt SA. *Transplantation.* 2003; 76(9): 1275-9.





## Ada Poon, PhD

Assistant Professor, Electrical Engineering

EMAIL [adapoon@stanford.edu](mailto:adapoon@stanford.edu)

PROFILE [stanford.edu/group/poongroup/cgi-bin/wordpress/people/](http://stanford.edu/group/poongroup/cgi-bin/wordpress/people/)

WEB [biosystems.stanford.edu](http://biosystems.stanford.edu)

### EDUCATION/TRAINING

PhD UC Berkeley

### HONORS & AWARDS

National Science Foundation Career Award (2014)

Okawa Foundation Research Grant recipient (2010)

Terman Fellow, Stanford University

### CURRENT RESEARCH

Our research focuses on providing theoretical foundations and engineering innovations for realizing microelectronics that seamlessly integrate with the body. Such systems will allow precise recording or perturbation of physiological processes for advancing basic scientific discovery, and restoring or augmenting biological functions for clinical applications. Although microelectronics can be made extremely small, existing methods for powering them involve large batteries or energy harvesting modules. The size of these powering components severely constrains the integration of microelectronics in living systems. The main thrust of our research aims to address these obstacles through fundamental understanding of power transfer physics with advances in low-power integrated circuits in order to demonstrate the injection of fully operational sensors, electrodes, light sources, and other electronics deep inside the body. An array of these tiny probes enables measurement or perturbation of physiological parameters in previously inaccessible locations and over long time periods.

Angels can fly because they take themselves lightly.  
- G.K. Chesterton

### SELECTED PUBLICATIONS

**Wirelessly powering miniature implants for optogenetic stimulation.** Yeh AJ, Ho JS, Tanabe Y, Neofytou E, Beygui RE, Poon ASY. *Appl Phys Lett*. 2013; 103: 163701.

**Midfield wireless powering of subwavelength autonomous devices.** Kim S, Ho JS, Poon ASY. *Phys Rev Lett*. 2013; 110: 203905.

**Midfield wireless powering for implantable systems.** Ho JS, Kim S, Poon ASY. *Proc IEEE*. 2013; 101(6): 1369-78.

**Wireless power transfer to a cardiac implant.** Kim S, Ho JS, Chen LY, Poon ASY. *Appl Phys Lett*. 2012; 101: 073701.

**A mm-sized wirelessly powered and remotely controlled locomotive implantable device.** Yakovlev A, Pivonka D, Meng TH, Poon ASY. *Proc IEEE Intl Solid-State Circuits Conf. (ISSCC)* 2012; 302-4.



## Thomas Quertermous, MD

William G. Irwin Professor in Cardiovascular Medicine  
Chief (Research), Division of Cardiovascular Medicine

EMAIL [tomq1@stanford.edu](mailto:tomq1@stanford.edu)

PROFILE [med.stanford.edu/profiles/Thomas\\_Quertermous](http://med.stanford.edu/profiles/Thomas_Quertermous)

DIVISION [cvmedicine.stanford.edu](http://cvmedicine.stanford.edu)

LAB [quertermous.stanford.edu](http://quertermous.stanford.edu)

### EDUCATION/TRAINING

MD University of Chicago

MS University of Chicago

### MEDICINE RESIDENCY & INTERNSHIP

University of Chicago

### CARDIOLOGY FELLOWSHIP

Massachusetts General Hospital

### RESEARCH FELLOWSHIP

Harvard Medical School

### BOARD CERTIFICATION

Cardiology, ABIM

### HONORS & AWARDS

#### ESTABLISHED INVESTIGATOR

American Heart Association

Pfizer New Faculty Award

University of Chicago Distinguished Service Award

MD Degree with honors

#### FORMER HJ MORGAN CHAIR IN

MEDICINE Vanderbilt University

#### FORMER DIRECTOR

Donald W. Reynolds Cardiovascular Clinical Research Center

#### ANALYSIS COMMITTEE CHAIR

Stanford Asia Pacific Program in Hypertension and insulin resistance (SAPPHIRE)

#### MEMBER

American Society for Clinical Investigation (Young Turks);  
Association of University Cardiologists

### CURRENT RESEARCH

My laboratory is interested in the molecular mechanisms that mediate vascular disease pathophysiology and the risk for these diseases. The approach is primarily genetic, using human cohorts and large scale genome wide studies to identify genes that associate with disease and risk, and molecular genetic studies to define the mechanisms of these associations. At the human level, we collaborate with a number of centers around the world through the CARDIoGRAM+C4D consortium to further identify coronary heart disease loci, and our group serves as the organizing center searching for loci that associate with gold standard measures of insulin sensitivity, the GENESIS study. For loci identified through these studies, we work to identify mechanisms by which causal variation is responsible for altered gene structure or function, and employ cellular and genetic mouse models to identify how encoded factors participate in the disease process.

When not working on disease genes, I enjoy listening to blues music.

### SELECTED PUBLICATIONS

**Disease-related growth factor and embryonic signaling pathways modulate an enhancer of TCF21 expression at the 6q23.2 coronary heart disease locus.** Miller CL, Anderson DR, Kundu RK, Raiesdana A, Nurnberg ST, Diaz R, Cheng K, Leeper NJ, Chen C-H, Chang I-S, Schadt EE, Hsiung CA, Assimes TL, Quertermous T. *PLoS Genet.* 2013; 9: e1003652.

**Apelin-APJ Signaling Is a Critical Regulator of Endothelial MEF2 Activation in Cardiovascular Development.** Kang Y, Kim J, Anderson JP, Wu J, Gleim SR, Kundu RK, McLean DL, Kim JD, Park H, Jin SW, Hwa J, Quertermous T, Chun HJ. *Circ Res.* 2013; 113: 22-31.

**Large-scale association analysis identifies new risk loci for coronary artery disease.** CARDIoGRAMplusC4D Consortium, Deloukas P, Kanoni S, [+148 authors], Quertermous T, [+43 authors], Samani NJ. *Nat Genet.* 2013; 45: 25-33.

**Loss of CDKN2B promotes p53-dependent smooth muscle cell apoptosis and aneurysm formation.** Leeper NJ, Raiesdana A, Kojima Y, Kundu RK, Cheng H, Maegdefessel L, Toh R, Ahn G-O, Ali ZA, Anderson DR, Miller CL, Roberts SC, Spin JM, de Almeida PE, Wu JC, Xu B, Cheng K, Quertermous M, Kundu S, Kortekaas KE, Berzin E, Downing KP, Dalman RL, Tsao PS, Schadt EE, Owens GK, Quertermous T. *ATVB.* 2012; 33: e1-e10.

**Large-scale association analysis identifies 13 new susceptibility loci for coronary artery disease.** Schunkert H, Konig IR, Kathiresan S, [+149 authors], Quertermous T, [+13 authors], Samani NJ. *Nat Genet.* 2011;43(4): 333-8.



## Marlene Rabinovitch, MD

Dwight and Vera Dunlevie Professor of Pediatric Cardiology  
Professor (by courtesy), Developmental Biology

EMAIL [marlener@stanford.edu](mailto:marlener@stanford.edu)

PROFILE [med.stanford.edu/profiles/Marlene\\_Rabinovitch](http://med.stanford.edu/profiles/Marlene_Rabinovitch)

LAB [med.stanford.edu/labs/rabinovitchbland](http://med.stanford.edu/labs/rabinovitchbland)

### EDUCATION/TRAINING

MD McGill University

PEDIATRICS RESIDENCY & INTERNSHIP  
University of Colorado

PEDIATRIC CARDIOLOGY FELLOWSHIP  
Baylor College of Medicine

PEDIATRIC CARDIOLOGY FELLOWSHIP  
Harvard Medical School

PEDIATRIC CARDIOLOGY RESEARCH  
FELLOWSHIP Harvard Medical School

BOARD CERTIFICATION  
General Pediatrics, ABP  
Pediatric Cardiology, ABP

### CLINICAL FOCUS

Pulmonary Hypertension  
Pulmonary Vascular Diseases

### HONORS & AWARDS

American Heart Association (AHA)  
Basic Research Prize

AHA Distinguished Scientist Award

ATS, Recognition Award for Scientific  
Accomplishment

Louis and Artur Lucian Award for  
Research in Circulatory Diseases

SCIENTIFIC ADVISORY BOARD  
Children's Discovery Institute,  
Washington University; NHLBI Lung  
Repair and Regeneration Consortium;  
Max Planck Institute for Heart and  
Lung Research

### CURRENT RESEARCH

We investigate mechanisms leading to pulmonary arterial hypertension (PAH) with the view that we might better treat this devastating condition that has no cure except for lung transplantation. We discovered relationships between degradation of elastin by an endogenous elastase, loss of pre-capillary vessels, and proliferation of vascular cells and showed that suppression of elastase activity could reverse experimentally-induced PAH; we are now embarking on a translational project to bring elastase inhibitors into the clinic. We focus on inflammation and autoimmunity in PAH. CyToF and multiple high throughput approaches are applied in immunophenotyping patients and experimental models of PAH. In addition, we investigate the use of induced pluripotent stem cells to understand the genetic and epigenetic factors that cause PAH. We recently discovered molecular pathways downstream of bone morphogenetic protein receptor (BMPR)2 explaining how activation of this receptor protects EC from apoptosis preventing obliteration and loss of pre-capillary arteries and attenuates proliferation of SMC and fibroblasts. Using human cells and genetically modified mice, we elucidate interactions between BMPR2 signaling and PPAR $\gamma$  mediated gene regulation. We relate mutant BMPR2 to heightened GM-CSF mediated macrophage recruitment, and PPAR $\gamma$  to DNA damage/repair mechanisms and preservation of mitochondrial function.

The patient with pulmonary hypertension still  
mystifies even the most astute of physicians.

### SELECTED PUBLICATIONS

**FK506 Activates BMPR2 Signaling, Rescues Endothelial Dysfunction, Reverses Pulmonary Hypertension.** Spiekerkoetter E, Xuefei T, Cai J, Hopper RK, Sudheendra, Li CG, El-Bizri N, Sawada H, Haghghat R, Chan R, Haghghat L, de Jesus Perez V, Wang L, Reddy S, Zhao M, Bernstein D, Solow-Cordero DE, Beachy PA, Wandless TJ, ten Dijke P, Rabinovitch M. *J Clin Invest.* 2013; Aug 1; 123(8): 3600-13.

**Loss of Adenomatous Poliposis Coli- $\alpha$ 3 Integrin Interaction Promotes Endothelial Apoptosis in Mice and Humans.** de Jesus Perez VA, Yuan K, Orcholski ME, Sawada H, Zhao M, Li CG, Tojais NF, Nickel NP, Rajagopalan V, Spiekerkoetter E, Wang L, Dutta R, Bernstein D, Rabinovitch M. *Circ Res.* 2012; 111(12): 1551-64.

**Disruption of PPAR $\gamma$ / $\beta$ -catenin-mediated regulation of apelin impairs BMP-induced mouse and human pulmonary arterial EC survival.** Alastalo T-P, Li M, de Jesus Perez VA, Pham D, Sawada H, Wang JK, Koskenvuo M, Wang L, Freeman BA, Chang HY, and Rabinovitch M. *J Clin Invest.* 2011; 121(9): 3735-46.



## Jayakumar Rajadas, PhD

Founding Director, Biomaterials and Advanced Drug Delivery Laboratory  
Assistant Director, Cardiovascular Pharmacology, Stanford CVI

EMAIL [jayraja@stanford.edu](mailto:jayraja@stanford.edu)

PROFILE [med.stanford.edu/profiles/Jayakumar\\_Rajadas/](http://med.stanford.edu/profiles/Jayakumar_Rajadas/)

LAB [bioadd.stanford.edu](http://bioadd.stanford.edu)

### EDUCATION/TRAINING

PhD Indian Institute of Technology

### HONORS & AWARDS

Young Scientist Award in Chemistry,  
Council of Scientific and Industrial  
Research, India

TANSA Award, Government of Tamil  
Nadu, India

### VISITING SCIENTIST

CNRS - National Centre for Scientific  
Research, France; ETH Zurich;  
National Institute on Aging (NIA), NIH

### CONSULTING PROFESSOR

Department of Chemical Engineering,  
Stanford University

### VISITING PROFESSOR (STANFORD UNIVERSITY)

Department of Biological Sciences;  
Department of Chemical Engineering;  
Department of Psychiatry

### STEERING COMMITTEE MEMBER

Stanford Cardiovascular Institute

### FORMER FOUNDING CHAIR (INDIA)

Bioorganic and Neurochemistry  
Laboratory, CLRI, Council of Scientific  
and Industrial Research

### CURRENT RESEARCH

My research oversees the application of various technologies in a research domain aimed at the development of novel formulations and therapeutics of inventing targeted drug delivery systems. For the past 15 years, I have been studying how protein aggregation in cardiomyocytes and neurons affects their functions. I have shown that misfolded protein accumulation is involved in the dysregulation of calcium homeostasis and cellular function. Recently, I discovered that the misfolding stress is initiated by extracellular interactions between amyloid aggregates and Eph2 and prion receptors. I am developing specific ligands to prevent these interactions. In addition, I have used biophysical and pharmacological approaches to identify optimal microenvironments in which to implant cardiomyocytes to repair injured hearts. My expertise in stem cell survival and differentiation is currently utilized in developing technology for high yield survival of purified cardiovascular cells in various transplantations and imaging studies.

Science is the attempt to make the chaotic diversity  
of our sense-experience corresponds to a logically  
uniform system of thought. - Albert Einstein

### SELECTED PUBLICATIONS

**Promotion of airway anastomotic microvascular regeneration and alleviation of airway ischemia by deferoxamine nanoparticles.** Jiang X, Malkovskiy AV, Tian W, [+7 authors], Rajadas J, Nicolls MR. *Biomaterials*. 2014; 35: 803-13.

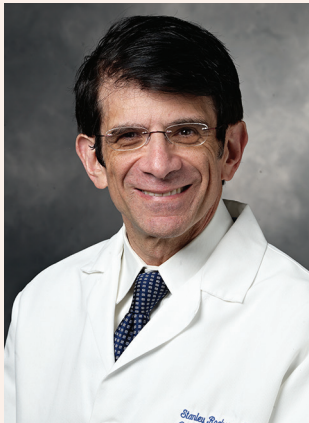
**Solvent microenvironments and copper binding alters the conformation and toxicity of a prion fragment.** Satheshkumar KS, Inayathullah M, Malkovskiy AV, Carre AL, Sivenesan S, Hardesty JO, Rajadas J. *PLoS ONE*. 2013; 8(10): e85160.

**Blocking macrophage leukotriene B4 prevents endothelial injury and reverses pulmonary hypertension.** Tian W, Jiang X, Tamosiuniene R, [+9 authors], Rajadas J, Peters-Golden M, Voelkel NF, Nicolls MR. *Sci Transl Med*. 2013; 5: 200.

**Polyvinylpyrrolidone microneedles enable delivery of intact proteins for diagnostic and therapeutic applications.** Sun W, Araci Z, Inayathullah M, Manickam S, Zhang X, Bruce MA, Marinkovich MP, Lane AT, Milla C, Rajadas J, Butte M. *Acta Biomater*. 2013; 9: 7767-74.

**Enhanced A beta(1-40) Production in Endothelial Cells Stimulated with Fibrillar A beta(1-42).** Rajadas J, Sun W, Li H, Inayathullah M, Cereghetti D, Tan A, de Mello Coelho V, Chrest FJ, Kusiak JW, Smith WW, Taub D, Wu JC, Rifkind JM. *PLoS ONE*. 2013; 8(3): e58194.





## Stanley G. Rockson, MD

Allan and Tina Neill Professor of Lymphatic Research and Medicine  
 Chief of Consultative Cardiology  
 Director, Stanford Center for Lymphatic and Venous Disorders

EMAIL [rockson@stanford.edu](mailto:rockson@stanford.edu)

PROFILE [med.stanford.edu/profiles/Stanley\\_Rockson](http://med.stanford.edu/profiles/Stanley_Rockson)

CENTER [stanfordhospital.org/cardiovascularhealth/lymphaticvenous](http://stanfordhospital.org/cardiovascularhealth/lymphaticvenous)

### EDUCATION/TRAINING

MD Duke University

### MEDICINE RESIDENCY & INTERNSHIP

Harvard University

### CARDIOLOGY FELLOWSHIP

Harvard University

### BOARD CERTIFICATION

Internal Medicine, ABIM

Cardiovascular Disease, ABIM

### CLINICAL FOCUS

Lymphatic and Venous Disease

Peripheral Vascular Disease

Consultative Cardiology

### HONORS & AWARDS

Morris and Caroline Barkon Lecture,  
 University of Pittsburgh

Pioneer Award, Lymphatic Research  
 Foundation

E. William Hancock Cardiovascular  
 Medicine Teaching Award, Stanford  
 University

Franklin G. Ebaugh Jr. Award for  
 Mentoring Medical Students, Stanford  
 University

### CHAIR, SCIENTIFIC ADVISORY COMMITTEE

Lymphatic Research Foundation

### FELLOW

American College of Cardiology;

American College of Angiology;

American College of Physicians; Society  
 of Vascular Medicine and Biology

### FACULTY MEMBER

Faculty of 1000 Medicine

### CURRENT RESEARCH

I have devoted the last fifteen years of my career to the clinical and translational investigation of lymphatic vascular disease. More specifically, my laboratory and clinical research team focus on: biomarker identification and validation in lymphatic vascular disease; applications of therapeutic lymphangiogenesis; drug therapies for acquired lymphedema; and pharmacologic prevention of cancer-induced lymphedema. Having studied and characterized lymphatic vascular disease in small animal models, we are increasingly attempting to apply these insights to the human clinical problem of lymphedema. In 1995, I co-founded, and currently direct, the Stanford Center for Lymphatic and Vascular Disorders, a specialized center for the diagnostic evaluation and focused therapy of lymphedema and allied diseases.

I agree with Woody Allen: 'I don't want to achieve immortality through my work. I want to achieve it by not dying.'

### SELECTED PUBLICATIONS

**The lymphatics and the inflammatory response: lessons learned from human lymphedema.** Rockson SG. *Lymphat Res Biol.* 2013; 11(3): 117-20.

**The Aging Lymphatics Become More Mature.** Rockson, SG. *Lymphat Res Biol.* 2013; 11(1): 1.

**Prospective transcriptomic pathway analysis of human lymphatic vascular insufficiency: identification and validation of a circulating biomarker panel.** Lin S, Kim J, Lee MJ, Roche L, Yang NL, Tsao PS, Rockson SG. *PLoS One.* 2012; 7(12): e52021.

**Anti-inflammatory pharmacotherapy with ketoprofen ameliorates experimental lymphatic vascular insufficiency in mice.** Nakamura K, Radhakrishnan K, Wong YM, Rockson SG. *PLoS One.* 2009; 4(12): e8380.

**Inflammatory manifestations of experimental lymphatic insufficiency.** Tabibiazar R, Cheung L, Han J, Swanson J, Beilhack A, An A, Dadras SS, Rockson N, Joshi S, Wagner R, Rockson, SG. *PLoS Med.* 2006; 3(7): e254.

**Therapeutic lymphangiogenesis with human recombinant VEGF-C.** Szuba A, Skobe M, Karkkainen MJ, Shin WS, Beynet DP, Rockson NB, Dakhil N, Spilman S, Goris ML, Strauss HW, Quertermous, T, Alitalo K, Rockson SG. *FASEB J.* 2002; 16(14):1985-1987.



## Stephen J. Roth, MD, MPH

Professor, Pediatrics

Chief, Division of Pediatric Cardiology, Lucile Packard Children's Hospital  
 Director, The Children's Heart Center, Lucile Packard Children's Hospital  
 James Baxter Wood and Yvonne Craig Wood Endowed Director of the  
 Cardiovascular Intensive Care Unit, Lucile Packard Children's Hospital

EMAIL [sroth@stanford.edu](mailto:sroth@stanford.edu)

PROFILE [med.stanford.edu/profiles/Stephen\\_Roth](http://med.stanford.edu/profiles/Stephen_Roth)

DEPARTMENT [pedcard.stanford.edu](http://pedcard.stanford.edu)

### EDUCATION/TRAINING

MD Yale University

MPH Harvard School of Public Health

MEDICINE RESIDENCY & INTERNSHIP  
 Children's Hospital Boston

PEDIATRIC CARDIOLOGY FELLOWSHIP  
 Children's Hospital Boston

RESEARCH FELLOWSHIP  
 Harvard Medical School

BOARD CERTIFICATION  
 Pediatric Cardiology, ABP

### CLINICAL FOCUS

Pediatric Cardiology  
 Pediatric Cardiac Intensive Care

### HONORS & AWARDS

Clinical Investigator Development  
 Award, NIH

PRESIDENT ELECT  
 Western Society of Pediatric  
 Cardiology (2015-16)

BOARD OF DIRECTORS  
 Pediatric Cardiac Intensive Care  
 Society (2009-12, 2013-16)

FORMER STEERING COMMITTEE  
 MEMBER  
 Pediatric Heart Network, NIH

MEMBER  
 Cardiovascular Development Clinical  
 and Translational Committee,  
 American Heart Association

### CURRENT RESEARCH

My clinical and translational research interests focus on improving the outcomes of newborns, infants, and children following cardiopulmonary bypass surgery for congenital heart defects. Mortality for these patients is fortunately now low, but morbidity related to prolonged ICU stay persists and can have a lifelong impact on function.

It is estimated that there are now 2 million people living in the United States with congenital heart disease. In 2012 more than half of these individuals are adults. This represents both great success in treating congenital heart disease in children as well as a major challenge for cardiovascular health care providers and institutions.

### SELECTED PUBLICATIONS

**Clinical outcome score predicts the need for neurodevelopmental intervention after infant heart surgery.** Mackie AS, Alton GY, Dinu IA, Joffe AR, Roth SJ, Newburger JW, Robertson CM. *J Thor Cardiovasc Surg.* 2013; 145(5): 1248.

**Postoperative respiratory failure in children with tetralogy of fallot, pulmonary atresia, and major aortopulmonary collaterals: a pilot study.** Asija R, Hanley FL, Roth SJ. *Ped Crit Care Med.* 2013; 14(4): 384-9.

**Efficacy and Predictors of Success of Noninvasive Ventilation for Prevention of Extubation Failure in Critically Ill Children With Heart Disease.** Gupta P, Kuperstock JE, Hashmi S, Arnolde V, Gossett JM, Prodhon P, Venkataraman S, Roth SJ. *Ped Cardiol.* 2013; 34(4): 964-77.

**Safety and efficacy of prolonged dexmedetomidine use in critically ill children with heart disease.** Gupta P, Whiteside W, Sabati A, Tesoro TM, Gossett JM, Tobias JD, Roth SJ. *Ped Crit Care Med.* 2012; 13(6): 660-6.

**Early Outcomes After Extracardiac Conduit Fontan Operation Without Cardiopulmonary Bypass.** McCammond AN, Kuo K, Parikh VN, Abdullah K, Balise R, Hanley FL, Roth SJ. *Ped Cardiol.* 2012; 33(7): 1078-85.

**Predictors for use of temporary epicardial pacing wires after pediatric cardiac surgery.** Gupta P, Jines P, Gossett JM, Maurille M, Hanley FL, Reddy VM, Miyake CY, Roth SJ. *J Thor Cardiovasc Surg.* 2012; 144(3): 557-62.



## Pilar Ruiz-Lozano, PhD

Associate Professor (Research), Pediatrics - Cardiology

EMAIL [prlozano@stanford.edu](mailto:prlozano@stanford.edu)

PROFILE [med.stanford.edu/profiles/Pilar\\_Ruiz-Lozano](http://med.stanford.edu/profiles/Pilar_Ruiz-Lozano)

DEPARTMENT [pedcard.stanford.edu](http://pedcard.stanford.edu)

### EDUCATION/TRAINING

PhD University of Barcelona

MS University of Barcelona

### HONORS & AWARDS

CVI Seed Grant (2012)

Weinstein Cardiac Development Conference Award for best trainee

### PATENT

Engineered Collagen Matrices for Myocardial Therapy (61/718,046)

### NIH Ad-hoc REVIEWER

Cardiovascular Differentiation and Development Study Section (2007, 2011, 2012); Cardiac Hypertrophy Study Section (2013); Special Emphasis Panel - Cardiac Development (2011, 2012, 2013); Special Emphasis Panel - Heart Failure (2012)

### FELLOW

American Heart Association

### MEMBER

Bio-X; Child Health Research Institute

### CURRENT RESEARCH

Heart failure and coronary artery disease are leading clinical problems in the western countries with limited therapeutical options ([www.americanheart.org](http://www.americanheart.org)). The heart, however, has endogenous mechanisms of repair that could potentially be enhanced pharmacologically and be used as novel approaches for treatment. Based on a genetic, stem cell and biochemical approaches, research in the Ruiz-Lozano's laboratory focuses on the discovery, analysis and applications of endogenous cardiac repair systems with particular emphasis on the role of epicardial progenitor cells.

The faculty of art is to change events; the faculty of science is to foresee them. - Henry Thomas Buckle.

### SELECTED PUBLICATIONS

**The effect of bioengineered acellular collagen patch on cardiac remodeling and ventricular function post myocardial infarction.** Serpooshan V, Zhao M, Metzler SA, Wei K, Shah PB, Wang A, Mahmoudi M, Malkovskiy AV, Rajadas J, Butte MJ, Bernstein D, Ruiz-Lozano P. *Biomaterials*. 2013; 34(36): 9048-55.

**Temperature: the "ignored" factor at the NanoBio interface.** Mahmoudi M, Abdelmonem AM, Behzadi S, Clement JH, Dutz S, Ejtehadi MR, Hartmann R, Kantner K, Linne U, Maffre P, Metzler S, Moghadam MK, Pfeiffer C, Rezaei M, Ruiz-Lozano P, Serpooshan V, Shokrgozar MA, Nienhaus GU, Parak W. *J ACS Nano*. 2013; 7(8): 6555-62.

**Coronary veins determine the pattern of sympathetic innervation in the developing heart.** Nam J, Onitsuka I, Hatch J, Uchida Y, Ray S, Huang S, Li W, Zang H, Ruiz-Lozano P, Mukoyama Y. *Development*. 2013; 140(7): 1475-85.

**APJ acts as a dual receptor in cardiac hypertrophy.** Scimia MC, Hurtado C, Ray S, Metzler S, Wei K, Wang J, Woods CE, Purcell NH, Catalucci D, Akasaka T, Bueno OF, Vlasuk GP, Kaliman P, Bodmer R, Smith LH, Ashley E, Mercola M, Brown JH, Ruiz-Lozano P. *Nature*. 2012; 488(7411): 394-8.

**Deficient signaling via Alk2 (Acvr1) leads to bicuspid aortic valve development.** Thomas PS, Sridurongrit S, Ruiz-Lozano P, Kaartinen V. *PLOS One*. 2012; 7(4): e35539.

**Cardiac muscle regeneration: lessons from development.** Mercola M, Ruiz-Lozano P, Schneider MD. *Genes Dev*. 2011; 25(4): 299-309.

**Retinoic acid stimulates myocardial expansion by induction of hepatic erythropoietin which activates epicardial Igf2.** Brade T, Kumar S, Cunningham TJ, Chatzi C, Zhao X, Cavallero S, Li P, Sucov HM, Ruiz-Lozano P, Duyster G. *Development*. 2011 Jan;138(1):139-48.



## Michael Snyder, PhD

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

EMAIL [mpsnyder@stanford.edu](mailto:mpsnyder@stanford.edu)

PROFILE [med.stanford.edu/profiles/Michael\\_Snyder](http://med.stanford.edu/profiles/Michael_Snyder)

LAB [snyderlab.stanford.edu](http://snyderlab.stanford.edu)

### EDUCATION/TRAINING

PhD California Institute of Technology

### HONORS & AWARDS

Pioneer Award, HUPO

Connecticut Medal of Science

Burroughs Wellcome Scholar Award

Lewis B. Cullman Professor of MCDB

### EXECUTIVE COMMITTEE

HUPO

### SCIENTIFIC ADVISORY COMMITTEE

EMBL

### SCIENTIFIC ADVISORY COMMITTEE

Northeast Structural Genomics Consortium

### SCIENTIFIC ADVISORY BOARD

Integrated Genomics Project, University of Toronto

### SCIENTIFIC ADVISORY BOARD

Duke University Systems Biology Center

### PRINCIPAL INVESTIGATOR

Yale Center of Excellence in Genome Sciences

### FORMER COUNCIL MEMBER

Genetics Society of America

### FORMER DIRECTOR

Yale Center for Genomics and Proteomics

### FORMER CHAIR

Department of Molecular, Cellular and Developmental Biology, Yale University

### CURRENT RESEARCH

We are presently in an omics revolution in which genomes and other omes can be readily characterized. My laboratory has both used and developed a variety of approaches to analyze genomes, proteomes and regulatory networks. Our research focuses on yeast, an ideal model organism ideally suited to genetic analysis, and humans. We discovered that much more of the human genome is transcribed and contains regulatory information that was previously appreciated, and a high diversity of transcription factor binding occurs both between and within species. We have also combined different state-of-the-art omics technologies to perform the first longitudinal detailed integrative personal omics profile (iPOP) of person and used this to assess disease risk and monitor disease states for personalized medicine.

I'm a believer in the future—genomics will move medicine from 'diagnose and treat' to 'predict and prevent'.

### SELECTED PUBLICATIONS

**Dynamic trans-acting factor colocalization in human cells.** Xie D, Boyle AP, Wu L, Zhai J, Kawli T, Snyder M. *Cell*. 2013; 155(3): 713-24.

**Extensive variation in chromatin states across humans.** Kasowski M, Kyriazopoulou-Panagiotopoulou S, Grubert F, Zaugg JB, Kundaje A, [+10 authors], Snyder M. *Science*. 2013; 342(6159): 750-2.

**A single-molecule long-read survey of the human transcriptome.** Sharon D, Tilgner H, Grubert F, Snyder M. *Nat Biotechnol*. 2013; 31(11): 1009-14.

**Systematic functional regulatory assessment of disease-associated variants.** Karczewski KJ, Dudley JT, Kukurba, KR, Chen, R, Butte, AJ, Montgomery SB, Snyder M. *Proc Natl Acad Sci USA*. 2013; 110(23): 9607-12.

**Whole-exome sequencing identifies tetratricopeptide repeat domain 7A (TTC7A) mutations for combined immunodeficiency with intestinal atresias.** Chen R, Giliani S, [+27 authors], Snyder M, Notarangelo LD. *J Allergy Clin Immunol*. 2013; 132(3): 656-64.

**Variation and genetic control of protein abundance in humans.** Wu L, Candille SI, Choi Y, Xie D, Jiang L, Li-Pook-Tham J, Tang H, Snyder M. *Nature*. 2013; 499(7456): 79-82.

**Overview of high throughput sequencing technologies to elucidate molecular pathways in cardiovascular diseases.** Churko JM, Mantalas GL, Snyder MP, Wu JC. *Circ Res*. 2013; 112(12): 1613-23.





## James Spudich, PhD

Douglass M. and Nola Leishman Professor of Cardiovascular Disease  
Professor, Biochemistry

EMAIL [jspudich@stanford.edu](mailto:jspudich@stanford.edu)

PROFILE [med.stanford.edu/profiles/devbio/researcher/James\\_Spudich](http://med.stanford.edu/profiles/devbio/researcher/James_Spudich)

LAB [spudlab.stanford.edu](http://spudlab.stanford.edu)

### EDUCATION/TRAINING

PhD Stanford University

### HONORS & AWARDS

Massry Prize

Ahmed H. Zewail Award Gold Medal

Albert Lasker Basic Medical Research Award

Wiley Prize in Biomedical Sciences

The Arthur Kornberg and Paul Berg Lifetime Achievement Award in Biomedical Sciences

E.B. Wilson Medal, American Society for Cell Biology (ASCB)

Biophysics Society Award for Outstanding Investigator in the Field of Single Molecule Biology

American Heart Association Research Prize

**CO-FOUNDER AND FORMER FIRST DIRECTOR** Interdisciplinary Program in Bioengineering, Biomedicine and Biosciences – Bio-X

### ELECTED FELLOW

American Academy of Arts and Sciences; American Association for the Advancement of Science

### ELECTED MEMBER

National Academy of Sciences

### SCIENTIFIC ADVISORY BOARD

Curie Institute, Paris; Mechanobiology Institute, Singapore

### ADJUNCT PROFESSOR

National Center for Biological Sciences, TFIR, Bangalor, India

### CURRENT RESEARCH

Our long-term goal is to understand how enzymes use specific structural elements to carry out their exquisite roles. We have focused on the myosin family of enzymes, which do much more than simply catalyze the conversion of a substrate to a product. The ATPase activity of myosin molecular motors must be precisely coupled with binding to and release from the actin filaments along which they move, as well as to a conformational change that provides force and directionality for movement. Understanding these structure-function relationships is a prerequisite to uncovering the effects of disease causing mutations in the genes encoding these molecular motors. My current research focuses on hypertrophic and dilated cardiomyopathies; these diseases, which affect 1 in 500 people, are debilitating and can lead to sudden death. Our focus is on the contractile machinery, studied at the molecular and single cardiomyocyte levels.

Every cell in the body has a 'dynamic city plan' (its cytoskeleton); maintenance of this highly organized structure is fundamental to the development and function of all cells.

### SELECTED PUBLICATIONS

**Molecular consequences of the R453C hypertrophic cardiomyopathy mutation on human  $\beta$ -cardiac myosin motor function.** Sommese RF, Sung J, Nag S, Sutton S, Deacon JC, Choe E, Leinwand LA, Ruppel K, Spudich JA. *Proc Natl Acad Sci U S A*. 2013; 110(31): 12607-12.

**Single-molecule fluorescence imaging of processive myosin with enhanced background suppression using linear zero-mode waveguides (ZMWs) and convex lens induced confinement (CLIC).** Elting MW, Leslie SR, Churchman LS, Korlach J, McFaul CM, Leith JS, Levene MJ, Cohen AE, Spudich JA. *Opt Express*. 2013; 21(1): 1189-202.

**Future challenges in single-molecule fluorescence and laser trap approaches to studies of molecular motors.** Elting MW, Spudich JA. *Dev Cell*. 2012; 23(6): 1084-91.

**Cell-intrinsic functional effects of the  $\alpha$ -cardiac myosin Arg-403-Gln mutation in familial hypertrophic cardiomyopathy.** Chuan P, Sivaramakrishnan S, Ashley EA, Spudich JA. *Biophys J*. 2012; 102(12): 2782-90.

**Systematic control of protein interaction using a modular ER/K  $\alpha$ -helix linker.** Sivaramakrishnan S, Spudich JA. *Proc Natl Acad Sci U S A*. 2011; 108(51): 20467-72.



## Marcia L. Stefanick, PhD

Professor, Medicine - Stanford Prevention Research Center  
Professor, Obstetrics and Gynecology

EMAIL [stefanick@stanford.edu](mailto:stefanick@stanford.edu)

PROFILE [med.stanford.edu/profiles/Marcia\\_Stefanick/](http://med.stanford.edu/profiles/Marcia_Stefanick/)

WEB [prevention.stanford.edu](http://prevention.stanford.edu)

CENTER [wsgm.stanford.edu](http://wsgm.stanford.edu)

### EDUCATION/TRAINING

PhD Stanford University

### HONORS & AWARDS

Iris F. Litt Faculty Fellowship,  
Clayman Institute of Gender Research  
(2009-2010)

PHS-NRS Award - Training Grant in  
Systems Biology (1976-1981)

Cardiovascular Disease Prevention  
Training Grant (1983-1986)

Principal Investigator of the Western  
Regional Center for the Women's  
Health Initiative Extension (2010-2015)

### CO-DIRECTOR

Stanford Center for Health Research  
on Women and Sex Differences in  
Medicine (WSDM)

### COUNCILOR

Organization for the Study of Sex  
Differences (OSSD)

### FELLOW

American College of Sports Medicine;  
American Heart Association (AHA);  
AHA Council on Arteriosclerosis,  
Thrombosis and Vascular Biology

### CO-DIRECTOR

Women's Cardiovascular Disease  
Strategic Planning Group

### STEERING, EXECUTIVE & EDUCATION COMMITTEE MEMBER

Stanford Cardiovascular Institute

### FORMER CHAIR

Steering and Executive Committees,  
Women's Health Initiative (1998-2011)

### CURRENT RESEARCH

My research focuses on chronic disease prevention—particularly, heart disease, breast cancer, and osteoporosis—and aging, in both women and men. As the principal investigator (PI) of the Women's Health Initiative (WHI), I have conducted large randomized controlled studies of diet, menopausal hormone therapy, and calcium and vitamin D supplementation as population-based strategies to prevent heart disease, stroke, cancer, fractures and dementia and plan to conduct a large physical activity trial in the WHI cohort. I mentor several junior and senior faculty and fellows on WHI analyses from across the School of Medicine. I am also PI of the multi-center Osteoporotic Fractures in Men (MrOS) Study, which is determining risk factors for bone and muscle loss (sarcopenia) and reduced physical function in older men, and the MrOS Sleep Study, which is focusing on cardiovascular outcomes.

Menopausal hormone therapy should not be used to prevent cardiovascular disease in women; the focus should be on lifestyle, i.e., physical activity and weight control.

### SELECTED PUBLICATIONS

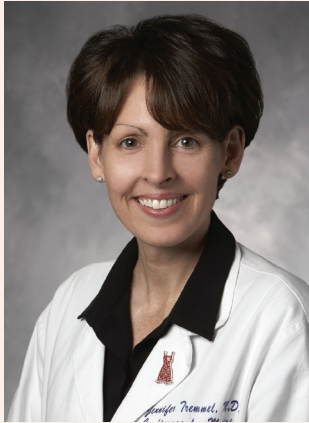
**Use of Medicare data to identify coronary heart disease outcomes in the Women's Health Initiative.** Hlatky MA, Ray RM, Burwen DR, [+18 authors], Stefanick ML. *Circ Cardiovasc Qual Outcomes*. 2014; 7(1): 157-62.

**Menopausal hormone therapy and health outcomes during the intervention and extended post-stopping phases of the Women's Health Initiative randomized trials.** Manson JE, Chlebowski RT, Stefanick ML, [+29 authors], Wallace RB. *JAMA*. 2013; 310(13): 1353-68.

**Changes in physical activity and body composition in postmenopausal women over time.** Sims ST, Kubo J, Desai M, Bea J, Beasley JM, Manson JM, Allison M, Sequin RA, Chen Z, Michael YL, Sullivan SD, Beresford S, Stefanick ML. *Med Sci Sports Exerc*. 2013; 45(8): 1486-92.

**Effects of postmenopausal hormone therapy on incident atrial fibrillation: the Women's Health Initiative Randomized Controlled Trials.** Perez MV, Wang P, Larson J, Virnig BA, Cochrane B, Curb D, Klein L, Manson J, Marin L, Robinson J, Wassertheil-Smoller S, Stefanick ML. *Circ Arrhythm Electrophysiol*. 2012; 5(6): 1108-16.

**Estrogen therapy and coronary-artery calcification.** Manson JE, Allison MA, Rossouw JE, Carr JJ, Langer RD, Hsia J, Kuller LH, Cochrane BB, Hunt JR, Ludlam SE, Pettinger MB, Gass M, Margolis KL, Nathan L, Ockene JK, Prentice RL, Robbins J, Stefanick ML. *N Engl J Med*. 2007; 356(25): 2591-602.



## Jennifer A. Tremmel, MD, MS

Assistant Professor, Medicine - Cardiovascular Medicine  
Clinical Director, Women's Heart Health at Stanford

EMAIL [jtremmel@stanford.edu](mailto:jtremmel@stanford.edu)

PROFILE [med.stanford.edu/profiles/Jennifer\\_Tremmel](http://med.stanford.edu/profiles/Jennifer_Tremmel)

CLINIC [stanfordhospital.org/cardiovascularhealth/womenHeartHealth](http://stanfordhospital.org/cardiovascularhealth/womenHeartHealth)

### EDUCATION/TRAINING

MD University of Iowa

MS Harvard University School of Public Health

### MEDICINE RESIDENCY

Dartmouth-Hitchcock Medical Center

### GENERAL CARDIOLOGY FELLOWSHIP

Stanford University

### PREVENTIVE CARDIOLOGY FELLOWSHIP

Stanford University

### INTERVENTIONAL CARDIOLOGY

FELLOWSHIP Stanford University

### BOARD CERTIFICATION

Cardiology, ABIM

Interventional Cardiology, ABIM

### CLINICAL FOCUS

Interventional Cardiology  
Women's Cardiovascular Disease

### HONORS & AWARDS

Society for Cardiovascular  
Angiography and Interventions (SCAI)  
Emerging Leader Mentorship Fellow

NIH Career Development Award

### EDITORIAL BOARD MEMBER

*Catheterization and Cardiovascular  
Interventions*

### EXECUTIVE COUNCIL MEMBER

SCAI Transradial Working Group

### LEADERSHIP COUNCIL MEMBER

American College of Cardiology  
Women in Cardiology Section

### CURRENT RESEARCH

Women's Heart Health at Stanford has several ongoing research studies focusing on women and sex differences in cardiovascular disease. We are studying patients who have chest pain, but normal appearing coronary arteries on angiography to understand sex differences in vascular function abnormalities, such as endothelial dysfunction, microvascular disease, and myocardial bridging. We are also investigating the best therapies for such patients, and have found that mindfulness-based stress reduction may reduce chest pain episodes. In addition, we are investigating the role of insomnia treatment for improving cardiac risk factors, trying to find ways of getting more women to cardiac rehab, and testing interventions to improve the cardiac health of women around the time of pregnancy.

The study of sex differences isn't just about the study of women. It's about taking a more careful look at both women and men.

### SELECTED PUBLICATIONS

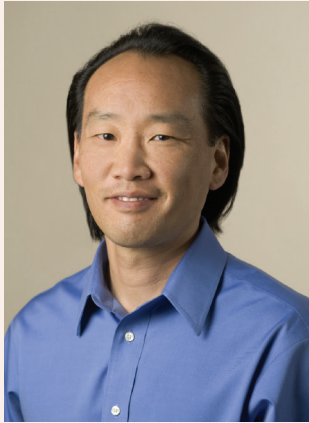
**A Novel Stress Echocardiography Pattern for Myocardial Bridge with Invasive Structural and Hemodynamic Correlation.** Lin S, Tremmel JA, Yamada R, Rogers IS, Yong CM, Turcott R, McConnell MV, Dash R, Schnittger I. *J Am Heart Assoc.* 2013; 2: e000097.

**Cognitive Behavioral Therapy for Insomnia in Women with Cardiovascular Disease.** Sears KC, Chambers AS, Tsai S, Nejedly M, Davidson A, Tremmel JA. *Ann Behav Med.* 2013; 45(2 Suppl): S268.

**The impact of sex differences on fractional flow reserve-guided percutaneous coronary intervention: a FAME (Fractional Flow Reserve Versus Angiography for Multivessel Evaluation) substudy.** Kim H-S, Tonino PA, DeBruyne B, Yong AS, Tremmel JA, Pijls NHJ, Fearon WF. *JACC Cardiovasc Interv.* 2012; 5(10): 1037-42.

**Most accurate definition of a high femoral artery puncture: aiming to better predict retroperitoneal hematoma in percutaneous coronary intervention.** Tremmel JA, Tibayan YD, O'Loughlin AJ, Chan T, Fearon WF, Yeung AC, Lee DP. *Catheter Cardiovasc Interv.* 2012; 80(1): 37-42.

**Transradial arterial access for coronary and peripheral procedures: Executive summary by the transradial committee of the SCAI.** Caputo RP, Tremmel JA, Rao S, Gilchrist IC, Pyne C, Pancholy S, Frasier D, Gulati R, Skelding K, Bertrand O, Patel T. *Catheter Cardiovasc Interv.* 2011; 78: 823-39.



## Philip S. Tsao, PhD

Professor, Medicine - Cardiovascular Medicine  
Associate Chief of Staff for Research and Development, VAPAHCS

EMAIL [ptsao@stanford.edu](mailto:ptsao@stanford.edu)

PROFILE [med.stanford.edu/profiles/Philip\\_Tsao](http://med.stanford.edu/profiles/Philip_Tsao)

### EDUCATION/TRAINING

PhD Thomas Jefferson University

### HONORS & AWARDS

#### CO-DIRECTOR

Cardiovascular Pulmonary Sciences Application

#### CO-DIRECTOR

CVI T32: Mechanisms and Innovation in Vascular Disease

Established Investigator Award, American Heart Association

Department of Medicine Faculty Mentoring Award, Stanford University

### EXECUTIVE & STEERING COMMITTEE

Stanford Cardiovascular Institute

### EXTERNAL ADVISORY BOARD MEMBER

Animal Models of Diabetic Complications Consortium, NIH

### MEMBER

Myocardial Ischemia and Metabolism Study Section, NIH

### FELLOW

ATVB Council of the American Heart Association

### MEMBER

American Association for the Advancement of Science; American Diabetes Association; American Heart Association; American Physiological Society; Endocrine Society; North American Vascular Biology Organization

### ASSOCIATE EDITOR

*Vascular Medicine*

### CURRENT RESEARCH

My laboratory's primary interests are in understanding the molecular underpinnings of vascular disease as well as assessing disease risk. We use a wide range of biochemical, molecular and physiological techniques to make primary observations in cell systems as well as preclinical models. Furthermore, we continue to extend our findings to human subjects in order to confirm their clinical applicability. Current research projects include the role of microRNAs in regulating atherosclerosis and abdominal aortic aneurysm disease; elucidating the impact of insulin resistance and obesity in vascular disease; and identification of biomarkers for risk assessment.

The Stanford Cardiovascular Institute is a place where clinicians and basic scientists can seamlessly collaborate on important clinical issues.

### SELECTED PUBLICATIONS

**MicroRNA-29b regulation of abdominal aortic aneurysm development.** Maegdefessel L, Azuma J, Tsao PS. *Trends Cardiovasc Med.* 2014; 24(1): 1-6.

**Hemodynamic regulation of reactive oxygen species: Implications for vascular diseases.** Raaz U, Toh R, Maegdefessel L, Adam M, Nakagami F, Emrich F, Spin JM, Tsao PS. *Antioxid Redox Signal.* 2013 [Epub ahead of print].

**Sequence variants in apolipoprotein(a) gene associate with systemic atherosclerosis and coronary atherosclerotic burden but not with venous thromboembolism.** Helgadottir A, Gretarsdottir S, Thorleifsson G, [+18 authors], Tsao PS, [+60 authors], Stefansson K. *J Am Coll Cardiol.* 2012; 60: 722-9.

**MicroRNA-21 blocks abdominal aortic aneurysm development and nicotine-augmented expansion.** Maegdefessel L, Azuma J, Toh R, Deng A, Merk DR, Raiesdana A, Leeper NJ, Raaz U, Schoelmerich AM, McConnell MV, Dalman RL, Spin JM, Tsao PS. *Sci Transl Med.* 2012; 4: 122ra22.

**Inhibition of microRNA-29b reduces murine abdominal aortic aneurysm development.** Maegdefessel L, Azuma J, Toh R, Merk DR, Deng A, Chin JT, Raaz U, Schoelmerich AM, Raiesdana A, Leeper NJ, McConnell MV, Dalman RL, Spin JM, Tsao PS. *J Clin Invest.* 2012; 122: 497-506.

**Transcriptional profiling and network analysis of the murine angiotensin II-induced abdominal aortic aneurysm.** Spin JM, Hsu M, Azuma A, Tedesco MM, Deng A, Dyer JS, Maegdefessel L, Dalman RL, Tsao PS. *Physiol Genomics.* 2011; 43: 993-1003.



## Minang 'Mintu' Turakhia, MD, MAS

Assistant Professor, Medicine - Cardiovascular Medicine

Director, Cardiac Electrophysiology at the VA Palo Alto Health Care System

EMAIL [mintu@stanford.edu](mailto:mintu@stanford.edu)

PROFILE [med.stanford.edu/profiles/Minang\\_Turakhia](http://med.stanford.edu/profiles/Minang_Turakhia)

DIVISION [cvmedicine.stanford.edu/people/turakhia.html](http://cvmedicine.stanford.edu/people/turakhia.html)

TWITTER [twitter.com/leftbundle](https://twitter.com/leftbundle)

### EDUCATION/TRAINING

MD UCSF

MAS UCSF

MEDICINE RESIDENCY & INTERNSHIP  
Brigham and Women's Hospital

CARDIOLOGY & CARDIAC ELECTROPHYSIOLOGY FELLOWSHIP UCSF

BOARD CERTIFICATION  
Cardiac Electrophysiology, ABIM  
Cardiovascular Disease, ABIM  
Internal Medicine, ABIM

### CLINICAL FOCUS

Catheter Ablation  
Atrial Fibrillation  
Ventricular Tachycardia  
Sudden Cardiac Death  
Pacemakers  
Implantable Defibrillators

### HONORS & AWARDS

VA Career Development Award  
American Heart Association (AHA)  
National Scientist Development Award  
Gilead Sciences Scholars Program in Cardiovascular Disease  
American College of Cardiology (ACC)  
Foundation Emerging Faculty Fellow  
E. William Hancock Stanford Cardiovascular Medicine Faculty Teaching Award  
AHA Top Ten Scientific Advances in Cardiology  
FELLOW  
ACC; AHA; Heart Rhythm Society

### CURRENT RESEARCH

The goal of my research is to improve the outcomes of the treatment of heart rhythm disorders, with a focus on atrial fibrillation (AF). We have developed a multidisciplinary outcomes research program that draws upon technical knowledge, principals, and methods from computer science, biostatistics, economics, health services research, epidemiology, and clinical cardiac electrophysiology, which is my practicing medical specialty. By using large administrative, medical record, registry, and implantable device data, my group takes a "Big Data" approach to fill evidence gaps in understanding quality of care, predicting AF-related complications, and comparing effectiveness of treatment strategies. Our TREAT-AF retrospective study of over 500,000 patients with newly-diagnosed AF is the largest known research cohort of AF patients.

Atrial fibrillation is one of the most commonly treated conditions in all of health care. Yet, it is astonishing how little we understand the disease, how to best treat it, and who is at highest risk for complications.

### SELECTED PUBLICATIONS

**Burden, timing, and relationship of cardiovascular hospitalization to mortality among Medicare beneficiaries with newly diagnosed atrial fibrillation.** Turakhia MP, Solomon MD, Jhaveri M, Davis P, Eber MR, Conrad R, Summers N, Lakdawalla D. *Amer Heart J.* 2013; 166(3): 573-80.

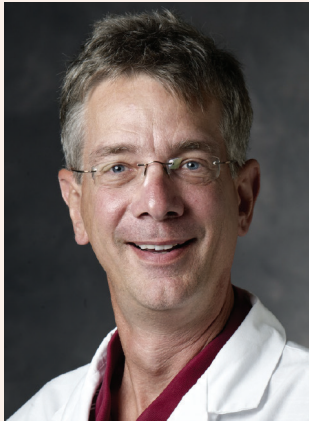
**US Health Care Policy and Reform: implications for cardiac electrophysiology.** Turakhia MP, Ullal AJ. *J Interv Cardiac Electrophys.* 2013; 36(2): 129-36.

**Differences and trends in stroke prevention anticoagulation in primary care vs cardiology specialty management of new atrial fibrillation: The Retrospective Evaluation and Assessment of Therapies in AF (TREAT-AF) study.** Turakhia MP, Hoang DD, Xu X, Frayne S, Schmitt S, Yang F, Phibbs CS, Than CT, Wang PJ, Heidenreich PA. *Amer Heart J.* 2013; 165(1): 93.

**Foreword: health policy and cardiac electrophysiology.** Hlatky, M. A., Reynolds, M., Turakhia, M. *J of Interventional Cardiac Electrophysiology.* 2013; 36(2): 97.

**Left atrial function predicts heart failure hospitalization in subjects with preserved ejection fraction and coronary heart disease: longitudinal data from the Heart and Soul Study.** Welles CC, Ku IA, Kwan DM, Whooley MA, Schiller NB, Turakhia MP. *J Am Coll Cardiol.* 2012; 59(7): 673-80.





## Paul J. Utz, MD

Professor, Medicine - Immunology and Rheumatology  
Program Director, Medical Scientist Training Program (MSTP)

EMAIL [pjutz@stanford.edu](mailto:pjutz@stanford.edu)

PROFILE [med.stanford.edu/profiles/Paul\\_Utz](http://med.stanford.edu/profiles/Paul_Utz)

LAB [utzlab.stanford.edu](http://utzlab.stanford.edu)

### EDUCATION/TRAINING

MD Stanford University

MEDICINE RESIDENCY & INTERNSHIP  
Brigham and Women's Hospital

CLINICAL IMMUNOLOGY AND  
RHEUMATOLOGY FELLOWSHIP  
Brigham and Women's Hospital

RESEARCH FELLOWSHIP  
Dana Farber Cancer Institute

BOARD CERTIFICATION  
Rheumatology, ABIM

### CLINICAL FOCUS

Immunology  
Rheumatology

### HONORS & AWARDS

FOUNDER AND DIRECTOR  
Stanford Institutes of Medicine Research  
(SIMR) Summer Students Program

PROGRAM DIRECTOR  
EXPLORE Summer Students Program;  
Rheumatology Fellowship Program

ASSOCIATE DIRECTOR OF EDUCATION  
Immunity, Transplantation and  
Infection Institute (ITI)

ELECTED MEMBER  
Society for Clinical Investigation; The  
Kunkel Society

Department of Medicine Teaching  
Award, Stanford University (2009)

FORMER FACULTY FELLOW  
Stanford University Office of Diversity  
and Leadership

### CURRENT RESEARCH

While earning my MD degree at Stanford, I co-discovered the transcription factor Nuclear Factor of Activated T Cells (NFAT) with JP Shaw in Dr. Gerald Crabtree's laboratory. I am an expert in the study of human and murine autoantibodies and autoantigens, apoptosis signaling pathways, animal models of autoimmunity, proteomics and multiplexed assay development for biomarker discovery. Members of my laboratory are developing several cutting-edge proteomics technologies for immunological applications, including multiplex planar-based autoantigen microarrays for studying lupus, multiple sclerosis, and other diseases such as diabetes.

We are working to develop antigen-specific tolerizing therapies for common autoimmune diseases.

### SELECTED PUBLICATIONS

**Clinical optimization of antigen specific modulation of type 1 diabetes with the plasmid DNA platform.** Gottlieb P, Utz PJ, Robinson W, Steinman L. *Clin Immunol.* 2013; 149(3): 297-306.

**Protein microarray analysis reveals BAFF-binding autoantibodies in system lupus erythematosus.** Price JV, Haddon DJ, Kemmer D, Delepine G, Mandelbaum G, Jarrell JA, Gupta R, Balboni I, Chakravarty EF, Sokolove J, Shum AK, Anderson MS, Cheng MH, Robinson W, Browne SK, Holland SM, Baechler, Utz PJ. *J Clin Invest.* 2013; 123(12): 5135-45.

**An integrated peptide-antigen microarray on plasmonic gold films for sensitive human antibody profiling.** Zhang B, Jarrell J, Price JV, Tabakman SM, Li Y, Gong M, Hong G, Feng J, Utz PJ, Dai H. *PLoS One.* 2013; 8(7): e71043.

**Interferon-alpha induction and detection of anti-Ro, anti-La, anti-Sm, and anti-RNP autoantibodies by autoantigen microarray analysis in juvenile dermatomyositis.** Balboni I, Niewold TB, Morgan G, Limb C, Eloranta M-L, Rönnblom L, Utz PJ, Pachman LM. *Arth Rheum.* 2013; 65(9): 2424-9.

**Characterization of influenza vaccine immunogenicity using whole-protein and peptide influenza microarrays.** Price JV, Jarrell JA, Furman D, Kattah NH, Newell E, Dekker CL, Davis MM, Utz PJ. *PLoS One.* 2013; 8(5): e64555.

**On silico peptide microarrays for high resolution mapping of antibody epitopes and diverse protein-protein interactions.** Price JV, Tangsombatvisit S, Guangyu X, Yu J, Zhu J, Levy D, Gillespie EC, Gozani O, Varma M, Utz PJ, Liu CLL. *Nat Med.* 2012; 18: 1434-40.



## Hannah A. Valantine, MD, MRCP

Professor, Medicine - Cardiovascular Medicine  
Senior Associate Dean for Diversity and Leadership

EMAIL [hvalantine@stanford.edu](mailto:hvalantine@stanford.edu)

PROFILE [med.stanford.edu/profiles/Hannah\\_Valantine](http://med.stanford.edu/profiles/Hannah_Valantine)

DIVERSITY [med.stanford.edu/diversity](http://med.stanford.edu/diversity)

### EDUCATION/TRAINING

MD St. George's, London University

PhD London University

### MEDICINE RESIDENCY

St. George's, London University

### MEDICINE RESIDENCY

Brompton Hospital

### CARDIOLOGY/GENERAL MEDICINE

FELLOWSHIP Hammersmith Hospital

### RESEARCH CARDIOLOGY FELLOWSHIP

Stanford University

### CLINICAL FOCUS

Cardiac Transplantation

### HONORS & AWARDS

President's Awards for Excellence  
Through Diversity, Stanford University

NIH Director's Pathfinder Award for  
Research into diversity in biomedical  
research workforce

Seventh Annual Diversity Visiting  
Professor, Johns Hopkins Department  
of Medicine (2009)

Exceptional Contributions to Education  
in Medicine, Stanford University

### MEMBER

National Academies Panel to review  
the science of team science

### FELLOW

American College of Cardiology

### FOMER PRESIDENT

American Heart Association Western  
States Affiliate

### CURRENT RESEARCH

**CLINICAL RESEARCH:** Heart transplantation pathophysiology of acute and chronic rejection; mechanisms of cardiac allograft vasculopathy and role of cytomegalovirus; echocardiographic markers of diastolic dysfunction for non-invasive diagnosis of acute rejection; genomic approaches to rejection surveillance including gene expression profiling and donor DNA sequencing. **GENERAL CARDIOLOGY:** Heart disease in women. **DIVERSITY AND LEADERSHIP:** Diversity and faculty career development in academic medicine; faculty mentoring programs; unconscious bias and stereotype threat as barriers to faculty career advancement for women.

Only by engaging the diverse intellectual capital of the US, will our nation ensure its competitive edge, leadership, innovation and economic success.

### SELECTED PUBLICATIONS

**Temporal response of the human virome to immunosuppression and antiviral therapy.** De Vlaminck I, Khush KK, Strehl C, Kohli B, Neff NF, Okamoto J, Snyder TM, Weill D, Bernstein D, Valantine HA, Quake SR. *Cell*. 2013; 155(5): 1178-87.

**Closing the gender gap in academic medicine: a multifaceted intervention.** Valantine HA, Grewal D, Ku MC, Moseley J, Shih M-C, Stevenson D, Pizzo P. *Acad Med*. 2013 [*In press*].

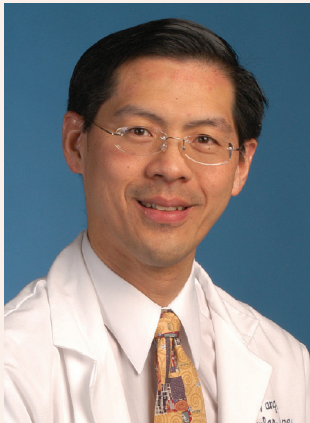
**Changing the culture of academic medicine to eliminate the gender leadership gap: 50/50 by 2020.** Valantine HA, Sandborg C. *Acad Med*. 2013; 88; No.10.

**Universal noninvasive detection of solid organ transplant rejection.** Snyder T, Khush K, Valantine H, and Quake S. *Proc Natl Acad Sci U S A*. 2011; 108(15): 6229-34.

**Medical faculty development: a modern-day odyssey.** Beckerle MC, Reed KL, Scott RP, Shafer M, Towner D, Valantine HA, Zahniser NR. *Sci Transl Med*. 2011; 3(104): 104cm31.

**Gene-expression profiling for rejection surveillance after cardiac transplantation.** Pham MX, Teuteberg JJ, Kfoury AG, Starling RC, Deng MC, Cappola TP, Kao A, Anderson AS, Cotts WG, Ewald GA, Baran DA, Bogaev RC, Elashoff B, Baron H, Yee J, Valantine HA; IMAGE Study Group. *N Engl J Med*. 2010; 362(20): 1890-900.

**Differentially expressed RNA from public microarray data identifies serum protein biomarkers for cross-organ transplant rejection and other conditions.** Chen R, Sigdel TK, Li L, Kambham N, Dudley JT, Hsieh SC, Klassen RB, Chen A, Caohuu T, Morgan AA, Valantine HA, Khush KK, Sarwal MM, Butte AJ. *PLoS Comput Biol*. 2010; 6(9): pii: e1000940.



## Paul J. Wang, MD

Professor, Medicine - Cardiovascular Medicine  
 Professor (by courtesy), Bioengineering  
 Director, Cardiac Arrhythmia Service and Cardiac Electrophysiology Laboratory

EMAIL [pjwang@stanford.edu](mailto:pjwang@stanford.edu)

PROFILE [med.stanford.edu/profiles/Paul\\_Wang](http://med.stanford.edu/profiles/Paul_Wang)

LAB [stanfordhospital.org/cardiovascularhealth/arrhythmia/team](http://stanfordhospital.org/cardiovascularhealth/arrhythmia/team)

### EDUCATION/TRAINING

MD Columbia University College of Physicians and Surgeons

MEDICINE RESIDENCY & INTERNSHIP  
 New York Presbyterian Medical Center

CARDIOVASCULAR DISEASE FELLOWSHIP  
 Brigham and Women's Hospital

BOARD CERTIFICATION  
 Internal Medicine, ABIM  
 Cardiovascular Disease, ABIM  
 Clinical Cardiac Electrophysiology, ABIM

### CLINICAL FOCUS

Cardiac Electrophysiology  
 Cardiac Arrhythmias  
 Hypertrophic Cardiomyopathy

### HONORS & AWARDS

DIRECTOR  
 Arrhythmia Advanced Treatment Center, Stanford Cardiovascular Health

DIRECTOR Cardiac Electrophysiology Fellowship Program

VICE CHAIR  
 American Heart Association Committee on Electrocardiography/Arrhythmias

CHAIR/EDUCATION COMMITTEE MEMBER  
 Heart Rhythm Society Continuing Medical Education Compliance Subcommittee

STEERING COMMITTEE MEMBER  
 Biodesign

CO-DIRECTOR  
 2014 Stanford Biodesign New Arrhythmia Technologies Retreat

### CURRENT RESEARCH

My research centers on the development of innovative approaches to the treatment of arrhythmias, including more effective catheter ablation techniques, more reliable implantable devices, and less invasive treatments. My clinical research interests include atrial fibrillation, ventricular tachycardia, supraventricular arrhythmias and implantable devices. I have active collaborations with Bioengineering, Mechanical Engineering, and Electrical Engineering Departments at Stanford. Some of the goals of my research program are: 1) to create a more effective methods of catheter ablation, 2) to create implantable pacemakers and leads that are more reliable, 3) to create a combined surgical-catheter approach to ablation, 4) to create noninvasive methods of ablation, 5) to make defibrillation painless.

Advances of the past 2 decades in engineering, biology and genetics, computer science, material science, chemistry and physics will result in major new developments in arrhythmia therapy and device innovation. We are poised to make significant contributions in this area.

### SELECTED PUBLICATIONS

**Drug screening using a library of human induced pluripotent stem cell-derived cardiomyocytes reveals disease-specific patterns of cardiotoxicity.** Liang P, Lan F, Lee AS, Gong T, Sanchez-Freire V, Wang Y, Diecke S, Sallam K, Knowles JW, Wang PJ, Nguyen PK, Bers DM, Robbins RC, Wu JC. *Circulation* 2013; 127(16): 1677-91.

**Outcomes from a Postgraduate Biomedical Technology Innovation Training Program: The First 12 Years of Stanford Biodesign.** Brinton TJ, Kurihara CQ, Camarillo DB, Pietzsch JB, Gorodsky J, Zenios SA, Doshi R, Shen C, Kumar UN, Mairal A, Watkins J, Popp RL, Wang PJ, Makower J, Krummel TM, Yock PG. *Ann Biomed Eng.* 2013; 41(9): 1803-10.

**Clinical significance of ventricular tachyarrhythmias in patients treated with CRT-D.** Kutiyfa V, Klein HU, Wang PJ, McNitt S, Polonsky B, Zima E, Merkely B, Moss AJ, Zareba W. *Heart Rhythm.* 2013; 10(7): 943-50.

**Procedural complications, rehospitalizations, and repeat procedures after catheter ablation for atrial fibrillation.** Shah RU, Freeman JV, Shilane D, Wang PJ, Go AS, Hlatky MA. *J Am Coll Cardiol.* 2012; 59(2): 143-9.



## Irving Weissman, MD

Virginia and DK Ludwig Professor for Clinical Investigation in Cancer Research  
 Professor, Developmental Biology and Pathology  
 Professor (by courtesy), Biology and Neurosurgery  
 Director, Institute for Stem Cell Biology and Regenerative Medicine  
 Director, Stanford Ludwig Center for Cancer Stem Cell Research and Medicine

EMAIL [irv@stanford.edu](mailto:irv@stanford.edu)

PROFILE [med.stanford.edu/profiles/Irving\\_Weissman](http://med.stanford.edu/profiles/Irving_Weissman)

LAB [stemcell.stanford.edu/about/Laboratories/weissman](http://stemcell.stanford.edu/about/Laboratories/weissman)

### EDUCATION/TRAINING

MD Stanford University

### HONORS & AWARDS

NATIONAL ACADEMY OF SCIENCE  
 COUNCIL National Academy of Science

Max Delbruck Medal, University of Berlin

Jessie Stevenson Kovalenko Medal,  
 National Academy of Sciences Council

California Scientist of the Year

Robert Koch Award, Koch Foundation,  
 Berlin, Germany

Lewis S. Rosenstiel Award for  
 Distinguished Work in Basic Medical  
 Science

### FELLOW

American Association for the  
 Advancement of Science

### ELECTED MEMBER

Institute of Medicine, National  
 Academy of Sciences; American  
 Philosophical Society

### BOARD OF SCIENTIFIC ADVISORS

National Cancer Institute

### BOARD OF DIRECTORS

Institute for Systems Biology;  
 International Society for Stem Cell  
 Research (ISSCR)

### SCIENTIFIC ADVISORY BOARD

Gladstone Institutes; Institute of  
 Medical Biology, A\*STAR, Singapore

### BOARD OF SCIENTIFIC COUNSELORS

Memorial Sloan Kettering Cancer Center

### CURRENT RESEARCH

My laboratory studies stem cell biology and regenerative medicine. We are particularly interested in hematopoiesis, hematopoietic stem cells (HSCs), leukemia, and the clonal events leading from HSC to leukemia. Our research encompasses the phylogeny and developmental biology of blood-forming cells and immune systems. My laboratory was the first to identify and isolate the blood-forming hematopoietic stem cell (HSC) from mice, and we have defined, by lineage analysis, the stages of development between the stem cells and mature progeny. We also discovered the human HSC, a human brain-forming stem cell population, mouse skeletal muscle stem cells, and an osteochondral stem cells in mice. Another research focus of my laboratory is cancer stem cell biology. In recent years, we have studied the potential of CD47 (a molecule expressed on the surface of cancer stem cells that protects them by providing a 'don't eat me' signal to phagocytic cells of the innate immune system) as a cancer therapeutic, and identifying cancer stem cells from a variety of blood and solid cancers.

In every aspect of stem cell and progenitor cell biology, and it's applications to regenerative medicine, I believe it must start with purification, purification, and purification; substituting impure or unsubstantiated cell populations will in the end only confuse the scientist and the clinical trialist.

### SELECTED PUBLICATIONS

**Anti-CD47 antibody-mediated phagocytosis of cancer by macrophages primes an effective antitumor T-cell response.** Tseng D, Volkmer JP, Willingham SB, Contreras-Trujillo H, Fathman JW, Fernhoff NB, Seita J, Inlay MA, Weiskopf K, Miyanishi M, Weissman IL. *Proc Natl Acad Sci USA*. 2013; 110(27): 11103-8.

**Identification of a colonial chordate histocompatibility gene.** Voskoboinik A, Newman AM, Corey DM, Sahoo D, Pushkarev D, Neff NF, Passarelli B, Koh W, Ishizuka KJ, Palmeri KJ, Dimov IK, Keasar C, Fan HC, Mantalas GL, Sinha R, Penland L, Quake SR, Weissman IL. *Science*. 2013; 341(6144): 384-7.

**Clonal precursor of bone, cartilage, and hematopoietic niche stromal cells.** Chan CK, Lindau P, Jiang W, Chen JY, Zhang LF, Chen CC, Seita J, Sahoo D, Kim JB, Lee A, Park S, Nag D, Gong Y, Kulkarni S, Luppen CA, Theologis AA, Wan DC, DeBoer A, Seo EY, Vincent-Tompkins JD, Loh K, Walmsley GG, Kraft DL, Wu JC, Longaker MT, Weissman IL. *Proc Natl Acad Sci USA*. 2013; 110(31): 12643-8.



## Cornelia M. Weyand, MD, PhD

Professor, Medicine - Immunology and Rheumatology  
 Chief, Division of Immunology and Rheumatology

EMAIL [cweyand@stanford.edu](mailto:cweyand@stanford.edu)

PROFILE [med.stanford.edu/profiles/Cornelia\\_Weyand](http://med.stanford.edu/profiles/Cornelia_Weyand)

DIVISION [immunology.stanford.edu](http://immunology.stanford.edu)

### EDUCATION/TRAINING

MD University of Aachen

DR. MED University of Bonn

PhD University of Heidelberg

### MEDICINE RESIDENCY

Hannover Medical School

### RHEUMATOLOGY FELLOWSHIP

Stanford University

### BOARD CERTIFICATION

Internal Medicine (Germany)

Rheumatology (Germany)

### CLINICAL FOCUS

Vasculitis

### HONORS & AWARDS

Henry Kunkel Young Investigator Award

Henry Christian Award for Excellence in Research

Ciba-Geigy Award for Excellence in Rheumatology Research

Carol Nachmann Award for Rheumatology

Paul Klemperer Award, New York Academy of Medicine

Mayo Distinguished Alumni Award

### MEMBER

American Society for Clinical Investigation; Association of American Physicians

### CURRENT RESEARCH

My research program is focused on defining and characterizing pathogenic immune responses in humans with emphasis on two disease models; inflammatory blood vessel disease and rheumatoid arthritis. In large vessel vasculitis, we have defined disease-relevant T cells, discerned mechanisms of T cell-antigen recognition, connected different T cell lineages to early and late disease and discovered microenvironmental signals that shape pathogenic immunity in the walls of human arteries. We were the first to describe the role of arterial wall dendritic cells in sensing danger-associated molecular patterns and initiating vasculitis and have implicated NOTCH-NOTCH ligand interactions in directing the tissue tropism of large vessel vasculitis. We build patient-relevant experimental models by engrafting human blood vessels, human atherosclerotic plaque and human immune cells into mice. Work in rheumatoid arthritis has identified premature immune aging as a typifying defect in this autoimmune syndrome. We are examining the contribution of DNA instability, telomeric damage and metabolic abnormalities in accelerated immune cell aging and inflammatory disease.

The immune system is everywhere. All diseases have their roots in the immune system.

### SELECTED PUBLICATIONS

**Phosphofructokinase deficiency impairs ATP generation, autophagy, and redox balance in rheumatoid arthritis T cells.** Yang Z, Fujii H, Mohan SV, Goronzy JJ, Weyand CM. *J Exp Med.* 2013; 210: 2119-34.

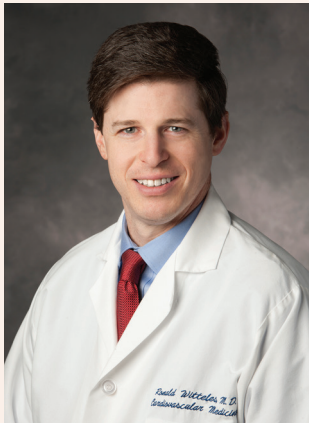
**Decline in miR-181a expression with age impairs T cell receptor sensitivity by increasing DUSP6 activity.** Li G, Yu M, Lee W-W, Tsang M, Krishnan E, Weyand CM, Goronzy JJ. *Nat Med.* 2012; 18: 1518-24.

**Blocking the NOTCH pathway inhibits vascular inflammation in large vessel vasculitis.** Piggott K, Deng J, Warrington K, Younge B, Kubo JT, Desai M, Goronzy JJ, Weyand CM. *Circulation.* 2011; 123: 309-18.

**Th17 and Th1 T-cell responses in giant cell arteritis.** Deng J, Younge BR, Olshen RA, Goronzy JJ, Weyand CM. *Circulation.* 2010; 121: 906-15.

**DNA-dependent protein kinase catalytic subunit mediates T-cell loss in rheumatoid arthritis.** Shao L, Goronzy JJ, Weyand CM. *EMBO Mol Med.* 2010; 2: 415-27.





## Ronald Witteles, MD

Assistant Professor, Medicine - Cardiovascular Medicine  
 Co-Director, Stanford Amyloid Center  
 Program Director, Internal Medicine Residency Training Program

EMAIL [witteles@stanford.edu](mailto:witteles@stanford.edu)

PROFILE [med.stanford.edu/profiles/Ronald\\_Witteles](http://med.stanford.edu/profiles/Ronald_Witteles)

AMYLOID CENTER [stanfordhospital.org/cardiovascularhealth/amyloid](http://stanfordhospital.org/cardiovascularhealth/amyloid)

RESIDENCY PROGRAM [medicine.stanford.edu/education/residency.html](http://medicine.stanford.edu/education/residency.html)

### EDUCATION/TRAINING

MD University of Chicago

### MEDICINE RESIDENCY

Stanford University

### CHEIF RESIDENT IN INTERNAL MEDICINE

Stanford University

### CARDIOLOGY FELLOWSHIP

Stanford University

### BOARD CERTIFICATION

Internal Medicine, ABIM

Cardiovascular Disease, ABIM

Nuclear Cardiology, CBNC

Advanced Heart Failure/Transplant

Cardiology, ABIM

### CLINICAL FOCUS

Heart Failure

Amyloidosis

Cardiac complications of cancer therapy (“Cardio-Oncology”)

Sarcoidosis

### HONORS & AWARDS

David Rytand Award for Excellence in Clinical Teaching, Department of Medicine (2009, 2010)

Heart Failure Society of America National Research Fellowship Award

Timothy F. Beckett, Jr. Award for Excelling in Clinical Teaching

### FELLOW

American College of Cardiology;

American College of Physicians

### CURRENT RESEARCH

My research focuses on two primary areas: amyloidosis and cardiac complications of cancer therapy. As Co-Director of one of the nation’s largest Amyloid Centers, I collaborate with partners throughout the campus on clinical trials, epidemiologic research, and laboratory-based research dedicated to a better understanding of and better treatments for cardiac amyloidosis. In the area of cardiac complications of cancer therapy (“Cardio-Oncology”), I collaborate with partners in the Divisions of Hematology and Medical Oncology to investigate optimal screening and treatment of cancer-therapy associated cardiac disease.

My career goal is to pursue excellence in and integration of the three cornerstones of academic medicine—clinical care, scholarship, and education.

### SELECTED PUBLICATIONS

**Implantable cardioverter-defibrillator placement in patients with cardiac amyloidosis.** Varr BC, Zarafshar S, Coakley T, Liedtke M, Lafayette RA, Arai S, Schrier SL, Witteles RM. *Heart Rhythm*. 2014; 11(1): 158-62.

**AG10 inhibits amyloidogenesis and cellular toxicity of the familial amyloid cardiomyopathy associated V122I transthyretin.** Penchala SC, Connelly S, Wang Y, Park MS, Zhao L, Baranczak A, Rappley I, Vogel H, Liedtke M, Witteles RM, Powers ET, Reixach N, Chan WK, Wilson IA, Kelly JW, Graef IA, Alhamadsheh MM. *Proc Natl Acad Sci USA*. 2013; 110(24): 9992-7.

**The frequency and severity of cardiovascular toxicity from targeted therapy in advanced renal cell carcinoma patients.** Hall PS, Harshman LC, Srinivas S, Witteles RM. *J Amer Coll Cardiol: Heart Failure*. 2013; 1(1): 72-8.

**Dipeptidyl peptidase 4 inhibition increases myocardial glucose uptake in nonischemic cardiomyopathy.** Witteles RM, Keu KV, Quon A, Tavana H, Fowler MB. *J Card Fail*. 2012; 18(10): 804-9.

**Underestimating cardiac toxicity in cancer trials: Lessons learned?** Witteles RM, Telli M. *J Clin Oncol*. 2012; 30(16): 1916-18.

**Use and overuse of left ventriculography.** Witteles RM, Knowles JW, Perez M, Morris WM, Spettell CM, Brennan TA, Heidenreich PA. *Am Heart J*. 2012; 163(4): 617-23.

**Heart transplantation and cardiac amyloidosis: Approach to screening and novel management strategies.** Varr BC, Liedtke M, Arai S, Lafayette RA, Schrier SL, Witteles RM. *J Heart Lung Transpl*. 2012; 31(3): 325-31.



## Y. Joseph Woo, MD

Chair, Cardiothoracic Surgery  
Professor, Cardiothoracic Surgery

EMAIL [joswoo@stanford.edu](mailto:joswoo@stanford.edu)

PROFILE [med.stanford.edu/profiles/Y. Joseph\\_Woo](http://med.stanford.edu/profiles/Y._Joseph_Woo)

DEPARTMENT [ctsurgery.stanford.edu](http://ctsurgery.stanford.edu)

### EDUCATION/TRAINING

MD University of Pennsylvania

BS Massachusetts Institute of Technology

### SURGERY RESIDENCY & INTERNSHIP

University of Pennsylvania

### RESEARCH FELLOWSHIP

University of Pennsylvania

### CARDIOTHORACIC SURGERY

FELLOWSHIP University of Pennsylvania

### BOARD CERTIFICATION

Surgery, ABS

Thoracic Surgery, ABTS

### CLINICAL FOCUS

Cardiothoracic Surgery

### HONORS & AWARDS

Surgical Mentorship Teaching Award,  
University of Pennsylvania (2013)

Luigi Mastroianni Clinical Innovator  
Award, University of Pennsylvania (2012)

### CHAIR

Leadership Committee, Council  
on Cardiovascular Surgery and  
Anesthesia, American Heart  
Association (AHA)

GUEST EDITOR *Circulation*

### FELLOW

AHA; American College of Cardiology;  
American College of Surgeons

### FORMER DIRECTOR (UNIVERSITY OF PENNSYLVANIA) Cardiac

Transplantation and Mechanical  
Circulatory Support Program;  
Minimally Invasive and Robotic  
Cardiac Surgery Program

### CURRENT RESEARCH

My research focus is the development of novel genetic, molecular and cellular strategies for treating myocardial ischemia and heart failure. We are investigating new paths to myocardial repair through angiogenesis, stem cells and tissue engineering. We are also exploring the newest techniques and devices for heart care: innovative approaches to mitral and aortic valve repair; smaller, more efficient mechanical heart pumps; and operations performed without stopping the heart.

Some of the most famous people in cardiac surgery (e.g., Norman Shumway) have led the program at Stanford over the years. It's truly a privilege to become a part of this amazingly prestigious, high-powered academic institution.

### SELECTED PUBLICATIONS

**Preclinical Evaluation of the Engineered Stem Cell Chemokine Stromal Cell Derived Factor 1-alpha Analogue in a Translational Ovine Myocardial Infarction Model.** MacArthur JW, Cohen JE, McGarvey JR, Shudo Y, Patel JB, Fairman AS, Trubelja A, Edwards BB, Hiesinger W, Goldstone AB, Atluri P, Fenning R, Wilensky R, Pilla JJ, Gorman JH, Gorman RC, Woo YJ. *Circ Res.* 2014 [In Press].

**Mesenchymal Precursor Cells as Adjunctive Therapy in Recipients of Contemporary LVADs: A Multi-Center Prospective Randomized Placebo-Controlled Double-Blinded Clinical Trial.** Ascheim DD, Geljins AC, Goldstein D, Moye LA, Smedira N, Lee S, Klodell CT, Szady A, Parides MK, Jeffries N, Skerret D, Taylor DA, Rame JE, Milano C, Rodgers JG, Lynch J, Dewey T, Eichhorn E, Sun B, Feldman D, Simiari R, O'Gara PT, Taddei-Peters W, Miller MA, Naka Y, Bagiella E, Rose EA, Woo YJ. *Circulation.* 2014 [In Press].

**Mitral Valve Repair versus Replacement for Severe Ischemic Mitral Regurgitation.** Acker MA, Parides MK, Perrault LP, Moskowitz AJ, Geljins AC, Voisine P, Smith PK, Hung JW, Blackstone E, Puskas JD, Argenziano M, Gammie JS, Mack M, Ascheim DD, Bagiella E, Moquette E, Ferguson B, Horvath K, Geller NL, Miller MA, Woo YJ, D'Alessandro DA, Ailawadi G, Dagenais F, Gardner TJ, O'Gara PT, Michler R, Kron IL. *N Engl J Med.* 2014; 370(1): 23-32.

**Spatially-Oriented, Temporally-Sequential SMC-EPC Bi-Level Cell-Sheet Neovascularizes Ischemic Myocardium.** Shudo Y, Cohen JE, MacArthur JW, Atluri P, Hsiao PF, Yang EC, Fairman AS, Trubelja A, Patel J, Miyagawa S, Sawa Y, Woo YJ. *Circulation.* 2013; 128(1): 59-68.

**Posterior Ventricular Anchoring Neochordal Repair of Degenerative Mitral Regurgitation Efficiently Remodels and Repositions Posterior Leaflet Prolapse.** Woo YJ, MacArthur JW. *Eur J Cardiothorac Surg.* 2013; 44(3): 485-9.



## Joseph C. Wu, MD, PhD

Professor, Medicine - Cardiovascular Medicine  
 Professor, Radiology  
 Director, Stanford Cardiovascular Institute

EMAIL [joewu@stanford.edu](mailto:joewu@stanford.edu)

PROFILE [med.stanford.edu/profiles/Joseph\\_Wu](http://med.stanford.edu/profiles/Joseph_Wu)

LAB [wulab.stanford.edu](http://wulab.stanford.edu)

### EDUCATION/TRAINING

MD Yale University

PhD UCLA

### MEDICINE RESIDENCY

UCLA Medical Center

### CARDIOLOGY FELLOWSHIP

UCLA Medical Center

### BOARD CERTIFICATION

Cardiovascular Disease, ABIM

### CLINICAL FOCUS

Adult Congenital Heart Disease

Cardiovascular Imaging

### HONORS & AWARDS

American Heart Association  
 Established Investigator Award

Presidential Early Career Award  
 for Scientists and Engineers, White  
 House Office of Technology

NIH Roadmap Transformative Award

NIH Director's New Innovator Award

Burroughs Wellcome Foundation  
 Career Award for Medical Scientists

Bernard and Joan Marshall Research  
 Excellence Prize, British Society for  
 Cardiovascular Research

### FELLOW

American Heart Association

### MEMBER

Association of University  
 Cardiologists; American Society for  
 Clinical Investigation

### CURRENT RESEARCH

My laboratory works on biological mechanisms of adult stem cells, embryonic stem cells (ESC), and induced pluripotent stem cells (iPSC). We use a combination of genetic and epigenetic profiling, tissue engineering, physiological testing, and molecular imaging technologies to better understand stem cell biology in vitro and in vivo. For adult stem cells, we are participating in several industry and NIH sponsored clinical trials. For ESC, we are currently studying their tumorigenicity, immunogenicity, and differentiation from CIRM funded grants. For iPSC, we are working on cardiovascular disease modeling, personalized drug screening, cell banking, and cell therapy. We also develop novel vectors and therapeutic genes for cardiovascular gene therapy applications.

The mission of Stanford CVI is to deliver excellence in clinical care, world-class education, and cutting-edge research.

### SELECTED PUBLICATIONS

**Patient-specific stem cells and cardiovascular drug discovery.** Mordwinkin NM, Lee AS, Wu JC. *JAMA*. 2013; 310(19): 2039-40.

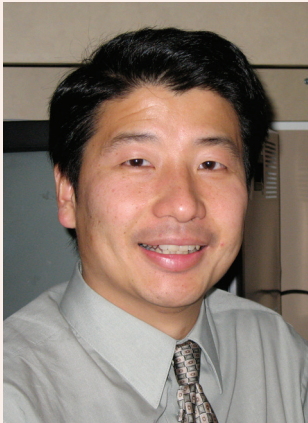
**Abnormal calcium handling properties underlie familial hypertrophic cardiomyopathy pathology in patient-specific induced pluripotent stem cells.** Lan F, Lee AS, Liang P, Sanchez-Freire V, Nguyen PK, Wang L, Han L, Yen M, Wang Y, Sun N, Abilez OJ, Hu S, Ebert AD, Navarrete EG, Simmons CS, Wheeler M, Pruitt B, Lewis R, Yamaguchi Y, Ashley EA, Bers DM, Robbins RC, Longaker MT, Wu JC. *Cell Stem Cell*. 2013; 12(1): 101-13.

**Drug screening using a library of human induced pluripotent stem cell-derived cardiomyocytes reveals disease specific patterns of cardiotoxicity.** Liang P, Lan F, Lee AS, Gong T, Sanchez-Freire V, Wang Y, Diecke S, Sallam K, Knowles JW, Nguyen PK, Wang PJ, Bers DM, Robbins RC, Wu JC. *Circulation*. 2013; 127(16): 1677-91.

**Tumorigenicity as a clinical hurdle for pluripotent stem cell therapies.** Lee AS, Tang C, Rao MS, Weissman IL, Wu JC. *Nat Med*. 2013; 19(8): 998-1004.

**Global epigenomic reconfiguration during mammalian brain development.** Lister R, Mukamel EA, Nery JR, [+11 authors], Wu JC, Rao A, Esteller M, He C, Haghghi FG, Sejnowski TJ, Behrens MM, Ecker JR. *Science*. 2013; 341(6146): 1237905.

**Patient-specific induced pluripotent stem cells as a model for familial dilated cardiomyopathy.** Sun N, Yazawa M, Liu J, [+17 authors], Wu JC. *Sci Transl Med*. 2012; 4(130): 130ra47.



## Sean M. Wu, MD, PhD

Assistant Professor, Medicine - Cardiovascular Medicine  
Assistant Professor (by courtesy), Pediatrics  
Endowed Faculty Scholar, Child Health Research Institute

EMAIL [smwu@stanford.edu](mailto:smwu@stanford.edu)

PROFILE [med.stanford.edu/profiles/Ming\\_Wu](http://med.stanford.edu/profiles/Ming_Wu)

LAB [seanwulab.stanford.edu](http://seanwulab.stanford.edu)

### EDUCATION/TRAINING

MD Duke University

PhD Duke University

### MEDICINE RESIDENCY

Duke University Hospital

### CARDIOLOGY FELLOWSHIP

Massachusetts General Hospital

### RESEARCH FELLOWSHIP

Boston Children's Hospital

### BOARD CERTIFICATION

Internal Medicine, ABIM

Cardiovascular Medicine, ABIM

### CLINICAL FOCUS

General Cardiology

### HONORS & AWARDS

NIH Director's New Innovator Award,  
NIH Office of the Director

Young Investigator Competitive  
Award in Cardiovascular Medicine,  
GlaxoSmithKline Education and  
Research Foundation

Finalist, Merck/ACC Young Investigator  
Awards Competition, American  
College of Cardiology

Career Development Award in  
Cardiovascular Medicine, ACC  
Foundation/Pfizer

CVI Seed Grant (2013)

### FELLOW

American College of Cardiology

### CURRENT RESEARCH

My research laboratory seeks to identify mechanisms responsible for human congenital heart disease, the most common cause of still-births in the U.S. and one of the major contributors to morbidity and mortality in infants and toddlers. We believe that by understanding the mechanisms regulating growth and differentiation of heart precursor cells during early embryonic development we can then apply these principles to understand the pathogenesis of adult onset heart diseases such as heart failure and arrhythmia where re-activation of early embryonic developmental program plays a central role. We currently use both genetically-modified mice as our living model to understand the biology of heart development as well as embryonic stem cells as a test-tube model to study the process of heart cell formation.

Given the difficult research funding climate, I hope in 20 years we can be proud of our efforts today to train the next generation of cardiovascular physician scientists.

### SELECTED PUBLICATIONS

**At a crossroad: cell therapy for cardiac repair.** Deutsch MA, Sturzu A, Wu SM. *Circ Res.* 2013; 112(6): 884-90.

**Essential and unexpected role of YY1 to promote mesodermal cardiac differentiation.** Gregoire S, Karra R, Passer D, Deutsch M-A, Krane M, Feistritz R, Sturzu A, Domian IJ, Saga Y, Wu SM. *Circ Res.* 2013; 112(6): 900-10.

**Of fish and mice: Clonal lineage analysis identifies divergence in myocardial development.** Sharma A, Wu SM. *Circ. Res.* 2013; 112: 583-5.

**Inefficient reprogramming of fibroblasts into cardiomyocytes using Gata4, Mef2c, and Tbx5.** Chen JX, Krane M, Deutsch MA, Wang L, Rav-Acha M, Gregoire S, Engels MC, Rajarajan K, Karra R, Abel ED, Wu JC, Milan D, Wu SM. *Circ Res.* 2012; 111(1): 50-5.

**Reprogramming of mouse, rat, pig, and human fibroblasts into iPS cells.** Rajarajan K, Engels MC, Wu SM. *Curr Protoc Mol Biol.* 2012; Chapter 23 Unit 23.15.

**Developmental and regenerative biology of multipotent cardiovascular progenitor cells.** Sturzu AC, Wu SM. *Circ Res.* 2011; 108(3): 353-64.

**Harnessing the potential of induced pluripotent stem cells for regenerative medicine.** Wu SM, Hochedlinger K. *Nat Cell Biol.* 2011; 13(5): 497-505.



## Phillip C. Yang, MD

Associate Professor, Medicine - Cardiovascular Medicine

Director, Laboratory for Cellular and Molecular MRI of Cardiovascular Stem Cells

Director, Cardiothoracic MRI Program

EMAIL [phillip@stanford.edu](mailto:phillip@stanford.edu)

PROFILE [med.stanford.edu/profiles/Phillip\\_Yang](http://med.stanford.edu/profiles/Phillip_Yang)

### EDUCATION/TRAINING

MD Yale University

MEDICINE RESIDENCY & INTERNSHIP  
UCLA

CARDIOLOGY FELLOWSHIP  
Stanford University

ADVANCED CARDIOLOGY IMAGING  
FELLOWSHIP Stanford University

BOARD CERTIFICATION  
Cardiovascular Disease, ABIM  
Echocardiography, Level III, ASE

### CLINICAL FOCUS

General Cardiology  
Cardiovascular Imaging

### HONORS & AWARDS

Young Investigator Award, American  
College of Cardiology

Burroughs Wellcome Scholar

NIH Career Development Award

NIH Career Enhancement Award in  
Stem Cell Research

Melvin Judkins Young Investigator  
Award, American Heart Association  
(AHA) (2009, 2010, 2012)

CO-CHAIR AHA Cardiovascular Stem  
Cell Writing Group

### PRINCIPAL INVESTIGATOR

NIH Cardiovascular Cell Therapy  
Research Network

### CURRENT RESEARCH

My laboratory is interested in visualizing the fundamental cellular and molecular processes of myocardial restoration by stem cells using cardiac MRI. By combining the chemical sensitivity of nuclear magnetic resonance with high spatial and temporal resolution, a wide range of biological events spanning from molecular to physiologic processes is characterized. This approach allows rapid transfer of innovative imaging tools to discover novel cardiovascular stem cell populations. Through extra-mural funding support from the NIH, AHA, and CIRM, key fundamental processes related to translation of stem cell biology are investigated, including engraftment, immunogenicity, tumorigenicity, epigenetic reprogramming, peri-infarct injury, and myocardial restoration. These tools are integrated to conduct multi-center clinical trial of novel cell therapies for a wide range of critical cardiovascular diseases, including acute MI, ischemic and non-ischemic cardiomyopathy, end-stage heart failure, and critical limb ischemia.

Success consists of going from failure to failure  
without loss of enthusiasm. - Winston Churchill

### SELECTED PUBLICATIONS

**Is reliable in vivo detection of stem cell viability possible in a large animal model of myocardial injury?** Yang PC. *Circulation*. 2012; 126(4): 388-90.

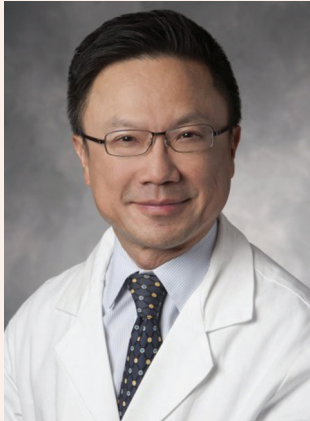
**Apelin enhances directed cardiac differentiation of mouse and human embryonic stem cells.** Wang IN, Wang X, Anderson J, Ho M, Ashley E, Quertermous T, Yang PC. *PlosOne*. 2012; 7(6): e38328.

**Human amniotic mesenchymal stem cell-derived induced pluripotent stem cells may generate a universal source of cardiac cells.** Ge X, Toma I, Wang I, Sebastiano V, Liu J, Buttee MJ, Reijo-Pera R, Yang PC. *Stem Cells Dev*. 2012; 21(15): 2798-808.

**Theranostic effect of serial manganese-enhanced magnetic resonance imaging of human embryonic stem cell derived teratoma.** Chung J, Dash R, Kee K, Barral JK, Kosuge H, Robbins RC, Nishimura D, Reijo-Pera RA, Yang PC. *Magn Reson Med*. 2012; 68(2): 595-9.

**Dual manganese-enhanced and delayed gadolinium-enhancement MRI detects myocardial border zone injury in a pig ischemia-reperfusion model.** Dash R, Chung J, Ikeno F, Hahn-Windgassen A, Matsuura Y, Lyons JK, Teramoto T, Robbins RC, McConnell MV, Yeung AC, Brinton TJ, Harnish PP, Yang PC. *Circ Cardiovasc Imaging*. 2011; 4(5): 574-82.





## Alan C. Yeung, MD

Li Ka Shing Professor of Medicine (Cardiology)  
 Medical Director, Cardiovascular Health, Stanford Medicine  
 Chief (Clinical), Division of Cardiovascular Medicine  
 Former Director, Interventional Cardiology

EMAIL [ayeung@stanford.edu](mailto:ayeung@stanford.edu)

PROFILE [med.stanford.edu/profiles/Alan\\_Yeung](http://med.stanford.edu/profiles/Alan_Yeung)

DIVISION [cvmedicine.stanford.edu](http://cvmedicine.stanford.edu)

### EDUCATION/TRAINING

MD Harvard Medical School

MEDICINE RESIDENCY & INTERNSHIP  
 Massachusetts General Hospital

CLINICAL CARDIOLOGY FELLOWSHIP  
 Brigham and Women's Hospital

RESEARCH CARDIOLOGY FELLOWSHIP  
 Harvard Medical School

BOARD CERTIFICATION  
 Internal Medicine, ABIM  
 Cardiovascular Disease, ABIM  
 Interventional Cardiology, ABIM

### CLINICAL FOCUS

Interventional Cardiology

### HONORS & AWARDS

BOARD OF TRUSTEES  
 Li Ka Shing Foundation and Shantou  
 University, Hong Kong

BOARD OF DIRECTORS  
 Cardiology Research Foundation, South  
 Korea; Chien Foundation, Hong Kong

edit orial bo ard  
*Journal of the American College of  
 Cardiology (JACC)*

REVIEW BOARD  
*Circulation*

FORMER CHAIR  
 ABIM Interventional Cardiology  
 Examination Board Chair

### CURRENT RESEARCH

My current research expands beyond stents and devices, trying to focus on interventions that could lead to long term health in all our cardiac patients. We are exploring this through mobile health as well as big data. I remain interested in device development such as percutaneous valves, new bioabsorbable stents and new ways to treat hypertension using renal denervation techniques.

Imagine a day when the interests of patients, physicians and the health care system are all aligned: to enhance the health of our patients physically and mentally.

### SELECTED PUBLICATIONS

**One-Year Outcomes of Percutaneous Coronary Intervention With the 38-mm Resolute Zotarolimus-Eluting Stent.** Lee M, Hiremath S, Zambahari R, Leon M, Mauri L, Yeung AC; RESOLUTE US and RESOLUTE Asia Investigators. *Am J Cardiol.* 2013; 112(9): 1335-41.

**Clinical outcome of patients with and without diabetes mellitus after percutaneous coronary intervention with the resolute zotarolimus-eluting stent: 2-year results from the prospectively pooled analysis of the international global RESOLUTE program.** Silber S, Serruys PW, Leon MB, Meredith IT, Windecker S, Neumann FJ, Belardi J, Widimsky P, Massaro J, Novack V, Yeung AC, Saito S, Mauri L. *JACC Cardiovasc Interv.* 2013; 6(4): 357-68.

**Impact of overlapping newer generation drug-eluting stents on clinical and angiographic outcomes: pooled analysis of five trials from the international Global RESOLUTE Program.** Farooq V, Vranckx P, Mauri L, Cutlip DE, Belardi J, Silber S, Widimsky P, Leon M, Windecker S, Meredith I, Negoita M, van Leeuwen F, Neumann FJ, Yeung AC, Garcia-Garcia HM, Serruys PW. *Heart.* 2013; 99(9): 626-33.

**Variability in quantitative and qualitative analysis of intravascular ultrasound and frequency domain optical coherence tomography.** Abnoui F, Waseda K, Kume T, Otake H, Kawarada O, Yong CM, Fitzgerald PJ, Honda Yeung AC, Fearon WF. *Catheter Cardiovasc Interv.* 2013; 82(3): E192-9.

**Conversation in cardiology: should FFR and IVUS be counted as PCI?** Kern M, Applegate R, Bach RG, Bailey SR, Bashore TM, Bass TA, Bell M, de Bruyne B, Garratt KN, Jeremias A, Kereiakes DJ, Klein LW, Krucoff MW, Mintz GS, Morrison D, Ohman EM, Pichard A, Rosenfield K, Samady H, Stone GW, Tommaso C, Turi ZG, Uretsky B, Vetrovec G, Weiner BH, Welt F, Yeung AC. *Catheter Cardiovasc Interv.* 2013; 82(1): 110-5.



## Paul Yock, MD

Martha Meier Weiland Professor of Medicine  
 Professor, Bioengineering  
 Professor, Medicine - Cardiovascular Medicine  
 Professor (by courtesy), Mechanical Engineering and Graduate School of Business  
 Director, Stanford Biodesign

EMAIL [yock@stanford.edu](mailto:yock@stanford.edu)

PROFILE [med.stanford.edu/profiles/Paul\\_Yock](http://med.stanford.edu/profiles/Paul_Yock)

BIODESIGN [biodesign.stanford.edu](http://biodesign.stanford.edu)

### EDUCATION/TRAINING

MD Harvard University

MEDICINE RESIDENCY & INTERNSHIP  
 USCF

CARDIOLOGY FELLOWSHIP  
 Stanford University

CORONARY ANGIOPLASTY FELLOWSHIP  
 Sequoia Hospital

BOARD CERTIFICATION  
 Internal Medicine, ABIM  
 Cardiovascular Disease, ABIM

### CLINICAL FOCUS

Cardiovascular Disease

### HONORS & AWARDS

Transcatheter Therapeutics (TCT)  
 Career Achievement Award

Distinguished Scientist Award,  
 American College of Cardiology

DOCTOR OF SCIENCE (HONORIS CAUSA)  
 Amherst College

FORMER FOUNDING CO-CHAIR  
 Bioengineering, Stanford University

ADVISORY BOARD  
 Stanford Technology Ventures Programs

LEADERSHIP GROUP  
 Stanford CTSA application and program

FELLOW  
 American College of Cardiology;  
 American Institute for Medical and  
 Biological Engineering

MEMBER  
 National Academic of Engineering

### CURRENT RESEARCH

My current research focuses on development and testing of catheter-based delivery systems for cardiac cell transplantation and new catheter and molecular imaging techniques for cardiology. I also maintain an active interest in intravascular ultrasound development and clinical trials. I founded and direct the Program in Biodesign, a unit of Stanford's Bio-X initiative that focuses on invention and technology transfer related to biomedical engineering.

There is a fusion now going on between the mechanical aspects of medical device design and the biochemical and biologic aspects of medical device design.

### SELECTED PUBLICATIONS

**Cost-effectiveness landscape analysis of treatments addressing xerostomia in patients receiving head and neck radiation therapy.** Sasportas LS, Hosford DN, Sodini MA, Waters DJ, Zambricki EA, Barral JK, Graves EE, Brinton TJ, Yock PG, Le QT, Sirjani D. *Oral Surg Oral Med Oral Pathol Oral Radiol.* 2013; 116(1): e37-51.

**Intravascular ultrasound analysis of small vessel lesions treated with the sparrow coronary stent system: Results of the care II trial.** Kume T, Waseda K, Koo BK, Yock PG, Botelho R, Verheye S, Whitbourn R, Meredith I, Worthley S, Tian Hai K, Honda Y, Abizaid A, Fitzgerald PJ. *Catheter Cardiovasc Interv.* 2013 [Epub ahead of print].

**Outcomes from a postgraduate biomedical technology innovation training program: The first 12 tears of Stanford Biodesign.** Brinton TJ, Kurihara CQ, Camarillo DB, Pietzsch JB, Gorodsky J, Zenios SA, Doshi R, Shen C, Kumar UN, Mairal A, Watkins J, Popp RL, Wang PJ, Makower J, Krummel TM, Yock PG. *Annals of Biomedical Engineering.* 2013; 41(9): 1803-10.

**Impact of myocardial bridging on major adverse cardiac events: Very long-term clinical outcomes following first- and second-generation drug-eluting stent implantation.** Yamada R, Sakamoto K, Kitahara H, Yock P, Fitzgerald P, Honda Y. *Elsevier Science, Inc.* 2013; E1725.

**Final IVUS results from the desolve-I first-in human trial: Long-term arterial response to a novel sirolimus-eluting stent with fully absorbable polymer and crystalline drug.** Otagiri K, Sakamoto K, Waseda, K., Yock, P., Whitbourn, R., Vrolix, M., Stewart, J., Webster, M., Honda, Y., Wijns, W., Ormiston, J., Fitzgerald, P. *Elsevier Science, Inc.* 2013; E1666.

**Impact of diabetes mellitus on vessel response in the drug-eluting stent era: pooled volumetric intravascular ultrasound analyses.** Sakata K, Waseda K, Kume T, Otake H, Nakatani D, Yock PG, Fitzgerald PJ, Honda Y. *Circ Cardiovasc Interv.* 2012; 5(6): 763-71.





**3/9/1981**

**Dr. Bruce Reitz (left) and Dr. Norman E. Shumway photographed during the first combined heart-lung transplant performed at Stanford University Medical Center.**

Credit: Chuck Painter / Stanford News Service



# Education & Training Committee

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The Stanford Cardiovascular Institute (CVI) Education and Training Committee is charged with overseeing and defining the educational aspect of the CVI and its goals. The committee meets on a quarterly basis and its members include representatives from the major cardiovascular disease areas.

One of the primary missions of the CVI is to educate and train the next generation of leaders in the field of cardiovascular medicine. A meaningful cardiovascular education engages people at all education levels and provides a full spectrum of experiences. This includes not only continuing to develop a first-rate education for medical students, but also providing cardiovascular educational opportunities for undergraduate students, graduate students and postdoctoral fellows from a variety of disciplines.

The CVI provides a number of forums for students, postdoctoral fellows and faculty to exchange research ideas. These include:

## COMMITTEE MEMBERS

Daniel Bernstein, MD – CHAIR

Euan A. Ashley, MRCP, DPhil

Crystal Botham, PhD

Terra Coakley, MAT

Ronald L. Dalman, MD

Alexander Dunn, PhD

Michael Fischbein, MD

Joseph Gold, PhD

Francois Haddad, MD

Janet Kalesnikoff, PhD

Nicholas Leeper, MD

Michael V. McConnell, MD, MSEE

David L. M. Preston, MA

Marlene Rabinovitch, MD

Michal Bental Roof, PhD

Marcia L. Stefanick, PhD

Philip S. Tsao, PhD

Paul J. Utz, MD

Paul J. Wang, MD

Joseph C. Wu, MD, PhD

Sean M. Wu, MD, PhD

**FRONTIERS IN CARDIOVASCULAR SCIENCE** This weekly lecture series provides a forum for Stanford scientists and distinguished visiting lecturers to present cutting-edge research and network with the CVI Community (see page 92).

## **MED 223 – CARDIOVASCULAR AND PULMONARY (CVP) SCIENCES SEMINAR**

The purpose of this course is to familiarize medical students with the spectrum of basic, clinical and translational CVI research beyond their specific area of chosen investigation. The course is lead by a team of four CVI faculty: Patricia K. Nguyen, MD; Marlene Rabinovitch, MD; Stanley G. Rockson, MD; and Philip S. Tsao, PhD.

**FRIDAYS AT FALK** This weekly series features current research from postdoctoral fellows and graduate students, providing a forum to exchange ideas and to sharpen presentation skills. The Friday afternoon seminar is also a chance for postdoctoral fellows and students to socialize at the end of the week.

## **TACKLING YOUR K - A STEP-BY-STEP COURSE TO STRENGTHEN YOUR NIH CAREER DEVELOPMENT AWARD**

The purpose of this course is to help CVI-affiliated postdoctoral fellows and Instructors develop competitive NIH Career Development K Award applications. The course is lead by Crystal Botham, PhD.

Additionally, the CVI offers postdoctoral training fellowships for MDs and PhDs in three different research areas: vascular disease (page 84), myocardial biology (page 86), and cardiovascular imaging (page 88). These NIH-funded T32 programs balance rigorous research training with directed educational curricula and career development opportunities with the goal of producing independent researchers. The programs emphasize career development, publications, oral presentations, and grant submissions as the means of achieving this goal.

# Mechanisms & Innovation in Vascular Disease

## PROGRAM DIRECTOR

Ronald L. Dalman, MD

## CO-DIRECTOR

Philip S. Tsao, PhD

This program trains a total of six postdoctoral fellows over two years in the following areas of vascular medicine and research: vascular reactivity and thrombosis; vascular regeneration and development; metabolic or lifestyle influences on vascular outcomes; proteomic markers and genetic determinants of vascular disease; gender and ethnicity differences in vascular disease; and vascular bioengineering. Thirty-one faculty mentors from nineteen different departments within the School of Medicine and the University provide a variety of approaches from which to address fundamental questions about vascular disease. A structured curriculum, well-defined mentorship, and both internal and external evaluations ensure that fellows receive training in both research and career development to prepare them for independent careers.

## CURRENT TRAINEES



### WENDY ALTMAN, PhD

**Mentor** Beth Pruitt, PhD **Co-Mentor** Daniel Bernstein, MD

**T32 Research Project** Microsystems and methodologies for the study of cardiomyocyte mechanotransduction // Dr. Altman is a scientist and engineer; her multidisciplinary research background spans nanotechnology, biomedical engineering, space sciences and cardiovascular biology. She is interested in developing critically needed high-throughput tools to study cell biomechanics.



### KELLY DOWNING, PhD

**Mentor** Nicholas Leeper, MD **Co-Mentor** John Cooke, MD, PhD

**T32 Research Project** The role of CDKN2B in angiogenesis // Dr. Downing earned her PhD in 2012 in Nutritional Sciences; she studied the role of adipocytes and obesity in cardiovascular diseases. The focus of her postdoctoral research is investigating the mechanisms of genetic risk factors that predispose to these diseases.

## DID YOU KNOW?

// This training grant started July 1, 2010. There are 6 current trainees on this grant, and 6 graduates from this program.



### BRIAN PIENING, PhD

**Mentor** Michael Snyder, PhD **Co-Mentor** Tracey McLaughlin, MD

**T32 Research Project** A genomic check-up: large-scale monitoring of molecular changes that occur in a patient's blood // Dr. Peining works in the field of genomics and proteomics; he is interested in applying computational methods to systems-level biological problems. He conducted his doctoral studies at the Fred Hutchinson Cancer Research Center and University of Washington, where he studied the effects of genetic epistasis on the cell's ability to replicate and repair DNA.

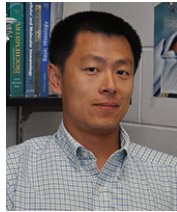




## SHARLA POWELL-WHITE, PhD

**Mentor** Wei Zhou, MD **Co-Mentor** Philip S. Tsao, PhD

**T32 Research Project** The effect of glycemic conditions on vascular dysfunction and associated treatments // Dr. Powell-White received her PhD in Pharmacognosy from the University of Illinois Chicago (Dissertation title: Serotonergic Botanicals for Menopausal Treatment). Her postdoctoral research focuses on understanding the underlying mechanisms of vascular dysfunction involved in atherosclerosis and restenosis.



## ZHIFEI SHAO, MD, PhD

**Mentor** Lawrence Leung, MD

**Co-Mentors** Philip S. Tsao, PhD and John Morser, PhD

**T32 Research Project** Thrombomodulin in vascular inflammation and adaptive immunity: a role beyond anti-coagulation // Dr. Shao received his MD in China and PhD from Creighton University (Dissertation title: Functional Responses of Lung Dendritic Cell Subsets in Flt3 Ligand-induced Immunomodulation in Allergic Asthma). His research focuses on identifying binding partners of thrombomodulin lectin-like domain and the significance of such interaction in vascular biology.



## EVANGELINE TZATZALOS, PhD

**Mentor** Joseph C. Wu, MD, PhD **Co-Mentor** Ellen Kuhl, PhD

**T32 Research Project** To develop a human disease model for atherosclerosis with endothelial cells derived from induced pluripotent stem cells (iPSCs). // Dr. Tzatzalos received her PhD in Biomedical Engineering from Rutgers University (Dissertation title: A regulatory element for interneuron progenitors in the developing vertebrate central nervous system). She is currently using iPSCs to study contractile force generation in normal and disease states of the cardiovascular system.

## 2013 PAST TRAINEES



## STEPHANIE PIECEWICZ, PhD

**Mentor** Calvin Kuo, MD, PhD **Co-Mentor** John Cooke, MD, PhD

**T32 Research Project** Endothelial-hepatocyte signaling crosstalk regulates glucose metabolism // Dr. Pieciewicz is currently a Product Development Manager at Bell Biosystems, a start-up specializing in synthetic organelles. She focuses on acquiring customers and partners, managing collaborative projects, and developing strategy toward optimizing Bell's first product, a magnetic particle for tracking cells in vivo.



## NAZISH SAYED, MD, PhD

**Mentor** John Cooke, MD, PhD **Co-Mentor** Ed Morcaski, PhD

**T32 Research Project** Role of innate immunity in nuclear reprogramming // Dr. Sayed is currently an Assistant Professor in the Department of Cardiovascular Sciences at the Methodist Hospital Research Institute. The goal of his lab is to understand if manipulation of innate immune signaling can be used to modify cell fate and whether the epigenetic plasticity induced by these pathways plays a role in reprogramming and regeneration.

# Research Training in Myocardial Biology

## PROGRAM DIRECTOR

Daniel Bernstein, MD

## CO-DIRECTOR

Thomas Quertermous, MD

## TRAINING COORDINATOR

Euan A. Ashley, MRCP, DPhil

This multidisciplinary program brings together postdoctoral fellows and faculty from six complementary areas: genetics and genomics; cellular signaling; molecular imaging; physiology and phenotyping; cardiac development and regeneration; and outcomes research and population science. This program trains six postdoctoral fellows from MD and PhD backgrounds together over a one to three year period beginning July 1 every year, combining myocardial biology research with a structured educational program. This program has eighteen faculty mentors from the School of Medicine, representing Cardiovascular Medicine, Pediatric Cardiology, Radiology, Pathology, Chemical Systems Biology, Molecular Imaging, Molecular Physiology, Bioengineering, Biochemistry, and Health Sciences Research.

## CURRENT TRAINEES



### CAROL CHO, PhD

**Mentor** James Spudich, PhD **Co-Mentor** Thomas Quertermous, MD

**T32 Research Project** Biomechanical characterization of human cardiac myosin // Dr. Cho received her BS in Biological Sciences from Seoul National University, and her PhD in Biochemistry and Molecular Biology from UCSF, where she worked on the molecular structure of cytoplasmic dynein. At Stanford, Dr. Cho continues to work on understanding molecular motor proteins.



### MICHAEL CORONADO, PhD

**Mentor** Daniel Bernstein, MD **Co-Mentor** TBD

**T32 Research Project** Role of  $\beta$ -adrenergic subtype signaling in cardiac mitochondrial dynamics // Dr. Coronado attended the University of California, Riverside where he received a BS in Biochemistry and conducted undergraduate research in toxicology. He received his PhD from the Johns Hopkins University where he conducted research on sex differences in CVB3-Myocarditis and dilated cardiomyopathy.

## DID YOU KNOW?

// This training grant, which started July 1, 2010, has had 11 trainees. Nine of the 18 faculty mentors on this training grant have had T32 trainees.



### AYCA ERBILGIN, PhD

**Mentor** Euan A. Ashley, MRCP, DPhil **Co-Mentor** TBD

**T32 Research Project** Using gene expression network analysis to study the genetics of heart disease // Dr. Erbilgin received her PhD in Microbiology, Immunology, and Molecular Genetics from UCLA. During her doctoral research, she studied the genetics of atherosclerosis, using a mouse model to identify genetic factors and mechanisms responsible for atherogenesis in the vessel wall.



**CLINT MILLER, PhD**

**Mentor** Thomas Quertermous, MD **Co-Mentor** Euan A. Ashley, MRCP, DPhil  
**T32 Research Project** Mapping the causal variants and regulatory mechanisms of the TCF21 association in coronary heart disease // Dr. Miller received a PhD in Pharmacology from the University of Rochester, where he studied cyclic nucleotide signaling networks in cardiac and vascular remodeling. He is currently defining the regulatory mechanisms of genetic variation associated with heart disease risk.



**KARIM SALLAM, MD**

**Mentor** Joseph C. Wu, MD, PhD **Co-Mentor** Sean M. Wu, MD, PhD  
**T32 Research Project** Use of iPSC derived cardiomyocytes to characterize angiotensin II mediated cardiac remodeling // Dr. Sallam completed his undergraduate and medical school training at the University of Pittsburgh. He did his internal medicine residency and cardiology fellowship at Stanford University.

## 2013 PAST TRAINEES



**FRANCES BARRON, PhD**

**Mentor** Joseph C. Wu, MD, PhD **Co-Mentor** Daniel Bernstein, MD  
**T32 Research Project** Understanding atrial fibrillation using induced pluripotent stem cells // Dr. Barron is currently the Associate Director of Clinical Development for a small consulting company, Judy Page INC, in Solana Beach, CA. They provide regulatory affairs, pharmacovigilance and clinical trial management for small biotech and virtual companies both locally and internationally.



**FREDERICK DEWEY, MD**

**Mentor** Euan A. Ashley, MRCP, DPhil **Co-Mentor** Russ Altman, MD, PhD  
**T32 Research Project** Integrative genomics of cardiovascular biology // Dr. Dewey is an ACGME clinical fellow in Cardiovascular Medicine at Stanford Hospital and Clinics. He maintains active research interests in the genetic basis of familial cardiomyopathy and transcriptional control of adaptive and maladaptive cardiovascular stress response.

# Multi-Disciplinary Training Program in Cardiovascular Imaging at Stanford (CVIS)

## PROGRAM DIRECTOR

Michael V. McConnell, MD, MSEE

## CO-DIRECTORS

Joseph C. Wu MD, PhD and John Pauly, PhD

This program brings together postdoctoral fellows and faculty from three complementary areas – clinical, engineering, and molecular imaging – to train the next generation of CV imaging investigators for successful careers. This program trains postdoctoral fellows over two years and emphasizes collaborative interaction in four areas: multi-modality CV Imaging; multi-disciplinary innovation; translational CV imaging; and research career development. It is critical that fellows be provided a broad, multi-disciplinary, and collaborative training program to foster their ability to translate CV imaging research into clinical application. The twenty-one faculty mentors are a critical component of the CVIS program, with a balance of MD and PhD mentors across the core collaborative departments. They are grant-funded faculty engaged in a broad range of cardiovascular imaging research with experience training successful young investigators.

## CURRENT TRAINEES



### HOSSEIN BAHRAMI, MD, PhD, MPH

**Mentor** Michael V. McConnell, MD, MSEE

**Co-Mentors** Paul A. Heidenreich, MD, MS and Mark Hlatky, MD

**T32 Research Project** Cardiac imaging // After medical school, Dr. Bahrami completed his PhD and two master degrees in Epidemiology and Biostatistics at Johns Hopkins University; he was involved with MESA (Multi-Ethnic Study of Atherosclerosis). He completed his internal medicine residency at Yale and then came to Stanford for his cardiology fellowship.



### NICK MORDWINKIN, PhD, PharmD

**Mentor** Joseph C. Wu, MD, PhD **Co-Mentor** Christopher Contag, PhD

**T32 Research Project** Modeling disease mechanisms of diabetic cardiomyopathy using human iPS cells // Dr. Mordwinkin received his PharmD from Nova Southeastern University in 2004, and his PhD in Pharmaceutical Sciences from the University of Southern California in 2012. His doctoral dissertation investigated the role of peptides of the renin-angiotensin system in diabetes mellitus-induced cardiac dysfunction.

## DID YOU KNOW?

// The first group of 4 trainees in this two year program started July 2009 and the second group of 4 started July 2011. As of July 2013, there are 2 trainees with plans for 2 new per year.

## 2013 PAST TRAINEES



### PAUL KIM, MD

**Mentor** Phillip C. Yang, MD **Co-Mentor** Dwight Nishimura, PhD  
**T32 Research Project** In vivo imaging of the heart after cell-based therapy // Dr. Kim is currently a Clinical Fellow in Cardiovascular Medicine, continuing his training at Stanford University Medical Center.



### MAI LAM, PhD

**Mentor** Michael Longaker, MD **Co-Mentor** Joseph C. Wu, MD, PhD  
**T32 Research Project** Cardiac stem cell therapy // Dr. Lam is now an Assistant Professor in the Department of Biomedical Engineering at Wayne State University (contact: mtlam@wayne.edu). Her new lab will focus on creating translatable techniques for cardiac tissue repair using stem cells and biomaterials.



### HADAS SHIRAN, MD

**Mentor** David Liang, MD, PhD  
**Co-Mentors** John Pauly, PhD and Michael V. McConnell, MD, MSEE  
**T32 Research Project** MRI, aortic disease // Dr. Shiran is currently a SPECTRUM KL2 Mentored Clinical Research Scholar and Instructor of Medicine in the Division of Cardiology. She also recently received support from The Marfan Foundation as part of the Early Investigator Research Grant Program.



### RAIYAN ZAMAN, PhD

**Mentor** Michael V. McConnell, MD, MSEE **Co-Mentor** Lei Xing, PhD  
**T32 Research Project** Cardiovascular imaging with radio-nuclide // Dr. Zaman received an American Heart Association Western States Affiliate Winter 2013 Postdoctoral Fellowship (July 2013-June 2015) for her research project entitled "Intravascular Molecular Imaging System to Characterize Coronary Plaque".

## Stanford Career Development Program In 'Omics' Of Lung Diseases (K12)

This Career Development Program (CDP) in 'Omics' of lung diseases with a major focus on pulmonary arterial hypertension (PAH), awarded by the NIH-NHLBI, started on September 1, 2013. This CDP will allow us to equip the next cadre of MD and PhD scientists with interdisciplinary and bioinformatic skills to integrate new high throughput genomic, proteomic and metabolic platforms to gain a better understanding of disease pathophysiology. Two to four trainees will be supported each year, with the first cohort of fellows are expected to start early 2014.

PIs: Marlene Rabinovitch, MD; Michael Snyder, PhD; Mark R. Nicolls, MD



The Stanford Cardiovascular Institute (CVI) seed grants provide funding for groundbreaking cardiovascular related research in the general areas of cardiac, vascular or pulmonary development and disease. These awards are intended to bring together new collaborative and interdisciplinary groups that can address high-risk, high-reward questions from a variety of perspectives by applying new techniques and methods to cardiovascular-related problems.

### 2012 (FY13) CVI SEED GRANT RECIPIENTS

Last year the CVI, with generous support from the Child Health Research Institute (CHRI), funded a record number of 12 seed grants. Seed Grant Recipients:

**PI Eugene Butcher, MD**

Coagulation factor VIII: endothelial origin and mechanisms of cell-specific and clinical dysregulation

**PI Manish Butte, MD, PhD**

Measuring electromechanical asynchrony in iPSC-CM using atomic force microscopy

**PI Christopher Contag, PhD**

Molecular mechanisms of fetal bradycardia due to placental infection

**PI Rajesh Dash, MD, PhD**

Arrhythmogenic impact of restorative stem cell therapy in the infarcted porcine myocardium

**PI Ngan F. Huang, PhD**

Induced pluripotent stem cell-derived aligned vascular graft with improved patency

**PI Michaela Kiernan, PhD**

A brief assessment tool for a heart-healthy diet

**Co-PIs Jason Merker, PhD; Joshua W. Knowles, MD, PhD**

Hybrid genotyping of a well-phenotyped healthy control population as a community resource for exome studies

**PI Patricia K. Nguyen, MD**

Evaluating the risk of low dose radiation: are patients being harmed by medical imaging tests?

**PI Marco Perez, MD**

Genetic variation near HCRTR2 is associated with dramatic improvement of heart function in patients with heart failure

**PI Pilar Ruiz-Lozano, PhD**

Engineered embryonic epicardium activates cardiac regeneration – a preclinical study in pigs

**PI Edda Spiekerkoetter, MD**

Increasing BMP signaling to improve right ventricular function in congenital heart disease

**PI Richard Zare, PhD**

Conductive nanoparticle composites for cardiac implants

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**LEGEND**

**PI** Principal Investigator

**Co-PI** Co-Principal Investigator

**Co-I** Co-Investigator

Seed grants are essential for opening doors to discovery. With this support, our investigators can pursue the boldest ideas and shift paradigms to create new treatments for cardiovascular disease. Stanford revolutionized heart treatment before, and we are poised to do it again. — Joseph C. Wu, MD, PhD

### 2013 (FY14) CVI SEED GRANT RECIPIENTS

This year the CVI, again with generous help from the CHRI, funded 8 seed grants, which reflect the breadth and vision of the CVI.

**Co-PIs** Gerald Berry, MD; Curt Scharfe, PhD

**Co-Is** Kitchener Wilson, MD, PhD; Justin Odegaard, MD, PhD

A clinical-grade next generation sequencing assay for targeting DNA mutations in inherited non-syndromic cardiomyopathies

**PI** Alexander Dunn, PhD

**Co-PIs** Gerald Fuller, PhD; Lorelei Shoemaker, PhD; Steven Chang, MD

Endothelial cell fate specification in response to fluid flow

**PI** Susan Fernandes, LPD, PA-C

**Co-I** George Lui, MD

Risk factors for acquired cardiovascular disease in adults with congenital heart disease

**Co-PIs** Jason T. Lee, MD; Apurva Mehta, PhD; Drew Nelson, PhD

A novel approach for studying the mechanical behavior of atherosclerotic plaque

**PI** Nicholas Leeper, MD

**Co-I** Andrew Connolly, MD, PhD

The paradoxical role of Cdkn2b in vessel sprouting and vessel maturation in atherosclerosis

**PI** Daria Mochly-Rosen, PhD

**Co-PIs** Daniel Bernstein, MD; Tobias Meyer, PhD

Identifying the master integrator of cardiac cell-fate decision

**PI** Beth Pruitt, PhD

**Co-PI** Sean M. Wu, MD, PhD

**Co-Is** Euan A. Ashley, MRCP, DPhil; Daniel Bernstein, MD; Alexander Dunn, PhD; Kathy Ruppel, PhD; James Spudich, PhD

Genetic tracking and functional assessment of atrial- and ventricular-specific cardiomyocytes from induced pluripotent stem cells

**PI** Sandra Tsai, MD, MPH

**Co-Is** Jennifer A. Tremmel, MD, MS; Wes Alles, PhD; Katharine Sears, PhD

Randomized control trial to improve cardiovascular health in postpartum women diagnosed with preeclampsia

The Frontiers in Cardiovascular Science lecture series is the flagship colloquium of the Stanford Cardiovascular Institute. Distinguished local, national and international scientists performing cutting-edge cardiovascular research (in both industry and academia) are invited to present their research and network with the CVI community. By convening the thought leaders in cardiovascular science, this seminar series facilitates the initiation of new collaborations and accelerates science at Stanford.

In 2013, the CVI hosted a total of 34 speakers; 20 national/international speakers and 14 local Stanford/Bay Area speakers. Some of the outside speakers that were invited to Stanford in 2013 are as follows:

1/15/2013 **James Min, MD**

Associate Professor of Medicine, Imaging and Biomedical Sciences  
Director, Cardiac Imaging Research  
Cedars Sinai Medical Center

1/29/2013 **Thomas L. Force, MD**

Professor of Medicine  
Clinical Director,  
Center for Translational Medicine  
Temple University

2/5/2013 **Mark McCarthy, MD**

Robert Turner Professor of Diabetes  
Chairman of the Oxford Centre for  
Diabetes, Endocrinology and Metabolism

2/12/2013 **Roberta A. Gottlieb, MD**

Frederick G. Henry Chair in Life Sciences  
Director, SDSU BioScience Center  
San Diego State University

2/19/2013 **Bruce Conklin, MD**

Senior Investigator, Roddenberry Center  
for Stem Cell Biology and Medicine  
at Gladstone Institutes  
Professor, Medical Genetics and Cellular  
and Molecular Pharmacology, UCSF

3/5/2013 **Andreas M. Zeiher, MD**

Professor and Head of the Division  
of Cardiology  
Goethe University, Germany

4/5/2013 **Aarif Khakoo, MD, MBA**

Executive Director, Cardiovascular Research  
Amgen, San Francisco

4/2/2013 **Benoit G. Bruneau, PhD**

Associate Director and Senior Investigator  
Gladstone Institute of Cardiovascular Disease

4/16/2013 **Charles Antzelevich, PhD**

Executive Director and Director of Research  
Masonic Medical Research Laboratory

4/23/2013 **Douglas Losordo, MD**

Adjunct Professor of Medicine  
Northwestern, Feinberg School of Medicine

5/7/2013 **Richard Lee, MD**

Professor of Medicine, Harvard Medical School  
Brigham and Women's Hospital

5/14/2013 **Peter J. Fitzgerald, MD, PhD**

Professor of Medicine and Engineering  
Director, CV Technology  
Stanford Cardiovascular Medicine

6/4/2013 **Jeffrey Robbins, PhD**

Professor of Pediatrics and Chair,  
Molecular Cardiovascular Biology  
Associate Chair, Cincinnati Children's  
Research Foundation

8/20/2013 **Michael S. Lauer, MD**

Director, Division of  
Cardiovascular Sciences  
National Heart, Lung,  
and Blood Institute, NIH

10/3/2013 **Gerald Dorn, MD**

Philip and Sima K. Needleman  
Professor of Medicine  
Washington University

10/22/2013 **Alan Daugherty, PhD, DSc**

Senior Associate Dean of Research  
University of Kentucky  
Editor, *ATVB*

10/29/2013 **Stefan Jovinge, MD, PhD**

Medical Director Cardiovascular Research  
Fred Meijer Heart and Vascular Institute

11/5/2013 **Mark E. Anderson, MD, PhD**

Professor and Director of the  
Cardiovascular Research Center  
University of Iowa

11/26/2013 **Luiz Belardinelli, MD**

Senior Vice President of Cardiovascular  
Therapeutics, Gilead Sciences, Inc.

12/3/2013 **Norman Stockbridge, MD, PhD**

Director Division of Cardiovascular and  
Renal Products (DCaRP), FDA

12/17/2013 **Ali J. Marian, MD**

Professor and Director, Center for  
Cardiovascular Genetic Research  
Texas Heart Institute



Li Ka Shing Center for Learning and Knowledge

**2014 Confirmed Outside Speakers:**

**1/7/2014 Judith S. Hochman, MD**  
Professor of Medicine  
New York University

**1/21/2014 Brian Black, PhD**  
Professor and Associate Director,  
Cardiovascular Research Institute, UCSF

**2/4/2014 Howard A. Rockman, MD**  
Professor of Medicine, of Cell Biology,  
and of Molecular Genetics  
and Microbiology  
Duke University

**2/11/2014 Sanjay Sharma, MD**  
Professor of Cardiology  
St. George's University of London

**2/18/2014 Dan M. Roden, MD**  
Professor of Medicine and  
of Pharmacology  
Vanderbilt University

**2/25/2014 Roger Hajjar, MD**  
Professor of Medicine  
Director, Cardiovascular Research Center  
Mount Sinai Hospital

**3/4/2014 Mukesh Jain, MD**  
Director, Case Cardiovascular Research  
Institute  
Ellery Sedgwick Jr. Chair and Distinguished  
Scientists University Hospitals  
Case Western University

**3/25/2014 Jil Tardiff, PhD**  
Professor of Medicine  
University of Arizona

**4/8/2014 Steven R. Houser, PhD**  
Professor of Medicine  
Temple University

**4/29/2014 Doug L. Mann, MD**  
Professor of Medicine  
Chief, Cardiology  
Washington University

**5/6/2014 Gregory Hundley, MD**  
Professor of Internal Medicine -  
Cardiology  
Wake Forest School of Medicine

**6/3/2014 Jonathan R. Lindner, MD**  
M. Lowell Edwards Professor of Cardiology  
Knight Cardiovascular Institute  
Oregon Health and Science University

**6/17/2014 David G. Harrison, MD**  
Betty and Jack Bailey Professor  
of Medicine and Pharmacology  
Director, Division of Clinical Pharmacology  
Director, Center for Vascular Biology  
Vanderbilt University

**LI KA SHING CENTER**

The Frontiers of Cardiovascular Science weekly lecture series takes place in the Li Ka Shing Center for learning and knowledge (LKSC). The LKSC is a reflection of Stanford School of Medicine's commitment to take medical education to new frontiers. It aspires to foster a unique confluence of cutting-edge medicine, modern teaching methods, and advanced technologies that will transform the way physicians and medical researchers are trained.

[lksc.stanford.edu](http://lksc.stanford.edu)



The Stanford Cardiovascular Institute (CVI) holds an annual retreat for its members. The retreat is an opportunity to share intramural research findings and to stimulate interdisciplinary research collaboration and development among CVI members. The 2013 retreat was held at the Li Ka Shing Center for Learning and Knowledge (LKSC) on September 12-13 and attendance was just over 200.



2013 CVI Annual Retreat

This year's program included a half-day educational symposium featuring "A conversation with Dr. Michael Snyder, PhD: Life as an Academic Scientist, Genome Entrepreneur, and Department Chair", Stanford Core Facilities workshops, a nursing research workshop, and a career panel discussion featuring a Senior Editor from Nature Publishing Group, an intellectual property attorney, and representatives from both industry and academia.

The full-day main retreat featured keynote addresses from Shaun Coughlin, MD, PhD, Director of the UCSF Cardiovascular Institute, and Paul Yock, MD, Director of Stanford Biodesign. There were two roundtable discussions ("Risk Prediction from Genome Profiling: Are we Ready for Primetime?" and "The Good, the Bad, and the Ugly about Clin-

ical Research at Stanford"), faculty talks (by Kenneth W. Mahaffey, MD, and Mark M. Davis, PhD), and presentations by the 2011 CVI seed grant recipients. Students and fellows presented their research findings at the poster session, with awards given to the top three posters as judged by an expert panel of researchers. Other highlights included oral presentations by the Young Investigator Award nominees, the announcement of the 2013 CVI Seed Grant recipients, and two networking social receptions.

The Annual Retreat is a popular event every year and we look forward to it continuing to grow along with the CVI.



2013 CVI Seed Grant recipients (left to right): Justin Odegaard, MD, PhD; Curt Scharfe, PhD; Kitchener Wilson, MD; Beth Pruitt, PhD; Lorelei Shoemaker, PhD; Alexander Dunn, PhD; Jennifer A. Tremmel, MD, MS; Joseph C. Wu, MD, PhD (presenter); Sean M. Wu, MD, PhD; Susan Fernandes, MD; and Nicholas Leeper, MD (see page 91).





**CATHY HUTTON**

Senior Associate Director,  
Medical Center Development  
cathy.hutton@stanford.edu

To learn more about how  
you can support the Stanford  
Cardiovascular Institute  
please contact:

**Joseph C. Wu, MD, PhD**

Director  
Stanford Cardiovascular Institute  
joewu@stanford.edu

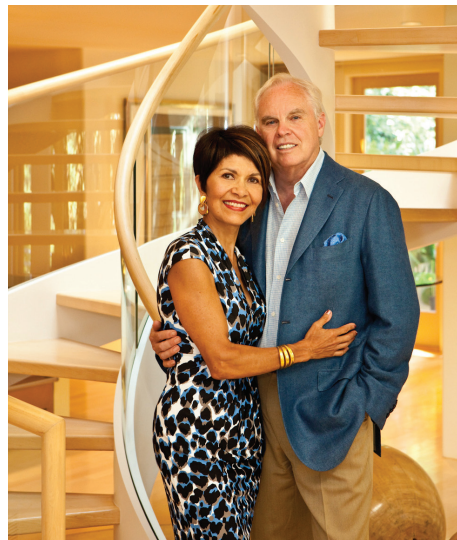
**Janet Kalesnikoff, PhD**

Associate Director  
Stanford Cardiovascular Institute  
jkalesni@stanford.edu

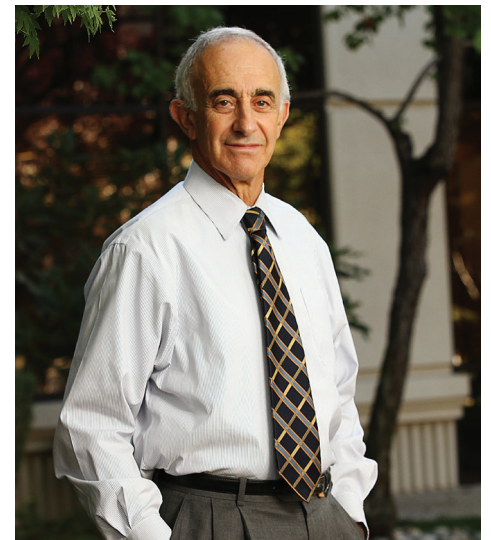
[cvi.stanford.edu/waystogive](http://cvi.stanford.edu/waystogive)

Innovation in science and technology provide the foundation for improving cardiovascular care and saving lives. The Stanford Cardiovascular Institute is at the forefront of today's ongoing advances in cardiovascular disease research and therapy. Through pioneering new initiatives and facilities, we are accelerating collaborations that integrate knowledge from diverse disciplines and promote the translation of discoveries into improved methods for cardiovascular disease prevention, detection and treatment.

Donors can provide critical support to a wide variety of programs to advance investigations into the biological mechanisms of cardiovascular disease and to develop innovative patient care programs. This support will help Stanford lead the way in cardiovascular research, education, and patient care.



It means a great deal to us to know we are helping leaders in cardiac research develop even better methods and devices to care for heart patients everywhere. Amazing advances are being made by Stanford CVI researchers, and we are pleased our support will ultimately help bring their work to patients.



I'm delighted to be a CVI annual donor. Their discoveries will provide the pathway to better prediction and prevention of heart disease as well as life-saving medical practices in the future.

—Christopher 'Kit' Kaufman

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*Alma and Marvin Burkett, pictured in their Silicon Valley home, have made generous gifts to help physician-scientists better understand and develop new treatments for cardiac arrhythmia*

