



Stanford Cardiovascular Institute

Annual Report 2019-2020



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Dean's Letter



Lloyd B. Minor, MD

The Carl and Elizabeth Naumann
Dean of the School of Medicine and
Professor of Otolaryngology - Head
& Neck Surgery and, by courtesy, of
Neurobiology and Bioengineering

I couldn't be prouder of the Stanford Cardiovascular Institute. Since its inception in 2004, the institute has established a legacy of groundbreaking research, outstanding education, and preeminent patient care. And its transformative work in 2019 only served to continue its excellence.

Led by Joseph C. Wu, MD, PhD, the Simon H. Stertz, MD, Professor of Cardiovascular Medicine and of Radiology, and Robert Harrington, MD, the Arthur L. Bloomfield Professor of Medicine and Chair of the Department of Medicine, the Cardiovascular Institute is a collaborative force. Its members — a diverse and talented team of engineers, surgeons, physicians, scientists, fellows, and students — are committed to improving cardiovascular health and developing the leaders of tomorrow.

The far-reaching impact of their dedication is demonstrated in just a few of the many headlines the Cardiovascular Institute generated this past year:

- The landmark Apple Heart Study laid the foundation for future large-scale app-based clinical studies by showing that wearable technology can safely identify heart rate irregularities.
- The number of invasive procedures may soon decline thanks to a finding that stents and bypass surgery show no benefit over medication and lifestyle advice in treating patients with severe but stable heart disease.
- As e-cigarette use skyrockets, the institute found flavoring liquid used in electronic cigarettes may increase the risk of cardiovascular disease when inhaled.
- In a first-of-its-kind study, the institute took heart muscle cells derived from stem cells to the International Space Station to understand how microgravity affects the cells of the human heart.

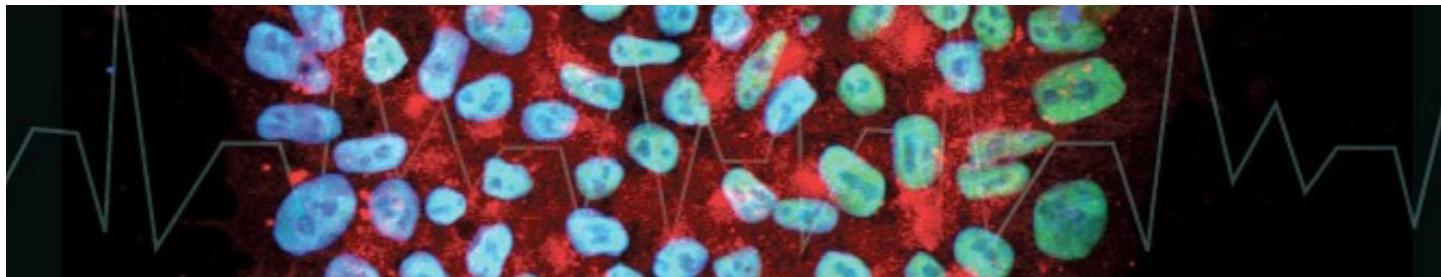
At the same time, the institute continued to strengthen collaborative relationships and create innovative partnerships. The Stanford-Penn Symposium brought together more than 300 attendees to promote interinstitutional sharing, and more than 500 people from industry and academia met at the institute's 4th Annual Drug Discovery Symposium.

Beyond these critical exchanges of knowledge, the future of cardiovascular health will be in good hands. The institute's undergraduate summer program hosted 19 students for an intense 10 weeks to explore a future in cardiovascular research. The most important job we have at Stanford is to inspire and encourage young people.

I am excited to see what the Stanford Cardiovascular Institute accomplishes in 2020 as it continues to lead the field of cardiovascular medicine.

Lloyd B. Minor, MD

Director's Letter



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

Stanford Cardiovascular Institute (CVI) was established in 2004 to bring together trainees, scientists, engineers, and some of the brightest cardiologists and cardiac surgeons in the field. Together, the members of the Cardiovascular Institute embody valuable collaborative spirit and an open-minded philosophy that have driven innovation and yielded incredible biomedical advances, as evidenced by over 2,000 manuscripts published by our members in 2019 alone. In this report, we highlight the contributions from our members, which now number more than 260 Stanford faculty members and hundreds of the brightest fellows and students in the country.

The core strength of the CVI comes from our talented students and postdoctoral and clinical fellows. Their training and professional development are a top priority of the Institute to ensure continued success throughout their time at Stanford and thereafter. We are fortunate to support 16 fellows each year on NIH training grants and provide grant writing support for all fellows to pursue their own funding opportunities. We also aim to facilitate an active exchange of ideas across disciplines and training levels. To achieve this, we have a Frontiers of Cardiovascular Science seminar that features international leaders in the field, and we host an annual Stanford Drug Discovery Symposium that attracts diverse leaders in academia, industry, and government. We are very excited to announce our upcoming relocation to the new Biomedical Innovations Building, designed to be a hub for cardiovascular scientists to work side-by-side and actively collaborate. We are continuing to lead important conversations within and outside the cardiovascular community at Stanford to promote fruitful collaborations across all facets of science.

As an academic institution, we are committed to ensure the professional growth and the development of scientific curiosity among all of our trainees. To that end, we appreciate greatly the generous endowment of the Dorothy Dee and Marjorie Helene Boring Trust, which supports Stanford medical students dedicated to cardiovascular research, and the Lawrence H. and Roberta Cohen Lectureship from the generous donations by the late Dr. Lawrence Cohen as a tribute to Dr. Norman Shumway's pioneering work in cardiovascular medicine. In partnership with the Maternal and Child Health Research Institute and the Steven M. Gootter Foundation, the CVI awarded eleven seed grants to launch the most creative and impactful projects that are in line with the Cardiovascular Institute's innovative spirit. We were also extremely fortunate to receive a generous endowment from Joan and Sanford I. Weill to provide support for faculty selected as CVI Weill Research Scholars, based on the merits of their research and academic scholarship.

As the Cardiovascular Institute Director, I am tremendously proud of the transformative advances in knowledge and novel approaches to cardiovascular disease therapy that our members and collaborators have been able to achieve.

Joseph C. Wu, MD, PhD

Leadership



Joseph C. Wu, MD, PhD

Director, Stanford Cardiovascular Institute
Simon H. Stertz, MD, Professor of Medicine
and Radiology



Robert A. Harrington, MD

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



Ronald L. Dalman, MD

Walter C. and Elsa R. Chidester
Professor of Surgery
Chief, Division of Vascular Surgery



Stephen J. Roth, MD, MPH

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



Dominik Fleischmann, MD

Professor, Dept. of Radiology
Chief, Cardiovascular Imaging



Michael Snyder, PhD

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



Eldrin Lewis, MD, MPH

Professor of Medicine and Division Chief,
Cardiovascular Medicine



Y. Joseph Woo, MD

Norman E. Shumway Professor
in Cardiothoracic Surgery
Chair, Dept. of Cardiothoracic Surgery



Kenneth Mahaffey, MD

Professor, Dept. of Medicine
Vice Chair of Medicine
for Clinical Research



Paul Yock, MD

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



Mark Nicolls, MD

Professor of Pulmonary and Critical
Care Medicine, Dept. of Medicine, Chief,
Pulmonary and Critical Care Medicine



Marlene Rabinovitch, MD

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



Executive Committee

The Stanford Cardiovascular Institute Executive Committee oversees Cardiovascular Institute operations. Its members represent cardiovascular research, education, and clinical care, ensuring that the Cardiovascular Institute remains the home for cardiovascular research at Stanford. The committee is comprised of Stanford experts in different disciplines listed below.

Basic Research

Ronglih Liao, PhD
Mark Mercola, PhD
Mark Nicolls, MD
Marlene Rabinovitch, MD

Cardiovascular Imaging

Dominik Fleischmann, MD
Koen Nieman, MD, PhD

Cardiovascular Medicine

Eldrin F. Lewis, MD, MPH
Thomas Quertermous, MD
Alan C. Yeung, MD

Cardiothoracic Surgery

Y. Joseph Woo, MD

Clinical Research

William Fearon, MD
Kenneth W. Mahaffey, MD

Education and Training

Daniel Bernstein, MD
Mark Mercola, PhD

Finance and Administration

Jason Irwin, MBA
Stefan Pavlovic, MBA

Innovation

Paul Yock, MD

Junior Faculty Development

Patricia Ngyuen, MD
Edda Spiekerkoetter, MD

Outcome & Prevention

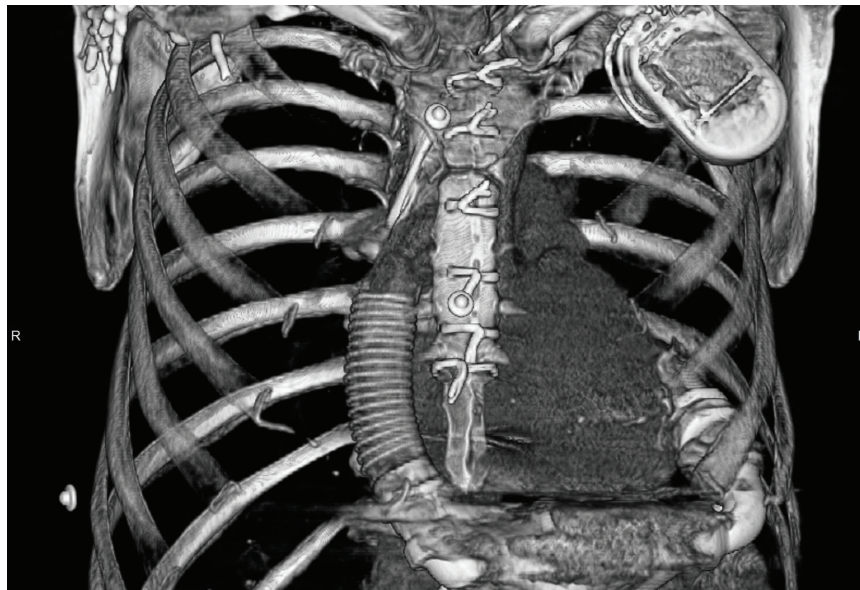
Mark Hlatky, MD
Marcia Stefanick, PhD
Paul A. Heidenreich, MD, MS

Translational Research

Philip S. Tsao, PhD
Sean M. Wu, MD, PhD

Vascular Surgery

Ronald L. Dalman, MD
Nicholas Leeper, MD



Steering Committee

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

Joseph C. Wu, MD, PhD

Euan A. Ashley, MRCP, DPhil

Daniel Bernstein, MD

Ronald L. Dalman, MD

Alexander Dunn, PhD

William Fearon, MD

Dominik Fleischmann, MD

Francois Haddad, MD

Robert A. Harrington, MD

Sarah Heilshorn, PhD

Paul A. Heidenreich, MD, MS

Mark Hlatky, MD

Ngan F. Huang, PhD

Michael Kapiloff, MD, PhD

Ioannis Karakikes, PhD

Joshua W. Knowles, MD, PhD

Brian Kobilka, MD

Mark A. Krasnow, MD, PhD

Eldrin Lewis, MD, MPH

Ronglih Liao, PhD

Nicholas Leeper, MD

David Liang, MD, PhD

Kenneth W. Mahaffey, MD

Mark Mercola, PhD

Daria Mochly-Rosen, PhD

Patricia Nguyen, MD

Koen Nieman, MD, PhD

Thomas Quertermous, MD

Marlene Rabinovitch, MD

Jayakumar Rajadas, PhD

James Spudich, PhD

Marcia Stefanick, PhD

Jennifer A. Tremmel, MD, MS

Philip S. Tsao, PhD

Minang ‘Mintu’ Turakhia, MD, MAS

Paul J. Utz, MD

Paul J. Wang, MD

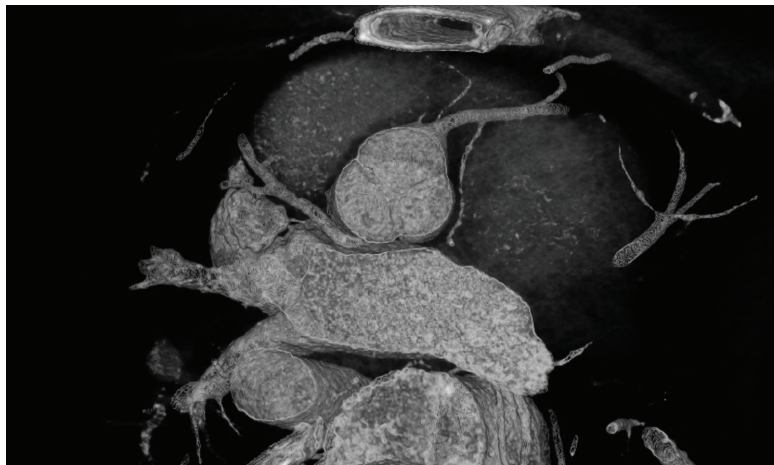
Y. Joseph Woo, MD

Sean M. Wu, MD, PhD

Phillip C. Yang, MD

Alan C. Yeung, MD

Paul Yock, MD



Education & Training Committee

The Cardiovascular Institute Education and Training Grant Committee oversees and defines the educational goals of the Cardiovascular Institute. The committee reflects multiple specialties of cardiovascular medicine and research, including surgery, pulmonary, development, genomics and engineering. The Institute strives to provide students and fellows with an atmosphere of growth and mentorship throughout their careers at Stanford.

Euan A. Ashley, MCRP, DPhil

Professor of Medicine (Cardiovascular), of Genetics and, by courtesy, of Pathology

Themistocles 'Tim' Assimes, MD, PhD

Associate Professor of Medicine (Cardiovascular Medicine) and, by courtesy, of Health Research and Policy (Epidemiology)

Daniel Bernstein, MD

Alfred Woodley Salter and Mabel Smith Salter Endowed Professor in Pediatrics

Amanda Chase, PhD

Project Coordinator and Grant Writer, Cardiovascular Institute

Terra Coakley

Program Manager, Center for Inherited Cardiovascular Disease, Division of Cardiovascular Medicine

Vinicio A. de Jesus Perez, MD

Associate Professor of Medicine (Pulmonary and Critical Care Medicine)

Alexander Dunn, PhD

Associate Professor of Chemical Engineering

Michael Fischbein, MD, PhD

Associate Professor of Cardiothoracic Surgery (Adult Cardiac Surgery)

Francois Haddad, MD

Clinical Associate Professor, Medicine - Cardiovascular Medicine

Ngan Huang, PhD

Assistant Professor, Cardiothoracic Surgery

Ioannis Karakikes, PhD

Assistant Professor, Cardiothoracic Surgery

Nicholas Leeper, MD

Professor of Surgery (Vascular Surgery) and Medicine (Cardiovascular)

Mark Mercola, PhD

Professor (Research), Cardiovascular Medicine

Patricia Nguyen, MD

Assistant Professor of Medicine (Cardiovascular) at the Palo Alto Veterans Affairs Health Care System

Koen Nieman, MD, PhD

Associate Professor of Medicine (Cardiovascular) and of Radiology (CV Imaging)

David L. M. Preston, MA, MBA

Program Manager, Cardiovascular Institute

Marlene Rabinovitch, MD

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

Sushma Reddy, MD

Assistant Professor of Pediatrics (Cardiology)

Marcia Stefanick, PhD

Professor of Medicine (Stanford Prevention Research Center) and of Obstetrics and Gynecology; Director and Co-founder, WSDM Program

Philip Tsao, PhD

Professor (Research) of Medicine (Cardiovascular)

PJ Utz, MD

Professor of Medicine (Immunology and Rheumatology)

Paul J. Wang, MD

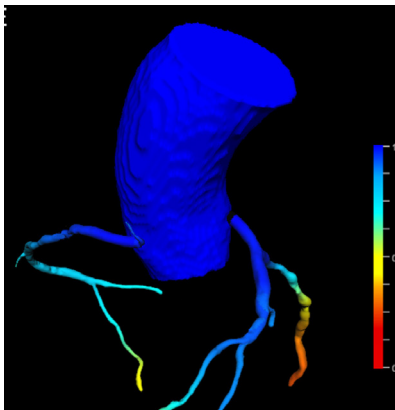
Professor of Medicine (Cardiovascular) and, by Courtesy, of Bioengineering

Joseph C. Wu, MD, PhD

Simon H. Stertzer, MD, Professor of Medicine (Cardiovascular) and of Radiology

Sean M. Wu, MD, PhD

Associate Professor of Medicine (Cardiovascular) and, by courtesy, of Pediatrics



Scientific Advisory Board



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
Chair, Department of Medicine
Brigham and Women's Hospital
Hersey Professor of the Theory and Practice
of Medicine, Harvard Medical School



Michael R. Bristow, MD, PhD
Professor of Medicine, University of Colorado
CEO, Arca Biopharma



Eric Olson, PhD
Annie and Willie Nelson Professor in Stem
Cell Research, Pogue Distinguished Chair in
Research on Cardiac Birth Defects, Robert A.
Welch Distinguished Chair in Science
UT Southwestern Medical Center



Victor J. Dzau, MD
President, National Academy of Medicine
Chancellor Emeritus and James B. Duke
Professor of Medicine,
Duke University



Robert C. Robbins, MD
President, University of Arizona



Jonathan Epstein, MD
William Wikoff Smith Professor of Medicine
Executive Vice Dean and Chief Scientific Officer,
Penn Medicine
Scientific Director, Penn Cardiovascular Institute
University of Pennsylvania



Howard Rockman, MD
Edward S. Organ Professor of Cardiology
Professor in Molecular Genetics, Microbiology,
and Cell Biology
Duke University School of Medicine



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
Gary & Mary West Endowed Chair of Innovative
Medicine, Professor of Molecular Medicine
Director & Founder, Executive VP
Scripps Research Translational Institute



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



Clyde Yancy, MD
Vice Dean for Diversity and Inclusion
Magerstadt Professor of Medicine
Chief, Division of Cardiology
Northwestern University Feinberg School of Medicine
Associate Director, Bluhm Cardiovascular Institute
Northwestern Memorial Hospital

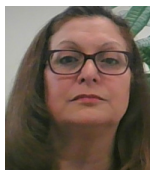
Administration



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Andrea Dang
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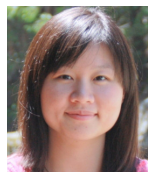
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Administrative Associate
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Edward Finn
Clinical Trials Manager
efinn@stanford.edu



Ying Wong
Financial Analyst
yjjwong@stanford.edu



Adrienne Mueller, PhD
Scientific Education and Outreach Program
Coordinator
alm04@stanford.edu

Research Disciplines

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.

BIOENGINEERING:

Sarah Heilshorn, PhD
Ngan F. Huang, PhD
Ellen Kuhl, PhD
Ronglih Liao, PhD
Alison Marsden, PhD
Nick Melosh, PhD
Ada Poon, PhD
Stephen Quake, PhD
Fan Yang, PhD
Peter Yang, PhD
Richard Zare, PhD

BIOMARKERS:

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

CARDIOVASCULAR IMAGING:

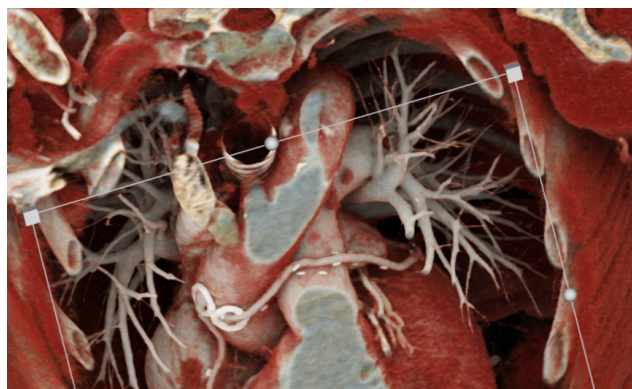
Rajesh Dash, MD, PhD
Dominik Fleischmann, MD
Sanjiv 'Sam' Gambhir, MD, PhD
Ronglih Liao, PhD
Craig Levin, PhD
Koen Nieman, MD, PhD
Patricia K. Nguyen, MD
Joseph C. Wu, MD, PhD
Phillip C. Yang, MD

CELLULAR & MOLECULAR BIOLOGY:

Alexander Dunn, PhD
Michael Kapiloff, MD, PhD
Ioannis Karakikes, PhD
Brian Kobilka, MD
Ronglih Liao, PhD
Matthew Porteus, MD
James Spudich, PhD

CLINICAL (ADULT):

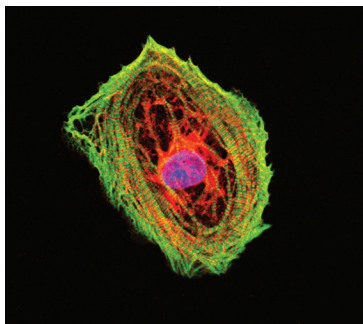
Kevin Alexander, MD
William Fearon, MD
Michael Fischbein, MD, PhD
Robert A. Harrington, MD
William Hiesinger, MD
Sharon Hunt, MD
Anson M. Lee, MD
David Lee, MD
Eldrin Lewis, MD, MPH
George Lui, MD
John MacArthur, MD
Kenneth W. Mahaffey, MD



David J. Maron, MD
Philip E. Oyer, MD
Latha Palaniappan, MD, MS
Stanley G. Rockson, MD
Elsie Ross, MD
Karim Sallam, MD
Paul J. Wang, MD
Ronald Witteles, MD
Y. Joseph Woo, MD
Alan C. Yeung, MD

CLINICAL (PEDIATRICS):

Daniel Bernstein, MD
Anne Dubin, MD
Frank Hanley, MD
Doff McElhinney, MD
David Rosenthal, MD
Stephen J. Roth, MD, MPH



Research Disciplines cont.

DEVELOPMENTAL BIOLOGY:

Daniel Bernstein, MD
Gerald R. Crabtree, MD
Mark A. Krasnow, MD, PhD
Mark Mercola, PhD
Hiromitsi 'Hiro' Nakauchi, MD, PhD
Kristy Red-Horse, PhD
Sean M. Wu, MD, PhD

GENOMICS & BIOINFORMATICS:

Russ B. Altman, MD, PhD
Themistocles 'Tim' Assimes, MD, PhD
Euan A. Ashley, MRCP, PhD
Carlos Bustamante, PhD
Joshua W. Knowles, MD, PhD
Ronglih Liao, PhD
Thomas Quertermous, MD
Michael Snyder, PhD

ION CHANNELS & ARRHYTHMIAS:

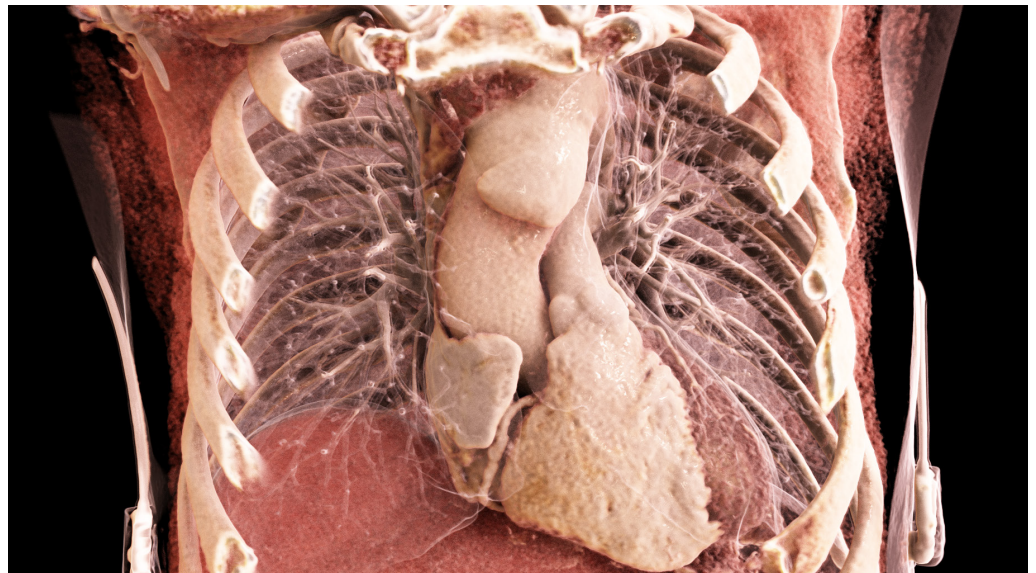
Bianxiao Cui, PhD
Merritt Maduke, PhD
Sanjiv Narayan, MD
Ada Poom, PhD
Paul J. Wang, MD
Minang 'Mintu' Turakhia, MD, MAS

INNOVATION:

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

METABOLIC DISEASES:

Joshua Knowles, MD, PhD
Fred Kraemer, MD
Ronglih Liao, PhD
Thomas Quertermous, MD



OUTCOMES & PREVENTION:

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

PULMONARY BIOLOGY:

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

STEM CELL BIOLOGY:

Helen M. Blau, PhD
Ioannis Karakikes, PhD
Ronglih Liao, PhD
Michael Longaker, MD
Mark Mercola, MD
Hiromitsu 'Hiro' Nakauchi, MD, PhD
Irving Weissman, MD
Y. Joseph Woo, MD
Joseph C. Wu, MD, PhD
Sean M. Wu, MD, PhD
Phillip C. Yang, MD

VASCULAR BIOLOGY:

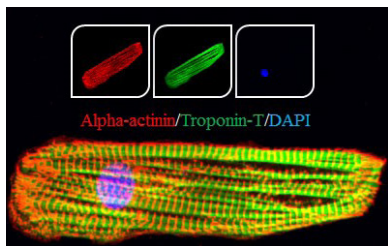
Ronald L. Dalman, MD
Calvin Kuo, MD, PhD
Jason T. Lee, MD
Nicholas Leeper, MD
Stanley G. Rockson, MD
Philip S. Tsao, PhD

WOMEN'S HEALTH:

Kiran Khush, MD
Patricia Nguyen, MD
Marcia L. Stefanick, PhD
Jennifer A. Tremmel, MD, MS

CVI Research Resources

Stanford CVI Human iPSC Biobank Service



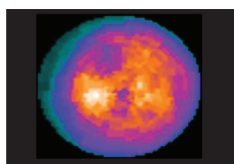
Normal and patient-derived reprogrammed cardiomyocytes are a tremendous resource for researchers and physicians here at Stanford and around the country. Understanding the disease process directly at the population level and observing these cells as surrogates under a myriad conditions has the potential to be a game-changer for cardiovascular medical research.

To facilitate research in a dish that allows screening of new compounds or characterization of human disease phenotypes using cardiomyocytes, the Institute created a service by which de-identified peripheral blood mononuclear cell (PBMC) samples from selected patients can be sent to Stanford CVI for reprogramming free of cost.

SCVI biobank is supported in part by National Heart, Lung and Blood Institute (NHLBI) and the Stanford Cardiovascular Institute (CVI).

Contact: Joseph Wu, MD, PhD / joewu@stanford.edu
or Biobank manager, **Yan Zhuge, PhD** / yanzhuge@stanford.edu with any questions.

Clinical Biomarker & Phenotyping Core Lab (BPCL)



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

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

Contact: Francois Haddad, MD / fhaddad@stanford.edu

CVI Clinical Trials Core

The CVI Clinical Trials Core provides full spectrum of support to CVI members and their clinical trials. The coordinators have extensive clinical research experience in both industry and academia. The team provides services and support to principal investigators and sponsors, including:

- Consultation
- Study start-up management, including IRB applications, budget development
- Subject recruitment, site visits, and follow-ups (AE reporting and queries)
- Data management
- Regulatory compliance and documentation
- Closeout

Contact: Ed Finn, Clinical Trials Manager at efin@stanford.edu



Cardiovascular Pharmacology (BioADD)

The Cardiovascular Pharmacology/Biomaterials and Advanced Drug Delivery (BioADD) Laboratory is a cutting edge research facility that specializes in the creation of biomaterials and drug delivery agents. The lab lends its expertise toward designing and analyzing biomaterials, developing drug delivery devices and formulations, pharmacokinetic and pharmacodynamic studies, and developing smart materials for biomedical applications. The CVI Cardiovascular Pharmacology also offers trainings and lectures.

Contact: Jayakumar Rajadas, PhD
jayraja@stanford.edu



3DQ Imaging Laboratory

Stanford's 3DQ Imaging Laboratory develops new approaches to exploration, analysis and quantitative assessments of diagnostic images that result in new and/or more cost-effective diagnostic approaches, and new techniques for the design and monitoring of therapy. The lab processes over 1,200 clinical cases to deliver relevant visualization and analysis of medical imaging data at Stanford. The lab is co-directed by Dominik Fleischmann, MD, Roland Bammer, PhD and Sandy Napel, PhD. **Contact: Dominik Fleischmann, MD** / d.fleischmann@stanford.edu

Education & Training Programs

The Stanford Cardiovascular Institute offers a unique platform to train the next generation of basic and translational scientists by exposing them to cardiovascular imaging research, mechanisms, and innovations in vascular disease and myocardial biology. Mentors for the programs are drawn from members of this collaborative Institute, including faculty in medicine, materials science, bioengineering, imaging, and health research and policy.

Mechanisms and Innovation in Vascular Disease

PROGRAM DIRECTORS

Philip Tsao, PhD and Nicholas Leeper, MD

The Mechanisms & Innovation in Vascular Disease program (T32) trains a total of six fellows over two years through an NIH training grant in the following areas of vascular medicine & research: Vascular Reactivity & Thrombosis, Vascular Regeneration & Development, Metabolic or Lifestyle Influences on Vascular Outcomes, Proteomic Markers & Genetic Determinants of Vascular Disease, Gender & Ethnicity Differences in Vascular Disease, and Vascular Bioengineering. Twenty-nine faculty mentors from eighteen different departments within the School of Medicine and the University provide a variety of angles from which to address fundamental questions about vascular disease.



ALEXANDER KAISER, PHD

Project: Personalized Virtual Surgery for Precision Treatment of Hypertrophic Cardiomyopathy



XIAOMING OUYANG, PHD

Project: Modeling Tyrosine Kinase Inhibitor-Induced Vascular Dysfunction Using Human iPSCs



STEPHANIE LINDSEY, PHD

Project: Quantification and Optimization of Tissue Engineered Vascular Graft Growth and Remodeling



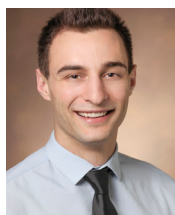
KENNETH TRAN, MD

Project: Patient Specific Computational Hemodynamic Performance Modelling in Complex EVAR



MARCELLA MARTIN, PHD

Project: Defining the Role of Endothelial Cell Dysfunction in Williams's Syndrome using iPSCs



IAN WILLIAMS, PHD

Project: Investigating the Role of Blood Flow in Coronary Vascular Remodeling

If interested in this postdoctoral training grant visit to apply: <http://med.stanford.edu/cvi/education/mechanisms-and-innovations-t32.html>.

Education & Training Programs

Multi-Disciplinary Program in Cardiovascular Imaging

PROGRAM DIRECTORS

Joseph C. Wu, MD, PhD, John Pauly, PhD, and Koen Nieman, MD, PhD

The Multi-Disciplinary Training Program in Cardiovascular Imaging (T32) at Stanford is funded by the National Institute of Biomedical Imaging and Bioengineering of the National Institutes of Health. The program is designed to train the next generation of CV imaging investigators by exposing them to three complementary areas – clinical, engineering, and molecular imaging. The program trains a total of four fellows in three complementary areas: Clinical, Engineering, and Molecular Imaging. With the impact of cardiovascular disease on US and world health and the rapid advances in imaging technologies and cardiovascular biology, it is critical that fellows be provided a broad, multi-disciplinary, and collaborative training program to foster their ability to translate CV imaging research into clinical applications. The faculty mentors are a critical component of the program, with a balance of MD and PhD mentors across the core collaborative departments.



SANGKYUN 'SANG' CHO, PHD

Project: Reversal of Myofibroblast Differentiation and Cardiac Fibrosis by Cooperative Chemo-mechanical Signaling



GENNIFER SMITH, PHD

Project: Risk Stratification of Atherosclerotic Plaques Through DNA Methylation Profiling



FATEMEH OSTADHOSSEIN, PHD

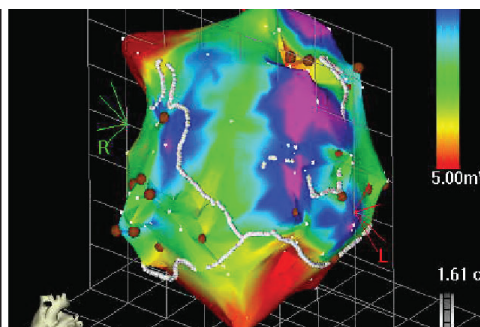
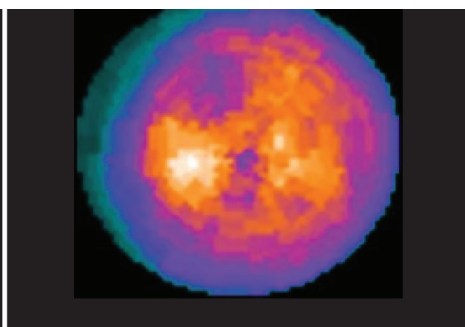
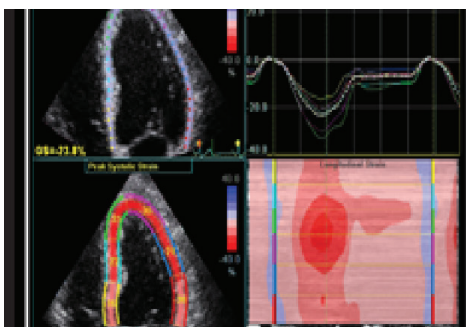
Project: Smart Nanoprobes for the Detection of Hypoxic Regions in Ischemia, Teratoma Formation, and Stem Cell Apoptosis



RAHEL A. WOLDEYES, PHD

Project: Visualizing the Structures and Subcellular Organization of Macromolecules Inside Cardiomyocytes Using Cryo-Electron Tomography

If you are interested in this postdoctoral training grant visit to apply: <http://med.stanford.edu/cvi/education/cardiovascular-imaging-t32.html>.



Education & Training Programs

Research Training in Myocardial Biology

PROGRAM DIRECTORS

Daniel Bernstein, MD, Thomas Quertermous, MD, and Euan Ashley, MRCP, DPhil

Myocardial biologists at Stanford are found in diverse departments and divisions, providing a natural vehicle for multidisciplinary training. This T32 training grant program is funded by the National Institutes of Health to bring together post-doctoral fellows and faculty from six complementary areas – genetics and genomics, cellular signaling and molecular imaging, physiology and cardiac development and regeneration, outcomes research and population science.



JACK O'SULLIVAN, PHD

Projects: 1. A Polygenic Risk Score to Predict Stroke in Patients with AF; 2. The Accuracy of Smartphone Camera Apps to Detect AF: A Meta-analysis; 3. Predicting Reproducibility of GWAS



ALISON SCHROER, PHD

Project: Investigating Myosin and Myofibril Mechanobiology in Human Induced Pluripotent Stem Cell-derived Cardiomyocyte (Completed grant Dec. 31, 2019)



PAUL PANG, PHD

Project: Single-cell Splicing Analysis of iPSC-CMs From Patients With Myotonic Dystrophy



DAVID STAUDT, MD, PHD

Project: Interrogating Diastolic Dysfunction Using A Novel Stem Cell Model of Restrictive Cardiomyopathy



SARA RANJBARVAZIRI, PHD

Project: Hypertrophic Cardiomyopathy: A Disease of Altered Cardiac Energetics

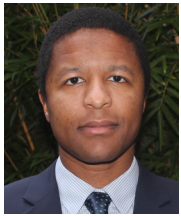


QIAN YU

Project: Mechanisms Underlying CIP4-CaNA β Signaling in Myocytes

If interested in this postdoctoral training grant email Terra R. Coakley at tcoakley@stanford.edu for more information on how to apply.

Promotions of CVI Affiliated Postdocs



Kevin Alexander, MD
Assistant Professor of Medicine,
Cardiovascular Medicine



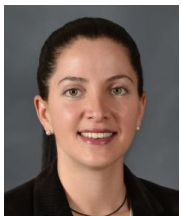
Mingxia Gu, PhD
Assistant Professor, Center for
Stem Cell and Organoid Medicine,
CuSTOM, Division of Dev. Biology,
and Perinatal Institute, Cincinnati
Children's Hospital Medical Center



Myriam Amsallem, MD, PhD
Instructor of Medicine -
Cardiovascular Medicine,
Stanford



Ilanit R. Itzhaki, PhD
Instructor, Cardiovascular
Institute



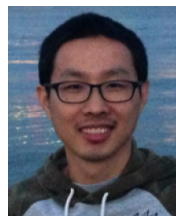
Tina Baykaner, MD, MPH
Instructor of Medicine -
Cardiovascular Medicine,
Stanford



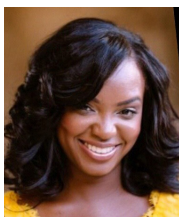
Amy Kaufman, MD
Clinical Instructor of Surgery -
Vascular Surgery, Stanford



Mark Chandy, MD, PhD
Instructor, Cardiovascular
Institute



Chun Liu, PhD
Instructor, Cardiovascular
Institute



Abbygail Foster, PhD
Technical Development Scientist
at Genentech



Edward Lau, PhD
Assistant Professor
Department of Medicine
(Cardiology)
University of Colorado Anschutz
Medical Center



Promotions of CVI Affiliated Postdocs cont.



Karina Nakayama, PhD
Assistant Professor, Biomedical Engineering, Oregon Health and Science University School of Medicine



June Rhee, MD
Instructor of Medicine - Cardiovascular Medicine
Instructor, Cardiovascular Institute, Stanford



Vivek Nanda, PhD
Assistant Professor, Division of Molecular and Cellular Pathology, University of Alabama-Birmingham



Elsie Ross, MD
Assistant Professor of Surgery (Vascular Surgery) and of Medicine (Biomedical Informatics Research), Stanford



Kevin Nead, MD, MPhil
Assistant Professor, Department of Epidemiology, Division of Cancer Prevention and Population Sciences, University of Texas, MD Anderson Center



Gennifer Smith, PhD
Assistant Professor of Engineering, University of San Francisco



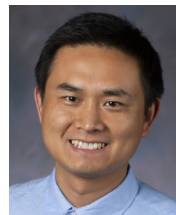
Sharon Paige, MD
Instructor, Pediatric Cardiology, Stanford



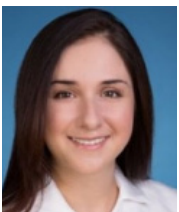
Ke Yuan, PhD, FAHA
Assistant Professor, Department of Pediatrics, Boston Children's Hospital



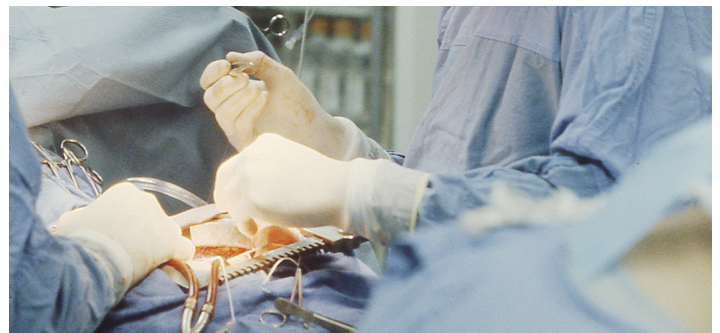
David T. Paik, PhD
Instructor, Cardiovascular Institute, Stanford



Mingtao Zhao, PhD
Assistant Professor at The Ohio State University & Principal Investigator at Nationwide Children's Hospital



Sheeva Rajaei, MD
Assistant Professor, University of Pennsylvania



Education & Training Programs

CVI Residents Cardiovascular Research

The Stanford Cardiovascular Institute has been awarded an R38 StARR (Stimulating Access to Research in Residency) grant as of February 2020. This is its inaugural year!

Funded by the NHLBI, this multidisciplinary resident training grant is designed to recruit and train resident-investigators in cardiovascular and pulmonary research and to accelerate their development into independent clinician-investigators. This program is designed for individuals who have completed a significant portion of their clinical training (~2 years), and interested in becoming physician scientists, and have developed a clinical and research focus.

Residents will be selected from Internal Medicine, Radiology, Pediatrics, and Cardiothoracic Surgery residency programs here at Stanford School of Medicine.

Deadline for application is **March 1, 2020**. Start date of award is **July 1, 2020**.

To apply: <https://tinyurl.com/R38CVI>.

R38 Directors



Michael Fischbein, MD, PhD

Associate Professor of Cardiothoracic Surgery, Adult Cardiac Surgery



Marlene Rabinovitch, MD

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



Joseph C. Wu, MD, PhD

Director, Stanford Cardiovascular Institute
Simon H. Stertz, MD, Professor of Medicine and Radiology

CVI Undergraduate Summer Research Program

Our undergraduate summer research program is supported by the American Heart Association (AHA), the NHLBI R25 Diversity in Health-Related Research grant, and the Stanford CVI.

The 10-week-long program is designed to train rising sophomores, juniors, and seniors (enrolled in a 4-year undergraduate program in the U.S. and territories) that are majoring in a scientific discipline exposure to cardiovascular research in the laboratories of CVI-affiliated faculty members.

Each student receives a set stipend covering living costs. The program dates will be between June 8, 2020, and August 14, 2020. During their individual research mentorships, the program also hosts events fostering student interaction, including: a visit to local Silicon Valley biotech company, meeting with a panel of faculty mentors and peers discussing career opportunities in cardiovascular science, and to present their work with formal research presentations during an Undergrad Research event.

For its inaugural year (2018), this program hosted 7 students from around the country. Last year (2019), CVI hosted 19 undergraduate students; and we are recruiting for 20 spots this year.



2019 CVI Summer Undergraduates and Faculty Mentors. Students include Natasha Auer, Julianne Ballon, Christian Beke Onana, Lily Cheng, Beatrice Choi, Lauren D'Amico, Nashielli Diaz, Gabriela Escobar, Breauna Franklin, Roberto Guzman Hernandez, Kelly Lancaster, Rachel Lippman, Joseph Lohmann, Sarah Madira, Racheal Mezynski, Raquel Racelis, Taylor Montiel, Samantha Roach, and Caydin Sablan.

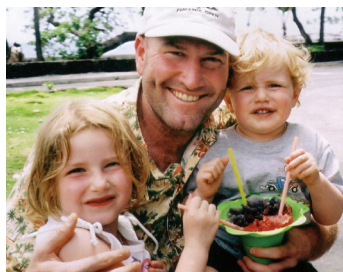
The deadline for submission for this summer is **March 15, 2020**. Applications and additional information can be found here: <https://tinyurl.com/cviundergradinfo>.

Questions? Contact: preston@stanford.edu or chaseama@stanford.edu.

The Impact of Philanthropy

Steven M. Gootter Foundation: Sudden Cardiac Death Research

The support from the **Steven M. Gootter Foundation** allows seed funding of research projects that advance current knowledge of sudden cardiac death (SCD) such as development of molecular



tests that can identify genetic mutations associated with SCD. Hypertrophic cardiomyopathy, in which a portion of the myocardium is thickened, is the most common cause of sudden death in the United States. The Foundation supports an annual lecture on Sudden Cardiac Death and Electrophysiology, Seed Grant

research projects (below), and other ongoing efforts.

Visit the Gootter Foundation at www.stevenmgootterfoundation.org



2017 Award: Oscar J. Abilez, MD, PhD

"Early Detection of Arrhythmogenesis due to Cardiac Fibrosis via Correlation of In Vitro Modeling and Clinical Assessment"



2018 Award: Kristy Red-Horse, PhD

"Does enhancing coronary artery development promote recovery from cardiac injury?"



2019 Award: Paul Wang, MD

"Experimental Heart Models of Ventricular Tachycardia: Porcine and Implanted Human Heart"



Sanford I. Weill (left) and Joan Weill (right)

CVI Weill Research Scholars Endowment

With an extraordinary gift of \$4 million from Joan and Sanford I. Weill, the CVI Weill Research Scholars endowment has been established to provide faculty research support in perpetuity. Education and partnership are at the heart of the Weills' passion for philanthropy and their dedication to making long term commitments to the organizations they support. The inaugural CVI Weill Scholars are Ronglih Liao, PhD; Mark Mercola, PhD; and Sean Wu, MD, PhD.



Ronglih Liao, PhD

Professor of Medicine (Cardiovascular Medicine)



Mark Mercola, PhD

Professor of Medicine (Cardiovascular Medicine)



Sean M. Wu, MD, PhD

Associate Professor of Medicine (Cardiovascular Medicine) and Associate Professor (by courtesy), Pediatrics

Supporting CVI

The support from our donors is critical for the Institute to provide a wide variety of programs to advance investigation of cardiovascular disease and development of innovative patient care programs.

To learn more about how you can support the Stanford Cardiovascular Institute please contact:

Cathy Hutton, MBA
Senior Associate Director, Medical Center Development
cathy.hutton@stanford.edu

<http://med.stanford.edu/cvi/support-our-research.html>



Lawrence H. and Roberta Cohn Endowed Lectureship

The **Lawrence H. and Roberta Cohn** endowed lectureship, held annually in the area of cardiothoracic surgery, brings together physician-scientists from around the country to Stanford. Dr. Cohn graduated from Stanford School of Medicine in 1962, training under Dr. Norman Shumway. Dr. Cohn was a pioneer in the field of heart valve repair and replacement surgery. Past keynote lecturers include: **David Adams, MD** (2015); **Tomislav Mihaljevic, MD** (2016); **Joseph Coselli, MD** (2017); **Frederick Y. Chen, MD, PhD** (2018); and **Tirone E. David, MD** (2019).

CVI Seed Grants 2019-2020 (FY 2020)

The Stanford Cardiovascular Institute has provided over **\$2.8 million** in seed funding to support cardiovascular research and innovation. Our goal is to ignite and support new ideas that will change how we diagnosis and treat cardiovascular diseases. Together with Stanford Maternal and Children's Health Research Institute (MCHRI) and the Gootter Foundation, the CVI is excited to support research for 11 outstanding projects in 2020.

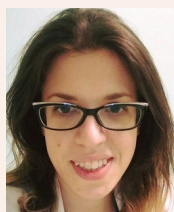
RESEARCH FUNDED BY MATERNAL & CHILD HEALTH RESEARCH INSTITUTE



PIs: Sushma Reddy, MD

Co-Investigators: Daniel Bernstein, MD; Jingjing Li, PhD

A Non-invasive Signature of Myocardial Signaling in Children with Single Ventricle Heart Failure

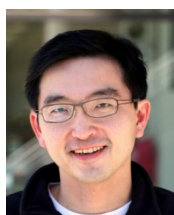


PIs: Francois Haddad, MD; Myriam Amsallem, MD, PhD; Jeffrey Feinstein, MD, MPH

Co-Investigators: Alison Marsden, PhD; Roham T. Zamanian, MD; David Ouyang, MD

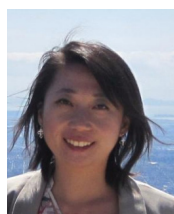
Developing Novel Computational Methods for the Early Detection of Right Heart Failure and Pulmonary Hypertension in the Pediatric and Adult Populations

RESEARCH FUNDED BY STANFORD CARDIOVASCULAR INSTITUTE



PIs: Ioannis Karakikes, PhD; Kevin Wang, MD, PhD

CRISPR-mediated Therapy for Cardiac Laminopathies



PIs: Nicholas Leeper, MD; Ying Wang, PhD

Identify 'Atherogenic' Somatic Mutations/Epigenetic Modifications in Vascular Smooth Muscle Cells



PIs: Kari Nadeau, MD, PhD; David T. Paik, PhD

Co-Investigators: Lei Tian, PhD

Single-cell Sequencing to Identify Air Pollution-Induced Cardiac Risks

CVI Seed Grants 2019-2020, cont.

RESEARCH FUNDED BY THE STEVEN M. GOOTTER FOUNDATION



PI: Paul Wang, MD

Co-Investigators: Duy Nguyen, MD; Anson Lee, MD; Moham N. Viswanathan, MD; Nitish Badhwar, MD; Sanjiv Narayan, MD; Oscar J. Abilez, MD, PhD; Phillip Yang, MD; Meghedi Babakhanian, PhD; Terrance Pong, MD; Paul A. Chang, MD

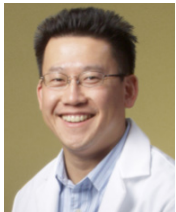
Experimental Heart Models of Ventricular Tachycardia: Porcine and Explanted Human Heart

RESEARCH FUNDED BY STANFORD CARDIOVASCULAR INSTITUTE



PI: Marlene Rabinovitch, MD; **Co-Investigators:** Michael Snyder, PhD; David Marciano, PhD; Jan-Renier Moonen, MD, PhD

Exploring Genomic Mosaicism in Pulmonary Arterial Hypertension Patient Lungs



PI: Phillip Yang, MD

Co-Investigator: Utkan Demirci, PhD; Katrin Svensson, PhD

Proteomic Analysis of iPSC-derived Extracellular Vesicles for Mitochondrial Biogenesis



PI: Elsie G. Ross, MD;

Co-Investigators: Nigam Shah, MBBS, PhD; Nicholas J. Leeper, MD; Erik Ingelsson, MD, PhD; Philip Tsao, PhD

Development of a Precision Screening Platform for Peripheral Artery Disease Using Electronic Health Records and Polygenic Risk Scores



PIs: Jennifer Tremmel, MD; Patricia Ngyuen, MD; **Co-Investigators:** Vedant Pargaonkar, MD; Thomas Quertermous, MD

Whole Exome Sequencing Study of Coronary Microvascular Dysfunction in Patients with Angina in the Absence of Obstructive Coronary Artery Disease



PIs: Ronald Witteles, MD; Euan A. Ashley, MRCP, PhD; Kevin Alexander, MD; **Co-Investigator:** Francois Haddad, MD; Paul Cheng, MD, PhD; David Ouyang, MD

Precision Approach to Ventricular Mass: Image-Based Differentiation of Hypertrophic Cardiomyopathy, Amyloidosis, and Phenocopies

Past Seed Grant Awardees: 2018-2019

Multiparametric Imaging to Study Cellular Dynamics in Duchenne Muscular Dystrophy-associated Dilated Cardiomyopathy

Helen Blau, PhD, The Donald E. and Delia B. Baxter Foundation Professor and Director, Baxter Laboratory for Stem Cell Biology

Yu Xin Wang, PhD, Postdoctoral Research Fellow, Microbiology and Immunology
Collaborators: Mingxia Gu, MD, PhD; Marlene Rabinovitch, MD

This research was funded by MCHRI

Identification of Metabolic Markers During Early Pregnancy Associated With the Risk of Congenital Heart Defects in the Offspring

Michael Snyder, PhD, Stanford W. Ascherman, MD, Professor in Genetics

Mads Melbye, MD, Visiting Professor, Medicine - Primary Care and Population Health
Collaborator: Liang Liang, PhD, Postdoctoral Research Fellow, Genetics

This research was funded by MCHRI

Functional Characterization of Distinct Bone Marrow Sub-Fractions for Treatment of Myocardial Infarction

Charles K. F. Chan, MD, Assistant Professor of Surgery (Plastic and Reconstructive Surgery)

Irving Weissman, MD, Director, Stanford Institute for Stem Cell Biology and Regenerative Medicine, Virginia & D. K. Ludwig Professor for Clinical Investigation in Cancer Research, Professor of Developmental Biology

Patrici K. Nguyen, MD, Assistant Professor of Medicine (Cardiovascular Medicine) at the Palo Alto Veterans Affairs Health Care System
Collaborator: Andrew Lee

Novel Intravascular Ultrasound Array Catheter for Quantitative Imaging of Vulnerable Plaque

Jeremy Dahl, PhD, Associate Professor of Radiology (Pediatric Radiology)

Matthew Lungren, MD, MPH, Assistant professor of Radiology (Pediatric Radiology)

Collaborator: Arsenii Telichko, PhD, Postdoctoral Research Fellow, Radiology; Carl Herickhoff, PhD, Research Engineer, Radiology (Pediatric Radiology)

Anesthetics Induced Myocardial Depression Through TRPA1 Signaling Pathway

Detlef Obal, MD, PhD, Clinical Assistant Professor, Anesthesiology, Perioperative and Pain Medicine

Collaborator: Ian Ying-Li Chen, MD, PhD, Staff, Cardiovascular Institute Operations, Resident, HS-Medicine-SHC

Genome-scale CRISPR Interference Approach to Investigate Statin-induced Myotoxicity

June-Wha Rhee, MD, Clinical Instructor of Medicine (Cardiovascular Medicine)

Stanley Qi, MD, Assistant Professor of Bioengineering
Collaborator: Masataka Nishiga, MD, PhD, Postdoctoral Research Fellow, Cardiovascular Institute

Influence of E-cigarette Vapor on Experimental Aortic Aneurysm

Philip Tsao, PhD, Professor (Research) of Medicine (Cardiovascular Medicine)

Collaborators: Joshua M. Spin, MD, PhD, Clinical Assistant Professor, Medicine (Cardiovascular Medicine); Rongli Liao, PhD, Professor of Medicine (Cardiovascular Medicine); Nicholas J. Leeper, MD, Professor of Surgery (Vascular Surgery) and Medicine (Cardiovascular Medicine); Juyong Brian Kim, MD, Instructor of Medicine (Cardiovascular Medicine)

Characterization of the Gut Microbiome-Host Metabolome Interactions in Heart Failure-Related Insulin Resistance

Michael Fowler, MB, FRCP, Professor of Medicine (Cardiovascular)

Petra Mamic, MD, Fellow in Medicine, Cardiovascular Medicine

Collaborators: Michael Snyder, PhD, Stanford W. Ascherman, MD, Professor in Genetics; Thomas Quertermous, MD, William G. Irwin Professor in Cardiovascular Medicine

A Bioabsorbable External Mesh to Prevent Vein Graft Failure After Coronary Artery Bypass Graft Surgery

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

Jack Boyd, MD, Clinical Associate Professor, Cardiothoracic Surgery

Collaborators: Michael Snyder, PhD, Stanford W. Ascherman, MD, Professor in Genetics; and Francois Haddad, MD (Medicine/Cardiology)

Does Enhancing Coronary Artery Development Promote Recovery From Cardiac Injury?

Kristy Red-Horse, PhD, Assistant Professor of Biology

Collaborators: Daniel Bernstein, MD, Alfred Woodley Salter and Mabel Smith Salter Endowed Professor in Pediatrics

Evaluation of Orphan G-protein-coupled Receptor GPR151 as a Novel Obesity Drug Target

Erik Ingelsson, MD, PhD, Professor of Medicine (Cardiovascular Medicine) and, by courtesy, of Health Research and Policy

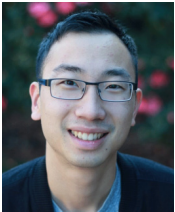
Collaborators: Mark Mercola, PhD, Professor of Medicine, Cardiovascular Medicine

Seed grants are essential for opening doors to discovery. With this support, our investigators can pursue their 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

Dorothy Dee & Marjorie Helen Boring Trust Medical School Student Research Award

Through a generous \$2.2 million gift from the Dorothy Dee and Marjorie Helene Boring family, the Stanford Cardiovascular Institute awards medical students with demonstrated excellence and dedication to cardiovascular medicine at Stanford.

**NICOLAS QUACH**

MS2 / Cardiothoracic Surgery

Project: Engineering a Supra-therapeutic C-X-C Chemokine Receptor Type 4 (CXCR4) Agonist to Prevent Ischemic Heart Failure

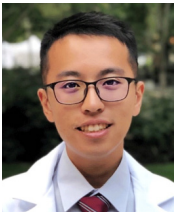
Mentor: William Hiesinger, MD

**SAAD SYED**

MS3 / Pediatric Cardiology

Project: A Non-invasive Signature of Myocardial Signaling in Children with Single Ventricle Heart Failure

Mentor: Sushma Reddy, MD

**TING HSUAN WU**

MS2 / Pulmonary and Critical Care Medicine

Project: Single-cell Analysis of Inflammation-induced Pulmonary Hypertension in Bmpr2 Dysfunction

Mentors: Mark Nicolls, MD and Peter Kao, MD, PhD

PAST AWARDEES

2018 Recipients: Kevin Cyr, Yuhao "Danny" Huang, and Annika Dries

2017 Recipients: Joetsaroop Bagga, Veronica Toro, Angela Zhang, and Xinyan "Lisa" Zhang

2016 Recipients: Aditya J. Ullal, Francisco Xavier Galdos, Andrew Lee, and Raheel Ata

2015 Recipients: Charlotte Rajasingh, and Christopher Jensen

We are very grateful for this generous endowment by the Boring Family Trust. Philanthropy enhances our educational mission and helps support the best and brightest young trainees within the Cardiovascular Institute.

— Joseph C. Wu, MD, PhD, Director, Stanford Cardiovascular Institute



Frontiers in Cardiovascular Science

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 thought leaders in cardiovascular science, this seminar series facilitates the initiation of new collaborations and accelerates science at Stanford.

January 7, 2020

JAVID J. MOSLEHI, MD

Associate Professor of Medicine,
Director of Cardio-Oncology, Vanderbilt
University Medical Center

January 14, 2020

YIBIN WANG, PHD

Professor of Molecular Medicine; Chair
of Cardiovascular Theme, UCLA David
Geffen School of Medicine

January 21, 2020

ANTHONY ROSENZWEIG, MD

Chief, Cardiology Division, Massachusetts
General Hospital; Paul Dudley White
Professor of Medicine, Harvard Medical
School; Co-Director, Corrigan Minehan
Heart Center

January 28, 2020

SHARLENE M. DAY, MD

Clinical Associate Professor of
Medicine, U-Penn

February 4, 2020

MARTIN PERA, PHD

Professor, Jackson Lab, Bar Harbor, ME

February 11, 2020

**GEOFFREY S. GINSBURG, MD,
PHD**

Professor of Medicine; Director,
Duke Center for Applied Genomics
& Precision Medicine; Professor
Pathology, Duke University

February 18, 2020

MANUELA ZACCOLO, MD, PHD

Deputy Head, Department of
Physiology, Anatomy and Genetics; and
Professor, Cell Biology, Oxford

February 25, 2020

JAYAKUMAR RAJADAS, PHD

Assistant Professor, Division of
Pulmonary, Allergy, and Critical Care;

Founding Director, Biomaterials and
Advanced Drug Delivery Laboratory
(BioADD)

March 3, 2020

MARIA I. KONTARIDIS, PHD

Gordon K. Moe Professor and Chair of
Biomedical Research and Translational
Medicine; Director of Research, Masonic
Medical Research Institute

March 10, 2020

MARK MERCOLA, PHD

Professor of Medicine (Cardiovascular
Medicine), Stanford

March 17, 2020

NAOMI CHESLER, PHD

Professor, Department of Biomedical
Engineering, University of Wisconsin-
Madison

March 24, 2020

KATHERINE YUTZEY, PHD

Professor, Department of Pediatrics,
Cincinnati Children's Hospital,
University of Cincinnati

March 31, 2020

YOUNG-SUP YOON, MD, PHD

Director of Stem Cell Biology; Professor
of Medicine, Division of Cardiology;
Department of Medicine, Emory
University School of Medicine

April 7, 2020

GLENN DILLON, PHD

Director of Research Operations,
American Heart Association

April 14, 2020

CORNELIA WEYAND, MD, PHD

Professor of Medicine (Immunology and
Rheumatology), Stanford University

April 28, 2020

BUDDHADEB DAWN, MD

Professor and Chairman, Department
of Internal Medicine; Chief, Division of
Cardiovascular Medicine, University of
Nevada, Las Vegas School of Medicine

May 5, 2020

ÅSA GUSTAFSSON, PHD

Professor, Skaggs School of Pharmacy
and Pharmaceutical Sciences,
Department of Pharmacology, School
of Medicine, UCSD

May 12, 2020

MICHAEL KAPILOFF, MD, PHD

Associate Professor (Research) of
Ophthalmology and, by courtesy, of
Medicine (Cardiovascular Medicine),
Stanford

May 19, 2020

DAVID J. MILAN, MD

Chief Science Officer, Leducq
Foundation

May 26, 2020

**GIANLUIGI CONDORELLI, MD,
PHD**

Professor of Cardiology, and Director,
Post-Graduate School of Cardiology;
Head, Dept. of Cardiovascular Medicine,
Humanitas Research Hospital

June 9, 2020

SUMANTH PRABHU, MD

Professor of Medicine, Cardiovascular
Disease; Chair, Department of Medicine,
University of Alabama, Birmingham

June 16, 2020

BIN ZHOU, MD, PHD

Professor, Institute of Biochemistry and
Cell Biology, Shanghai Institutes for
Biological Sciences, Chinese Academy
of Sciences

MED223: Cardiovascular Research and Medicine

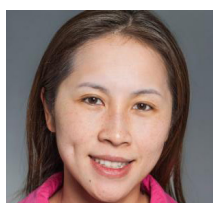
The focus of the MED223 class, in conjunction with the Cardiovascular and Pulmonary Medicine Scholarly Concentration, is to fine tune critical thinking skills by: analyzing original publications, engaging small group lectures with Stanford faculty, and exposing medical students to the variety of current complexities of the cardiovascular and pulmonary systems.

Winter 2020

Directors:



Vinicio de Jesus
Perez, MD



Ngan Huang, PhD



Ioannis
Karakikes, PhD



Edda
Spiekerkoetter, MD

Lecturers:



January 9, 2019

FRANCOIS HADDAD, MD

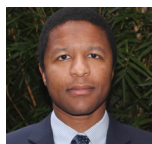
Clinical Associate Professor, Cardiovascular
Medicine



February 13, 2019

JUNE RHEE, MD

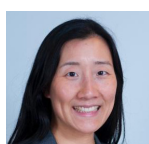
Instructor of Medicine, Cardiovascular
Medicine and Cardiovascular Institute



January 16, 2019

KEVIN ALEXANDER, MD

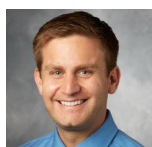
Assistant Professor of Medicine,
Cardiovascular Medicine



February 20, 2019

NATALIE LUI, MD

Assistant Professor of Cardiothoracic Surgery
(Thoracic Surgery)



January 23, 2019

ANDREW SWEATT, MD

Clinical Assistant Professor of Medicine,
Pulmonary and Critical Care Medicine



February 27, 2019

JONATHAN MYERS, MD

Clinical Professor of Medicine (Affiliated),
VA Palo Health Care System, Cardiovascular
Medicine



January 30, 2019

OSCAR ABILEZ, MD, PHD

Instructor of Medicine, Cardiovascular
Medicine



March 5, 2019

AMY TIAN, PHD

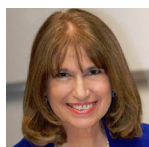
Affiliate, Pulmonary, Allergy & Critical Care
Medicine



February 6, 2019

JAYAKUMAR RAJADAS, PHD

Assistant Professor (Research) of Medicine
(Pulmonary and Critical Care Medicine)



March 12, 2019

MARLENE RABINOVITCH, MD

Dwight and Vera Dunlevie Professor in
Pediatric Cardiology

Vera Moulton Wall Center for Pulmonary Vascular Disease



THE WALL CENTER
PULMONARY VASCULAR DISEASE
@STANFORD

Who We Are

An international leader in the field of pulmonary vascular disease with an established tradition of innovative research, exceptional teaching, and outstanding patient care. A pioneer of new and novel clinical therapies, the Vera Moulton Wall Center is uniquely positioned to lead the field translating research into effective pulmonary hypertension (PH) therapies.

Our Mission

To eradicate pulmonary vascular disease by discovering fundamental causes, developing innovative therapies, disseminating crucial knowledge, and delivering transformative care.

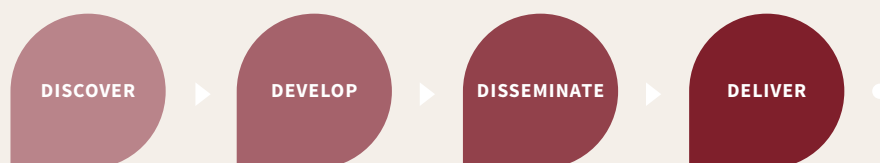
Our Vision

To transform the way pulmonary vascular disease is understood and treated, both locally and globally.

Contact Us

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Web: wallcenter.stanford.edu

What We Do



Steering Committee



Mark Krasnow, MD, PhD

Endowed Chair, The Paul and Mildred Berg Professorship Investigator, Howard Hughes Medical Institute
Executive Director, Wall Center for Pulmonary Vascular Disease



Jeffrey Feinstein, MD, MPH

Endowed Chair, The Dunlevie Family Professorship in Pulmonary Vascular Disease and Professor, by courtesy, of Bioengineering at Lucile Packard Children's Hospital
Director, Vera Moulton Wall Center



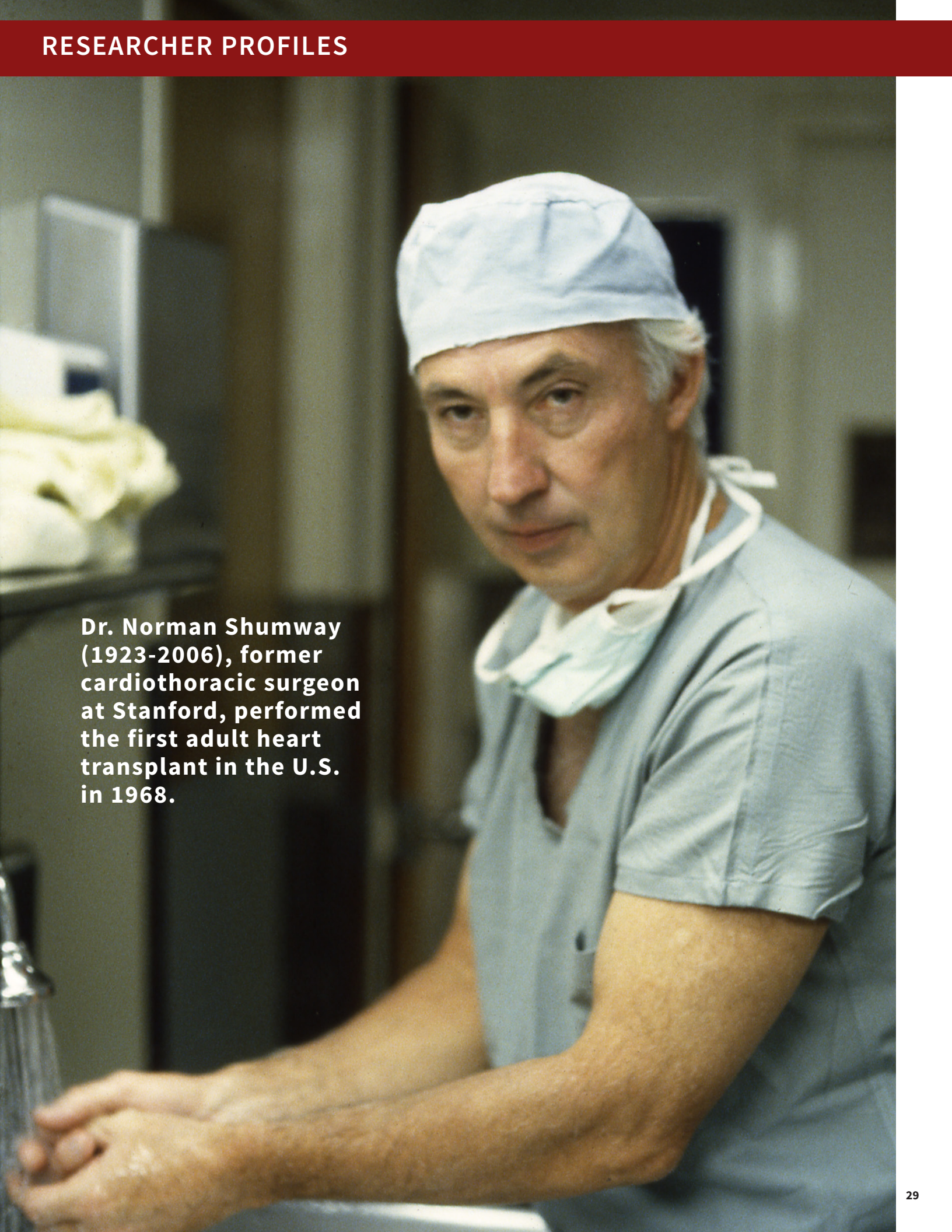
Mark Nicolls, MD

Endowed Chair, The Stanford Professor of Pulmonary and Critical Care Medicine; Professor, Immunology and Rheumatology; Chief, Division of Pulmonary, Allergy and Critical Care Medicine; Director, Lung Immunology



Roham Zamanian, MD, FCCP

Associate Professor, Pulmonary & Critical Care Medicine
Director, Adult Pulmonary Hypertension (PH) Program

A photograph of Dr. Norman Shumway, an older man with white hair, wearing a light blue surgical cap and a matching short-sleeved scrub top. He is standing in an operating room, looking directly at the camera with a serious expression. His hands are positioned under a running faucet, and water is visible. The background is slightly out of focus, showing typical operating room equipment and lighting.

**Dr. Norman Shumway
(1923-2006), former
cardiothoracic surgeon
at Stanford, performed
the first adult heart
transplant in the U.S.
in 1968.**



Kevin Alexander, MD

Assistant Professor of Medicine - Cardiovascular Medicine

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EDUCATION/TRAINING

MD University of Pennsylvania

RESIDENCY

Johns Hopkins Hospital

FELLOWSHIPS

Brigham and Women's Hospital/Harvard Medical School (Cardiology)

Stanford Hospital (Advanced Heart Failure and Transplant Cardiology)

CLINICAL FOCUS

Cardiac amyloidosis
Cardiac sarcoidosis
Heart failure
Heart transplant
Mechanical circulatory support

HONORS & AWARDS

Gertrude M. and Ezra M. Eisen Prize for Cardiovascular Research, University of Pennsylvania School of Medicine (2011)

Thomas W. Smith Fellowship in Heart Failure, Brigham and Women's Hospital (2017)

National Institutes of Health Loan Repayment Award, National Institutes of Health (2017-2020)

Fellow of the American College of Cardiology (FACC) (2018)

Harold Amos Medical Faculty Development Award, American Heart Association (2019-2023)

MEMBERSHIPS

Co-Chair, Diversity and Inclusion Committee, California Chapter, American College of Cardiology (2018 - Present)

Editorial Board, Circulation Research (2019 - Present)

CURRENT RESEARCH

My research focuses on understanding the molecular mechanisms involved in cardiac amyloidosis, particularly transthyretin amyloidosis. The main goals are to (i) elucidate key determinants of protein misfolding and amyloid formation, (ii) develop biomarkers for early disease detection and monitoring, and (iii) identify novel targets for specific amyloid therapies. To pursue these goals, we use cell- and animal-based models combined with detailed phenotypic profiling of large cardiac amyloid patient cohorts.

Some people want it to happen, some wish it would happen, others make it happen. — Michael Jordan

SELECTED PUBLICATIONS

Randomized Evaluation of Heart Failure with Preserved Ejection Patients with Acute Heart Failure and Dopamine (ROPA-DOP) Trial. Sharma K, Vaishnav J, Kalathiya R, Hu J, Miller J, Shah N, Hill T, Sharp M, Tsao A, Alexander K, et al. *JACC Heart Fail*, 2018;6(10):859-70.

Geographic Disparities in Reported US Amyloidosis Mortality During 1979-2015: Potential Underdetection of Cardiac Amyloidosis. Alexander KM, Orav J, Singh A, Jacob S, Menon A, Padera RF, et al. *JAMA Cardiol*, 2018;3(9):865-70.

Association Between Ruptured Distal Biceps Tendon and Wild-Type Transthyretin Cardiac Amyloidosis. Geller HI, Singh A, Alexander KM, Mirto TM, Falk RH. *JAMA*, 2017;318(10):962-3.

Phosphorylation of Src by Phosphoinositide 3-kinase Regulates Beta-adrenergic Receptor Mediated EGFR Transactivation. Watson LJ, Alexander KM, Mohan ML, Bowman AL, Mangmool S, Xiao K, et al. *Cell Signal*, 2016;28(10):1580-92.



Christopher Almond, MD

Professor of Pediatrics (Cardiology)
at the Lucile Salter Packard Children's Hospital
Director, Cardiac Anticoagulation Services, Stanford Children's Health

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EDUCATION/TRAINING

MD University of Connecticut

INTERNSHIP

Boston Children's Hospital (2000)

RESIDENCY

Boston Children's Hospital (Combined
Residency in Pediatrics) (2002)

FELLOWSHIPS

Boston Children's Hospital (2005)

Boston Children's Hospital (2006)

BOARD CERTIFICATION

Pediatrics, American Board of Pediatrics
(2002)

Pediatric Cardiology, American Board of
Pediatrics (2014)

CURRENT RESEARCH

Dr. Almond's clinical research efforts focus on improving outcomes for children with end-stage heart failure, specifically in the areas of pediatric ventricular assist devices, cardiac transplantation, medical management of decompensated heart failure, and anticoagulation. He has a special interest in the design of multicenter clinical trials to evaluate promising drugs and devices seeking FDA approval for rare diseases. Dr. Almond served as the national PI for the Berlin Heart EXCOR Pediatric VAD multicenter clinical trial. He currently serves as PI for the TEAMMATE Trial, a randomized clinical trial evaluating Everolimus to prevent long-term complications after pediatric heart transplantation, and the PumpKIN trial, evaluating the Jarvik 2015, a miniaturized continuous flow durable VAD for bridge to heart transplant in children.

We have had a longstanding interest in how to use ventricular assist devices (VAD) in children, and we want to carry that into the future, as well.

SELECTED PUBLICATIONS

Impact of the 18th Birthday on Waitlist Outcomes Among Young Adults Listed for Heart Transplant: A Regression Discontinuity Analysis. Peng DM, Qu Q, McDonald N, Hollander SA, Bernstein D, Maeda K, Kaufman BD, Rosenthal DN, McElhinney DB, Almond CS. *J Heart Lung Transplant.* 2017 May 19.

Temporary Circulatory Support in U.S. Children Awaiting Heart Transplantation. Yarlaga VV, Maeda K, Zhang Y, Chen S, Dykes JC, Gowen MA, Shuttlesworth P, Murray JM, Shin AY, Reinhartz O, Rosenthal DN, McElhinney DB, Almond CS. *J Am Coll Cardiol.* 2017 Oct 31;70(18):2250-2260.

Hemodynamic Profiles of Children with End-Stage Heart Failure. Chen S, Dykes CJ, McElhinney DB, Gajarski RJ, Shin AY, Hollander SA, Everitt ME, Price JF, Thiagarajan RR, Kindel SJ, Rossano JW, Kaufman BD, May LJ, Pruitt E, Rosenthal DN, Almond CS. *European Heart Journal* 2017 Oct 7;38(38):2900-2909.

Development and Validation of a Major Adverse Transplant Event (MATE) Score to Predict Late Graft Loss in Pediatric Heart Transplantation. Almond CS, Hoen H, Rossano JW, Castleberry C, Auerbach SR, Yang L, Lal AK, Everitt MD, Fenton M, Hollander SA, Pahl E, Pruitt E, Rosenthal DN, McElhinney DB, Daly KP, Desai M; Pediatric Heart Transplant Study (PHTS) Group Registry. *J Heart Lung Transplant.* 2017 Mar 24.

Impact of a Modified Anti-thrombotic Guideline on Stroke in Children Supported With a Pediatric Ventricular Assist Device. Rosenthal DN, Lancaster CA, McElhinney DB, Chen S, Stein M, Lin A, Doan L, Murray JM, Gowen MA, Maeda K, Reinhartz O, Almond CS. *J Heart Lung Transplant.* 2017 May 20.



Russ B. Altman, MD, PhD

Kenneth Fong Professor and Professor of Bioengineering, of Genetics, of Medicine (General Medical Discipline) and, by Courtesy, of Computer Science

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EDUCATION/TRAINING

MD Stanford University

PHD Stanford University

BOARD CERTIFICATION Diplomate, ABIM

RESEARCH FOCUS

Biomedical informatics,
pharmacogenomics,
structural informatics,
bioengineering, genetics,
artificial intelligence,
data science,
pharmacology

HONORS & AWARDS

Editor-in-Chief, Annual Reviews of
Biomedical Data Science (2016 -
Present)

Advisor, NIH Advisory Committee to the
Director (ACD) (2013 - 2018)

Member, FDA Commissioner Science
Board (2011 - 2014)

Co-Organizer, Pacific Symposium on
Biocomputing (psb.stanford.edu) (1995-
Present)

Co-PI UCSF-Stanford FDA Center of
Excellence for Regulatory Science &
innovation (2015 - present)

CURRENT RESEARCH

Russ Altman's primary research interests are in the application of computing and informatics technologies to problems relevant to medicine. He is particularly interested in methods for understanding drug action at molecular, cellular, organism, and population levels. His lab studies how human genetic variation impacts drug response (e.g., <http://www.pharmgkb.org/>). Other work focuses on the analysis of biological molecules to understand the actions, interactions and adverse events of drugs (e.g., <http://feature.stanford.edu/>). He helps lead an FDA-supported Center of Excellence in Regulatory Science & Innovation.

SELECTED PUBLICATIONS

RedMed: Extending Drug Lexicons for Social Media Applications. Lavertu A, Altman RB. *J Biomed Inform.*, 2019 Nov;99:103307.

Graph Convolutional Neural Networks for Predicting Drug-Target Interactions. Torng W, Altman RB. *J Chem Inf Model.*, 2019 Oct 28;59(10):4131-4149.

Predicting Venous Thromboembolism Risk From Exomes in the Critical Assessment of Genome Interpretation (CAGI) Challenges. McInnes G, Daneshjou R, Katsonis P, Lichtarge O, Srinivasan R, Rana S, Radivojac P, Mooney SD, Pagel KA, Stambouliau M, Jiang Y, Capriotti E, Wang Y, Bromberg Y, Bovo S, Savojardo C, Martelli PL, Casadio R, Pal LR, Moulton J, Brenner SE, Altman R. *Hum Mutat.*, 2019 Sep;40(9):1314-1320.

Pharmacogenomic Polygenic Response Score Predicts Ischemic Events and Cardiovascular Mortality in Clopidogrel-Treated Patients. Lewis JP, Backman JD, Reny JL, Bergmeijer TO, Mitchell BD, Ritchie MD, Déry JP, Pakyz RE, Gong L, Ryan K, Kim EY, Aradi D, Fernandez-Cadenas I, Lee MTM, Whaley RM, Montaner J, Gensini GF, Cleator JH, Chang K, Holmvang L, Hochholzer W, Roden DM, Winter S, Altman R, Alexopoulos D, Kim HS, Gawaz M, Bliden K, Valgimigli M, Marcucci R, Campo G, Schaeffeler E, Dridi NP, Wen MS, Shin JG, Fontana P, Giusti B, Geisler T, Kubo M, Trenk D, Siller-Matula JM, Ten Berg JM, Gurbel PA, Schwab M, Klein TE, Shuldiner AR. *Eur Heart J Cardiovasc Pharmacother.*, 2019 Sep 3.

Atrial Fibrillation Burden Signature and Near-Term Prediction of Stroke: A Machine Learning Analysis. Han L, Askari M, Altman RB, Schmitt SK, Fan J, Bentley JP, Narayan SM, Turakhia MP. *Circ Cardiovasc Qual Outcomes.*, 2019 Oct;12(10):e005595.



Shipra Arya, MD

Associate Professor of Surgery (Vascular Surgery)

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EDUCATION/TRAINING

MD All India Institute of Medical Sciences, India

RESIDENCY

Creighton University General Surgery Residency

FELLOWSHIP

University of Michigan

BOARD CERTIFICATION

General Surgery, Vascular Surgery (ABS)

CLINICAL FOCUS

Abdominal and thoracic aortic aneurysms/dissections

Peripheral artery disease

Intestinal circulation disorders

Carotid angioplasty/stenting

Vascular trauma

Dialysis access

Thoracic outlet syndrome

Venous disease

Pediatric vascular disease

HONORS & AWARDS

Fellow of American College of Surgeons (2016)

S. Timothy String President Award for best papa at the Southern Association for Vascular Surgery Meeting (2017)

Top Cited Paper (#5) in Journal of Vascular Surgery 2015-2016 (2017)

Chair, Leadership Committee, Association for Academic Surgery (2018)

Secretary Surgical Outcomes Club (2019)

CURRENT RESEARCH

Dr Arya's research is focused on improving quality of care and outcomes in older and high-risk vulnerable patients undergoing surgery. Her health services research lab focuses on how novel risk predictors can be used to guide improvements in patient centered outcomes and healthcare value in this population. She has been funded by the American Heart Association (AHA) grant to develop risk prediction models for cardiovascular outcomes and limb loss in Peripheral Arterial Disease (PAD) patients. She is also funded by the NIH/ NIA GEMSSTAR grant studying the impact of frailty on quality of surgical care in PAD and aortic aneurysm patients. Her work addressing the importance of home-time in older adults undergoing surgery is funded by the Center for Innovation and Implementation (Ci2i) at VA Palo Alto. Her accumulated research points to frailty as a versatile tool that can guide surgical decision making, inform patient consent and design quality improvement initiatives at the patient and hospital level.

If you don't measure it, you can't improve it.

SELECTED PUBLICATIONS

Association of Frailty and Postoperative Complications With Unplanned Readmissions After Elective Outpatient Surgery. Rothenberg KA, Stern JR, George EL, Trickey AW, Morris AM, Hall DE, Johanning JM, Hawn MT, Arya S. *JAMA Netw Open*. 2019 May 3;2(5):e194330.

Recalibration and External Validation of the Risk Analysis Index: A Surgical Frailty Assessment Tool. Arya S, Varley P, Youk A, Borrebach JA, Perez S, Massarweh NN, Johanning JM, Hall DE. *Ann Surg*. 2019 Mar 19.

Variation in Center-level Frailty Burden and the Impact of Frailty on Long-term Survival in Patients Undergoing Elective Repair for Abdominal Aortic Aneurysms. George EL, Chen R, Trickey AW, Brooke BS, Kraiss L, Mell MW, Goodney PP, Johanning J, Hockenberry J, Arya S. *J Vasc Surg*. 2019 May 27.

Statins Have a Dose-dependent Effect on Amputation and Survival in Peripheral Artery Disease Patients. Arya S, Khakharia A, Binney Z, Demartino RR, Brewster L, Goodney P, Wilson PWF. *Circulation*. 2018 Jan 12.



Euan A. Ashley, BSc, MB ChB, FRCP, DPhil

Associate Dean, School of Medicine

Professor, Medicine - Cardiovascular Medicine; Professor, Genetics; Professor, Biomedical Data Science; Professor (by courtesy), Pathology; Co-Director, Stanford Data Science Initiative; Director, Stanford Clinical Genomics Program; Co-Director, Center for Digital Health; Director, Stanford Cardiopulmonary Exercise Testing Laboratory

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PROFILE med.stanford.edu/profiles/Euan_Ashley

LAB ashleylab.stanford.edu

CENTER 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

White House Honoree

One Brave Idea

NIH Director's New Innovator Award

Innovative Research Award, American Heart Association (AHA)

Faculty Scholar, Donald E. and Delia B. Baxter Foundation

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

Allele-Specific Silencing Ameliorates Restrictive Cardiomyopathy Attributable to a Human Myosin Regulatory Light Chain Mutation. Zaleta-Rivera K, Dainis A, Ribeiro AJS, Cordero P, Rubio G, Shang C, Liu J, Finsterbach T, Parikh VN, Sutton S, Seo K, Sinha N, Jain N, Huang Y, Hajjar RJ, Kay MA, Szczesna-Cordary D, Pruitt BL, Wheeler MT, Ashley EA. *Circulation*. 2019 Aug 27;140(9):765-778.

Physical Activity, Sleep and Cardiovascular Health Data for 50,000 Individuals From the MyHeart Counts Study. Hershman SG, Bot BM, Shcherbina A, Doerr M, Moayed Y, Pavlovic A, Waggott D, Cho MK, Rosenberger ME, Haskell WL, Myers J, Champagne MA, Mignot E, Salvi D, Landray M, Tarassenko L, Harrington RA, Yeung AC, McConnell MV, Ashley EA. *Sci Data*. 2019 Apr 11;6(1):24.

Rapid Genome Sequencing in the Critically Ill. Buchan JG, White S, Joshi R, Ashley EA. *Clin Chem*. 2019 Jun;65(6):723-726.

Pathologic Gene Network Rewiring Implicates PPP1R3A as a Central Regulator in Pressure Overload Heart Failure. Cordero P, Parikh VN, Chin ET, Erbilgin A, Gloudemans MJ, Shang C, Huang Y, Chang AC, Smith KS, Dewey F, Zaleta K, Morley M, Brandimarto J, Glazer N, Waggott D, Pavlovic A, Zhao M, Moravec CS, Tang WHW, Skreen J, Malloy C, Hannenhalli S, Li H, Ritter S, Li M, Bernstein D, Connolly A, Hakonarson H, Lusis AJ, Margulies KB, Depaoli-Roach AA, Montgomery SB, Wheeler MT, Cappola T, Ashley EA. *Nat Commun*. 2019 Jun 24;10(1):2760.



Themistocles (Tim) Assimes, MD, PhD, FAHA

Associate Professor, Medicine - Cardiovascular Medicine
 Attending Cardiologist, Palo Alto VA Health Care System
 Director, Medical & Population Genomics for Precision Medicine, VA Palo Alto Health Care System
 Associate Director, Epidemiology Research and Information Center for Genomics, VA Palo Alto Hospital

EMAIL tassimes@stanford.edu

PROFILE med.stanford.edu/profiles/Themistocles-Assimes

EDUCATION/TRAINING

MD/PHD McGill University

MEDICINE RESIDENCY

McGill University

CARDIOLOGY FELLOWSHIP

Stanford University

BOARD CERTIFICATION

Cardiovascular Medicine, ABIM

CLINICAL FOCUS

General Cardiology

Primary and Secondary Prevention of Coronary Artery Disease

Echocardiography

HONORS AND AWARDS

50 faces of Vanier College (2018)

AHA Genomic & Precision Medicine & Epidemiology Mid-Career Research Award (2019)

Elected Member, American Society of Clinical Investigation (2020)

Steering Committee, Project Baseline (2017 - Present)

AHA Leadership Committee, Council of Genomics and Precision Medicine (2016 - Present)

Member, Ancillary Studies Committee, Women's Health Initiative (2010 - Present)

CURRENT RESEARCH

My investigative focus is the design, conduct, analysis, and interpretation of human molecular epidemiology studies of complex cardiovascular disease (CVD) related traits including coronary atherosclerosis and risk factors for coronary atherosclerosis. In addition to performing discovery and validation population genomic studies, we use contemporary genetic studies to gain important insight on the causal and mechanistic nature of associations between purported risk factors and adverse cardiovascular related health outcomes through instrumental variable analyses and genetic risk score association studies of intermediate phenotypes. I am also actively involved in studies assessing the clinical utility of novel genetic markers in isolation or in combination with other biomarkers.

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

Blood Leukocyte DNA Methylation Predicts Risk of Future Myocardial Infarction and Coronary Heart Disease. Agha G, Mendelson MM, Ward-Caviness CK, Joeannes R, Huan T, Gondalia R, Salfati E, [40 authors], Ferrucci L, Sotoodehnia N, Matullo G, Peters A, Fornage M, Assimes TL, Whitsel EA, Levy D, Baccarelli AA. *Circulation*, 2019 Aug 20;140(8):645-657.

Genetics of Blood Lipids Among ~300,000 Multi-ethnic Participants of the Million Veteran Program. Klarin D, Damrauer SM, Cho K, Sun YV, Teslovich TM, Honerlaw J, Gagnon DR, DuVall SL, [30 authors]; Global Lipids Genetics Consortium; Myocardial Infarction Genetics (MIGen) Consortium; Geisinger-Regeneron DiscovEHR Collaboration; VA Million Veteran Program, Concato J, Gaziano JM, O'Donnell CJ, Tsao PS, Kathiresan S, Rader DJ, Wilson PWF, Assimes TL. *Nat Genet*. 2018 Nov;50(11):1514-1523.

Leveraging Multi-ethnic Evidence for Risk Assessment of Quantitative Traits in Minority Populations. Coram MA, Fang H, Candille SI, Assimes TL, Tang H. *Am J Hum Genet*. 2017 Aug 3;101(2):218-226.

Fifteen New Risk Loci for Coronary Artery Disease Highlight Arterial-wall-specific Mechanisms. Howson JMM, Zhao W, Barnes DR, Ho WK, Young R, Paul DS, Waite LL, Freitag DF, Fauman EB, [60 authors], Chen YI, Nordestgaard BG, Assimes TL, Danesh J, Butterworth AS, Saleheen D. *Nat Genet*. 2017 Jul;49(7):1113-1119.



Leah Backhus, MD, MPH, FACS

Associate Professor of Cardiothoracic Surgery (Thoracic Surgery) at the Palo Alto Veterans Affairs Health Care System
Thoracic Track Residency Associate Program Director
Co-Director, Thoracic Surgery Health Services Research

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PROFILE med.stanford.edu/profiles/Leah-Backhus

EDUCATION/TRAINING

MD University of Southern California
Keck School of Medicine

MPH University of Washington

RESIDENCY UCLA David Geffen School of Medicine and USC Medical Center

INTERNSHIP USC Medical Center

AB Stanford University, Human Biology

BOARD CERTIFICATION

Thoracic Surgery, ABTS
General Surgery, ABS

HONORS & AWARDS

MEMBER

American Medical Association
Society of Thoracic Surgeons
International Association for the Study of Lung Cancer
Fellow, American College of Surgeons
Western Thoracic Surgical Association
Women in Thoracic Surgery
Professional member of the Patient Centered Outcomes Research Institute (PCORI) Advisory Panel on Improving Healthcare Systems

CURRENT RESEARCH

Leah Backhus trained in general surgery at the University of Southern California and cardiothoracic surgery at the University of California Los Angeles. She practices at Stanford Hospital and is Chief of Thoracic Surgery at the VA Palo Alto. Her surgical practice consists of general thoracic surgery with special emphasis on thoracic oncology and minimally invasive surgical techniques. She is Co-Director of the Thoracic Surgery Clinical Research Program and has independent grant funding with a VA Merit Award through the Veterans Affairs Administration Health Services Research & Development. She also has grant funding as a co-PI on an RO1 clinical trial titled, "A Mechanistic Clinical Trial of JAK Inhibition to Prevent Ventilator-induced Diaphragm Dysfunction.". Her current research interests are in imaging surveillance following treatment for lung cancer and cancer survivorship. Outside of Stanford, she is also a member of the National Lung Cancer Roundtable in conjunction with the American Cancer Society; serves as the Chair of the Women and Lung Cancer Task Group; and serves as Chair of the Thoracic Surgery Review Committee for the ACGME.

SELECTED PUBLICATIONS

Thirty-day Unplanned Postoperative Inpatient and Emergency Department Visits Following Thoracotomy. Shaffer R, Backhus L, Finnegan MA, Remington AC, Kwong JZ, Curtin C, Hernandez-Boussard T. *J Surg Res.* 2018 Oct;230:117-124.

Unhealthy Alcohol Use is Associated With Postoperative Complications in Veterans Undergoing Lung Resection. Graf SA, Zeliadt SB, Rise PJ, Backhus LM, Zhou XH, Williams EC. *J Thorac Dis.* 2018 Mar;10(3):1648-1656.

Intraoperative Costs of Video-assisted Thoracoscopic Lobectomy can be Dramatically Reduced Without Compromising Outcomes. Richardson MT, Backhus LM, Berry MF, Vail DG, Ayers KC, Benson JA, Bhandari P, Teymourtash M, Shrager JB. *J Thorac Cardiovasc Surg.* 2018 Mar;155(3):1267-1277.e1.

Patients Reported Outcomes in Thoracic Surgery. Pompili C, Absalom K, Velikova G, Backhus L. *J Thorac Dis.* 2018 Feb;10(2):703-706.

Imaging Surveillance and Survival for Surgically Resected Non-small-cell Lung Cancer. Backhus LM, Farjah F, Liang CK, He H, Varghese TK Jr, Au DH, Flum DR, Zeliadt SB. *J Surg Res.*; 2016 Jan; 200(1): 171-6.

Failure to Rescue and Pulmonary Resection for Lung Cancer. Farjah F, Backhus L, Cheng A, Englum B, Kim S, Saha-Chaudhuri P, Wood DE, Mulligan MS, Varghese TK. *J Thorac Cardiovasc Surg.* 2015 May; 149 (5): 1365-71.

Predictors of Imaging Surveillance for Surgically Treated Early-stage Lung Cancer. Backhus LM, Farjah F, Zeliadt SB, Varghese TK, Cheng A, Kessler L, Au DH, Flum DR. *Ann Thorac Surg.*; 2014 Dec; 98 (6): 1944-51; discussion 1951-2.



Hans-Christoph Becker, MD

Professor of Radiology (General Radiology) at the Stanford University Medical Center

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EDUCATION/TRAINING

MD Ludwig-Maximilians-University, Germany

INTERNSHIP Ludwig-Maximilians-University, Germany

RESIDENCY Ludwig-Maximilians-University, Germany

HONORS & AWARDS

MEMBER

Radiological Society of North America

North American Society of Cardiovascular Imaging

Society of Computed Tomography & Magnetic Resonance

Society of Cardiac Computed Tomography

European Society of Radiology

CURRENT RESEARCH

My current research focus is applying radiomics and deep learning algorithms to tumor response assessment with computed tomography, positron emission tomography and magnetic resonance imaging. Together with the 3D lab, I am establishing standardized response assessment for different tumor entities and new targeted and immunotherapies with cross sectional imaging for patients in clinical trials. From my former work, my area of expertise includes contrast induced nephropathy, new image reconstruction methods and radiation protection strategies, meta-analysis for the predictive value of cardiac CT, as well as large clinical surveys in the field of radiation exposure habits. My recent publications dealt with the comparison of intravascular ultrasound with computed tomography for the assessment of myocardial coronary artery bridges. My primary clinical focus is cardiovascular and body imaging.

SELECTED PUBLICATIONS

Contrast Administration in CT: A Patient-Centric Approach. Kalra MK, Becker HC, Enterline DS, Lowry CR, Molvin LZ, Singh R, Rybicki FJ. *J Am Coll Radiol*, 2019 Mar;16(3):295-301.

Myocardial Bridges on Coronary Computed Tomography Angiography Correlation with Intravascular Ultrasound and Fractional Flow Reserve. Forsdahl SH, Rogers IS, Schnittger I, Tanaka S, Kimura T, Pargaonkar VS, Chan FP, Fleischmann D, Tremmel JA, Becker HC. *Circ. J.* 2017 Nov 24.



Daniel Bernstein, MD

Associate Dean for Curriculum and Scholarship
Stanford University School of Medicine
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

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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

Committee on Curriculum and Academic Policy

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

Our recent work has focused on the mechanism by which mutations in sarcomeric proteins such as myosin lead to the clinical phenotypes of hypertrophic cardiomyopathy (HCM). Utilizing human induced pluripotent stem cell-derived cardiomyocytes, with mutations induced by CRISPR/Cas9 gene editing, we are undertaking a multi-scale approach ranging from structural and function studies on the single myosin molecule, to the individual myofibril, to whole cells and to microengineered tissues. To better understand cardiomyocyte mechano-transduction, we are applying FRET sensors in critical sarcomeric and junctional proteins. We are also studying a large biobank of myocardial samples from patients with HCM, combining transcriptomics and metabolomics with measurements of mitochondrial function to determine the degree to which HCM is a disease of altered cardiac energetics. These studies will allow us to correlate findings from hiPSC-CMs with actual patient samples. Another focus of our lab has been on the molecular mechanisms of RV hypertrophy and its transition to RV failure, and how this differs from LV failure. I am also involved in several clinical/translational projects: a multi-center clinical study to evaluate novel biomarkers for post-transplant lymphoproliferative disorder in pediatric solid organ transplant patients; the Pediatric Cardiac Genomics Consortium, an NIH initiative to sequence 10,000 trios for genes associated with congenital heart disease; and a study to use immune profiling to predict adverse outcomes after pediatric left ventricular assist device (LVAD) implantation.

SELECTED PUBLICATIONS

β -Cardiac Myosin Hypertrophic Cardiomyopathy Mutations Release Sequestered Heads and Increase Enzymatic Activity. Adhikari AS, Trivedi DV, Sarkar SS, Song D, Kooiker KB, Bernstein D, Spudich JA, Ruppel KM. *Nature Commun.*, 10: 2685, 2019.

Drp1/Fis1 Interaction Mediates Mitochondrial Dysfunction in Septic Cardiomyopathy. Haileselassie B, Mukherjee R, Joshi AU, Napier BA, Massis LM, Ostberg NP, Queliconi BB, Monack D, Bernstein D, Mochly-Rosen D. *J. Mol. Cell. Cardiol.*, 130: 160-169, 2019.

Functional Assays to Screen and Dissect Genomic Hits: Doubling Down on the National Investment in Genomic Research. Musunuru K, Bernstein D, Cole FS, Khokha M, Lee F, Lin S, McDonald T, Moskowitz I, Quertermous T, Sankaran V, Schwartz D, Silverman E, Zhou X, Hasan A, Luo J. *Circulation: Genomic and Precision Medicine*, 11:e002178, 2018.

Physiological Mitochondrial Fragmentation is a Cardiac Adaptation to Increased Demand. Coronado M, Zhao M, Fajardo G, Jung G, Gottlieb R, Bernstein D. *Circulation Research*, 122: 282-295, 2018.

miR-21 is Associated With Fibrosis and Right Ventricular Failure. Reddy S, Hu D-Q, Zhao M, Blay E, Sandeep N, Ong S-G, Jung G, Kooiker KB, Coronado M, Fajardo G, Bernstein D. *JCI Insight*, 2(9): e91625, 2017.



Helen M. Blau, PhD

Donald E. and Delia B. Baxter Foundation Professor & Director,
Baxter Laboratory for Stem Cell Biology

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EDUCATION/TRAINING

PHD Harvard University

ELECTED MEMBER

National Academy of Sciences

National Academy of Medicine

National Academy of Inventors

Pontifical Academy of Sciences

American Institute for Medical & Biological Engineering

American Academy of Arts & Sciences

American Association for the Advancement of Science

American Heart Association

Harvard Board of Overseers

HONORS & AWARDS

Ellison Medical Foundation, Senior Scholar Award

AACR-Irving Weinstein Award

NIH MERIT Award

NIH Challenge Grant

NIH EUREKA Grant

NIH Director's Transformative Research Award

FASEB Excellence in Science Award

HONORARY DOCTORATE

University of Nijmegen, Holland

University of York, England

PRESIDENT

International Society of Differentiation

Society for Developmental Biology

COUNCIL MEMBER

National Academy of Medicine

NIH National Institute on Aging

American Academy of Arts and Sciences

CURRENT RESEARCH

Dr. Blau's research area is stem cell biology, aging, and regenerative medicine. She is world renowned for her work on nuclear reprogramming and demonstration of the plasticity of cell fate using cell fusion. Her lab made the unexpected finding that short telomeres are a hallmark of genetic dilated cardiomyopathies and constitute premature aging disorders. Blau's lab identified biomaterials and molecular regulators that synergize to rejuvenate aged muscle stem cell function, augmenting strength. From these studies, new therapeutic paradigms have emerged for cardiac and skeletal muscle disorders.

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

Stem Cells in the Treatment of Disease. Blau HM, Daley GQ. *N Engl J Med.*, 2019 May 2;380(18):1748-1760.

Glucose Metabolism Drives Histone Acetylation Landscape Transitions that Dictate Muscle Stem Cell Function. Yucel N, Wang YX, Mai T, Porpiglia E, Lund PJ, Markov G, Garcia BA, Bendall SC, Angelo M, Blau HM. *Cell Rep.*, 2019 Jun 25;27(13):3939-3955.e6.

Telomere Shortening is a Hallmark of Genetic Cardiomyopathies. Chang ACY, Chang ACH, Kirillova A, Sasagawa K, Su W, Weber G, Lin J, Termglinchan V, Karakikes I, Seeger T, Dainis AM, Hinson JT, Seidman J, Seidman CE, Day JW, Ashley E, Wu JC, Blau HM. *Proc Natl Acad Sci USA.* 2018 Sep 11;115(37):9276-9281.

Induction of Muscle Stem Cell Quiescence by the Secreted Niche Factor Oncostatin. M. Sampath SC, Sampath SC, Ho ATV, Corbel SY, Millstone JD, Lamb J, Walker J, Kinzel B, Schmedt C, Blau HM. *Nature Commun.* 2018 Apr 18;9(1):1531.

Bioengineering Strategies to Accelerate Stem Cell Therapeutics. Madl CM, Heilshorn SC, Blau HM. *Nature.* 2018 May;557(7705):335-342.

NKX3-1 is Required for Induced Pluripotent Stem Cell Reprogramming and Can Replace OCT4 in Mouse and Human iPSC Induction. Mai T, Markov GJ, Brady JJ, Palla A, Zeng H, Sebastiano V, Blau HM. *Nature Cell Biol.* 2018 Aug;20(8):900-908.

Telomere Shortening and Metabolic Compromise Underlie Dystrophic Cardiomyopathy. Chang AC, Ong SG, LaGory EL, Kraft PE, Giaccia AJ, Wu JC, Blau HM. *Proc Natl Acad Sci USA.* 2016 Nov 15; 113 (46):13120-13125.



Carlos Bustamante, PhD

Professor of Biomedical Data Science, Genetics, and (by courtesy) Biology

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EDUCATION/TRAINING

PHD Harvard University

HONORS & AWARDS

Marshall Sherfield Fellow, Marshall Aid Commemoration Commission (2001-2002)

Sloan Research Fellow in Molecular Biology, Sloan Foundation (2007-2009)

Provost Award for Distinguished Research, Cornell University (2008)

MacArthur Fellow, John D. and Catherine T. MacArthur Foundation (2010)

CURRENT RESEARCH

My research focuses on analyzing genome wide patterns of variation within and between species to address fundamental questions in biology, anthropology, and medicine. My group works on a variety of organisms and model systems ranging from humans and other primates to domesticated plant and animals. Much of our research is at the interface of computational biology, mathematical genetics, and evolutionary genomics.

SELECTED PUBLICATIONS

An Unexpectedly Complex Architecture for Skin Pigmentation in Africans. Martin AR, Lin M, Granka JM, Myrick JW, Liu X, Sockell A, Atkinson EG, Werely CJ, Möller M, Sandhu MS, Kingsley DM, Hoal EG, Liu X, Daly MJ, Feldman MW, Gignoux CR, Bustamante CD, Henn BM. *Cell*. 2017 Nov 30;171(6):1340-1353.e14.

Genetic Mapping and Biochemical Basis of Yellow Feather Pigmentation in Budgerigars. Cooke TF, Fischer CR, Wu P, Jiang TX, Xie KT, Kuo J, Doctorov E, Zehnder A, Khosla C, Chuong CM, Bustamante CD. *Cell*. 2017 Oct 5;171(2):427-439.e21.

FIRE: Functional Inference of Genetic Variants That Regulate Gene Expression. Ioannidis NM, Davis JR, DeGorter MK, Larson NB, McDonnell SK, French AJ, Battle AJ, Hastie TJ, Thibodeau SN, Montgomery SB, Bustamante CD, Sieh W, Whittemore AS. *Bioinformatics*. 2017 Dec 15;33(24):3895-3901.

Human Demographic History Impacts Genetic Risk Prediction Across Diverse Populations. Martin AR, Gignoux CR, Walters RK, Wojcik GL, Neale BM, Gravel S, Daly MJ, Bustamante CD, Kenny EE. *Am J Hum Genet*. 2017 Apr 6;100(4):635-649.

Population Genetic Analysis of the DARC Locus (Duffy) Reveals Adaptation From Standing Variation Associated With Malaria Resistance in Humans. McManus KF, Taravella AM, Henn BM, Bustamante CD, Sikora M, Cornejo OE. *PLoS Genet*. 2017 Mar 10;13(3):e1006560.



Scott Ceresnak, MD

Associate Professor of Pediatric Cardiology
Program Director, Pediatric Cardiology Fellowship Program Director, Non-Invasive Electrophysiology

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EDUCATION/TRAINING

BA/MD Rutgers University combined 7-year program / Robert Wood Johnson Med School (2002)

INTERNSHIP Weill Cornell School of Medicine (2003)

RESIDENCY Weill Cornell School of Medicine (2005)

FELLOWSHIP
New York Presbyterian Hospital Columbia (2008)
Lucile Packard Children's Hospital at Stanford (2009)

BOARD CERTIFICATION
Pediatric Cardiology, American Board of Pediatric Cardiology (2008)
Adult Congenital Heart Disease, American Board of Internal Medicine (2015)

HONORS & AWARDS

Fellow, American Academy of Pediatrics
Member, American Heart Association

Member, American College of Cardiology
Member, Heart Rhythm Society

Member, Pediatric and Congenital Electrophysiology Society

Member, Pediatric Society of Greater New York

Member, New York Pediatric Electrophysiology Society

CURRENT RESEARCH

My research involves clinical and translational work in heart rhythm disorders in children and adults with congenital heart disease. My primary area of interest is in novel methods of signal analysis and approaches to ablation in children with SVT. I am also involved in efforts to evaluate arrhythmias in adults with congenital heart disease, multi-center collaborations involving the evaluation of children with WPW, and collaborations on device therapies in children and adults with heart disease and cardiomyopathies.

I truly love what I do. It is a privilege to care for my patients and to work with a tremendously bright and motivated group of caregivers and scholars here at Stanford.

SELECTED PUBLICATIONS

Life-Threatening Event Risk in Children With WPW: A Multi-center International Study. Etheridge SP, Escudero CA, Blaufox AD, Law IH, Dechert-Crooks BE, Stephenson EA, Dubin AM, Ceresnak SR, Motonaga KS, Skinner JR, Marcondes LD, Perry JC, Collins KK, Seslar SP, Cabrera M, Uzun O, Cannon BC, Aziz PF, Kubuš P, Tanel RE, Valdes SO, Sami S, Kertesz NJ, Maldonado J, Erickson C, Moore JP, Asakai H, Mill L, Abcede M, Spector ZZ, Menon S, Shwayder M, Bradley DJ, Cohen MI, Sanatani S. *JACC Clin Electrophysiol.* 2018 Apr;4(4):433-444.

Pediatric Cardiology Boot Camp: Description and Evaluation of a Novel Intensive Training Program for Pediatric Cardiology Trainees. Ceresnak, S. R., Axelrod, D. M., Motonaga, K. S., Johnson, E. R., Krawczeski, C. D. *Pediatric Cardiology*, 2016; 37 (5): 834-844.

Electrocardiographic Repolarization Abnormalities and Increased Risk of Life-threatening Arrhythmias in Children With Dilated Cardiomyopathy. Chen, S., Motonaga, K. S., Hollander, S. A., Almond, C. S., Rosenthal, D. N., Kaufman, B. D., May, L. J., Avasarala, K., Dao, D. T., Dubin, A. M., Ceresnak, S. R. *Heart Rhythm*, 2016; 13 (6): 1289-1296.

50 is the New 70: Short Ventriculoatrial Times are Common in Children With Atrioventricular Reciprocating Tachycardia. Ceresnak, S. R., Doan, L. N., Motonaga, K. S., Avasarala, K., Trela, A. V., Reddy, C. D., Dubin, A. M. *Heart Rhythm*, 2015; 12 (7): 1541-1547.

Wolff-Parkinson-White Syndrome (WPW) and Athletes: Darwin at Play? Ceresnak, S. R., Dubin, A. M. *Journal of Cardiovascular Electrophysiology*, 2015; 48 (3): 356-361.



Glenn Chertow, MD

Professor of Medicine (Nephrology) and, by courtesy, of Health Research and Policy (Epidemiology)

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EDUCATION/TRAINING

MD Harvard Medical School

MPH Harvard School of Public Health

RESIDENCY Brigham and Women's Hospital

FELLOWSHIP Brigham and Women's Hospital

BOARD CERTIFICATION
Internal Medicine (ABIM); Nephrology (ABIM)

CLINICAL FOCUS

Nephrology, Dialysis, Hypertension, Mineral metabolism

HONORS & AWARDS

Elected Member, American Society of Clinical Investigation (2004)

National Torchbearer Award, American Kidney Fund (2007)

Senior Mentor, Network of Minority Research Investigators, NIDDK (2008-)

Denise O'Leary Award for Clinical Excellence, Stanford Health Care (2014)

Elected Member, Association of American Physicians (2015)

Belding H. Scribner Award, American Society of Nephrology (2015)

Elected Member, National Academy of Medicine (2015)

David M. Hume Memorial Award, National Kidney Foundation (2018)

CURRENT RESEARCH

Dr. Chertow's research interests are focused on clinical epidemiology, health services research, and clinical trials in acute and chronic kidney disease. In addition to his own research program, he devotes considerable effort in collaborative research and in mentoring junior faculty, fellows, residents and other trainees.

You miss 100% of the shots you don't take.
— Wayne Gretzky

SELECTED PUBLICATIONS

Chronic Kidney Disease and Risk of Death, Cardiovascular Events and Hospitalization. Go AS, Chertow GM, Fan D, McCulloch CE, Hsu CY. *N Engl J Med* 2004; 351:1296-1305.

Intensity of Renal Support for Acute Kidney Injury in the Critically Ill. Palevsky PM, Zhang JH, O'Connor TZ, Chertow GM, Crowley ST, Choudury D, Finkel K, Kellum JA, Paganini E, Schein RMH, Smith MW, Swanson KM, Vijayan A, Watnick S, Star RA, Peduzzi P. *N Engl J Med* 2008; 359:7-20.

In Center Hemodialysis Six Times per Week Versus Three Times per Week. Chertow GM, Levin NW, Beck GJ, et al.; Frequent Hemodialysis Network Trial Group. *N Engl J Med* 2010; 363:2287-2300.

The Effect of Cinacalcet on Cardiovascular Disease in Hemodialysis. Chertow GM, Block GA, Correa-Rotter R, Drüeke TB, Floege J, Goodman WG, Herzog CA, Kubo Y, London GM, Mahaffey KW, Mix TCH, Moe SM, Trotman ML, Wheeler DC, Parfrey PS. *N Engl J Med* 2012; 367:2482-2494.

Bardoxolone Methyl in Type 2 Diabetes and Stage 4 Chronic Kidney Disease. De Zeeuw D, Akizawa T, Audhya P, Bakris GL, Chin M, Christ-Schmidt H, Goldsberry A, Houser M, Krauth M, Lambers-Heerspink HJ, McMurray JJ, Meyer CJ, Parving HH, Remuzzi G, Toto RD, Vaziri ND, Wanner C, Wittes J, Wrolstad D, Chertow GM. *N Engl J Med* 2013; 369:2492-2503.

Effect of Etelcalcetide Versus Placebo on Serum Parathyroid Hormone in Patients Receiving Hemodialysis With Secondary Hyperparathyroidism: Two Randomized Clinical Trials. Block GA, Bushinsky DA, Cunningham J, Drueke TB, Ketteler M, Kewalramani R, Martin KJ, Mix TC, Moe SM, Patel UD, Silver J, Spiegel DM, Sterling L, Walsh L, Chertow GM. *JAMA* 2017; 317:146-155.



Gerald Crabtree, MD

Department of Pathology Professor in Experimental Pathology
and Professor of Developmental Biology

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LAB crablab.stanford.edu/

EDUCATION/TRAINING

MD Temple University

HONORS & AWARDS

Investigator, Howard Hughes Medical
Institute

CURRENT RESEARCH

We are interested in the role of chromatin regulation in development and human cancer. Recent studies have shown that over 20% of all human cancers have mutations in the subunits of an ATP-dependent chromatin regulatory complex we discovered several years ago. The genes behave as tumor suppressors and sometimes as oncogenes. We hope to understand the fundamental mechanisms used by these complex to prevent cancer.

These same chromatin remodeling complexes are frequently mutated in a variety of human neurologic diseases, reflecting their roles in the development of the nervous system. It appears that these specialized roles in the nervous system are due to the use of unique neural specific assemblies in the developing human and mouse brain. We hope to understand their fundamental mechanism of action through biochemical and genetic approaches in combination with genome-wide analysis and genome sequencing studies.

Finally, we are developing new ways of making conditional alleles of mammalian genes using synthetic ligands that we hope will bring about a new fusion of biochemical and genetic approaches to understanding and controlling fundamental biologic processes. Recently we have developed an effective way of both assaying and modifying chromatin regulation in living cells.

SELECTED PUBLICATIONS

Rapid Chromatin Repression by Aire Provides Precise Control of Immune Tolerance. Koh AS, Miller EL, Buenrostro JD, Moskowitz DM, Wang J, Greenleaf WJ, Chang HY, Crabtree GR. *Nat Immunol.* 2018 Feb;19(2):162-172.

Dominant-negative SMARCA4 Mutants Alter the Accessibility Landscape of Tissue-unrestricted Enhancers. Hodges HC, Stanton BZ, Cermakova K, Chang CY, Miller EL, Kirkland JG, Ku WL, Veverka V, Zhao K, Crabtree GR. *Nat Struct Mol Biol.* 2018 Jan;25(1):61-72.

Rapid and Reversible Epigenome Editing by Endogenous Chromatin Regulators. Braun SMG, Kirkland JG, Chory EJ, Husmann D, Calarco JP, Crabtree GR. *Nat Commun.* 2017 Sep 15;8(1):560.

TOP2 Synergizes With BAF Chromatin Remodeling for Both Resolution and Formation of Facultative Heterochromatin. Miller EL, Hargreaves DC, Kadoch C, Chang CY, Calarco JP, Hodges C, Buenrostro JD, Cui K, Greenleaf WJ, Zhao K, Crabtree GR. *Nat Struct Mol Biol.* 2017 Apr;24(4):344-352.



Bianxiao Cui, PhD

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EDUCATION/TRAINING

PHD University of Chicago

HONORS & AWARDS

Michael and Kate Barany Award,
Biophysical Society, (2018)

NSF INSPIRE award, National Science
Foundation (2013)

NIH New Innovator Award, National
Institutes of Health (2012)

Hellman Scholar, Hellman Foundation
(2011)

NSF CAREER award, National Science
Foundation (2011)

Packard Fellowships for Science and
Engineering, David and Lucile Packard
Foundation (2009)

CURRENT RESEARCH

Our research focuses on developing biophysical and chemical tools to probe fundamental questions in biology. We bring together state-of-the-art nanotechnology, physical science, engineering, and molecular and cell biology, to advance current understandings of biological processes in neurons and cardiomyocytes. Currently, there are two major research directions: (1) Developing nanoscale tools to probe electric activities and cellular processes at the cell-material interface. In this area, we have developed nanoscale electric probes for measuring intracellular action potentials in electrogenic cells, as well as structural probes and optical probes with high sensitivity and subcellular localization. (2) Employing optical, magnetic, and optogenetic tools to understand nerve growth factor (NGF) signaling in neurons. By adapting a variety of microscopy, optogenetic, nanotechnology and biochemical tools, we aim for a deeper understanding of NGF signaling in normal neurons and neurodegenerative diseases.

Life is like riding a bicycle. To keep your balance,
you must keep moving. – Albert Einstein

SELECTED PUBLICATIONS

Understanding CRY2 Interactions for Optical Control of Intracellular Signaling. Duan L, Hope J, Ong Q, Lou HY, Kim N, McCarthy C, Acero V, Lin MZ, Cui B. *Nature Communications*, 8, 547 (2017).

Nanoscale Manipulation of Membrane Curvature for Probing Endocytosis in Live Cells. Zhao W, Hanson L, Lou HY, Akamatsu M, Chowdary PD, Santoro F, Marks JR, Grassart A, Drubin DG, Cui Y, Cui B. *Nature Nanotechnology*, 12, 750, (2017).

Accurate Nanoelectrode Recording of Human Pluripotent Stem Cell-derived Cardiomyocytes for Assaying Drugs and Modeling Disease. Lin ZC, McGuire A, Burrridge PW, Matsa E, Lou HY, Wu JC, Cui B. *Microsystems & Nanoengineering*, 3, 16080 (2017).

Vertical Nanopillars for In Situ Probing of Nuclear Mechanics in Adherent Cells. Hanson L, Zhao W, Lou HY, Lin ZL, Lee SW, Chowdary PD, Cui Y, Cui B, *Nature Nanotechnology*, 10, 554-562 (2015).

Iridium Oxide Nanotube Electrodes for Intracellular Measurement of Action Potentials. Lin ZL, Xie C, Osakada Y, Cui Y, Cui B. *Nature Communications*, 5, 3206 (2014).

Intracellular Recording of Action Potentials by Nanopillar Electroporation. Xie C, Lin ZL, Hanson L, Cui Y, Cui B. *Nature Nanotechnology*, 7, 185-190 (2012).



Ronald L. Dalman, MD

Walter C. and Elsa R. Chidester Professor and Chief, Division of Vascular Surgery
Stanford Medicine Associate Dean for Market Development

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DIVISION vascular.stanford.edu

EDUCATION/TRAINING

MD University of Michigan

GENERAL SURGERY RESIDENCY

University of Washington

VASCULAR SURGERY FELLOWSHIP

Oregon Health Sciences University

BOARD CERTIFICATION

General Vascular Surgery, American
Board of Surgery

Surgery, American Board of Surgery

CLINICAL FOCUS

Abdominal Aortic Aneurysm Disease

HONORS & AWARDS

FELLOW

American College of Surgeons, American
Heart Association

MEMBER

American Surgical Association; Society
of University Surgeons;

Vascular Surgery Board, American Board
of Surgery (2016 to 2022).

Board of Governors, American College of
Surgeons

Society for Vascular Surgery (Vice-
President 2018-2019, President 2020-
2021)

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

Inhibition of VEGF (Vascular Endothelial Growth Factor)-A or its Receptor Activity Suppresses Experimental Aneurysm Progression in the Aortic Elastase Infusion Model. Xu B, Iida Y, Glover KJ, Ge Y, Wang Y, Xuan H, Hu X, Tanaka H, Wang W, Fujimura N, Miyata M, Shoji T, Guo J, Zheng X, Gerritsen M, Kuo C, Michie SA, Dalman RL. *Arterioscler Thromb Vasc Biol.* 2019.

Open vs. Endovascular Repair of Abdominal Aortic Aneurysm. Lederle FA, Kyriakides TC, Stroupe KT, Freischlag JA, Padberg FT Jr., Matsumura JS, Huo Z, Johnson GR; OVER Veterans Affairs Cooperative Study Group. *N Engl J Med.* 2019

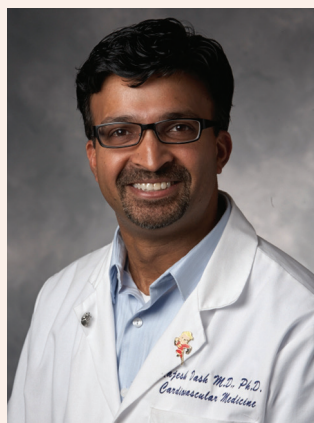
Infrarenal Endovascular Aneurysm Repair With Large Device (34- to 36-mm) Diameters is Associated With Higher Risk of Proximal Fixation Failure. McFarland G, Tran K, Virgin-Downey W, Sgroi MD, Chandra V, Mell MW, Harris EJ Jr., Dalman RL, Lee JT. *J Vasc Surg.* 2019.

Metformin Prescription Status and Abdominal Aortic Aneurysm Disease Progression in the US Veteran Population. Itoga NK, Rothenberg KA, Suarez P, Ho TV, Mell MW, Xu B, Curtin CM, Dalman RL. *J Vasc Surg.* 2019.

Decoding the Genomics of Abdominal Aortic Aneurysm. Li J, Pan C, Zhang S, Spin JM, Deng A, Leung LLK, Dalman RL, Tsao PS, Synder M. *Cell* 2018.

Episode-based Cost Reduction for Endovascular Aneurysm Repair. Itoga NK, Tang N, Patterson D, Ohkuma R, Lew R, Mell MW, Dalman RL. *J Vasc Surg.* 2018.

The Society for Vascular Surgery Practice Guidelines on the Care of Patients With an Abdominal Aortic Aneurysm. Chaikof EL, Dalman RL, Eskandari MK, Jackson BM, Lee WA, Mansour WA, Mastracci TM, Mell MW, Murad MH, Nguyen LL, Oderich GS, Patel MS, Schermerhorn ML, Starnes BW. *J Vasc Surg.* 2018.



Rajesh Dash, MD, PhD

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

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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 the prediction of coronary and cardiovascular disease in high risk patient populations, using population health and molecular imaging, as well as digital health technologies to achieve better preventive outcomes. I am Medical and Scientific Director of the Stanford South Asian Translational Heart Initiative (SSATHI). Our mission is to detect, treat, and prevent the onset of coronary and cardiometabolic diseases in young South Asians. We study this problem at the cellular and physiological levels, and validate our discoveries with partners in India. Within SSATHI, I launched CardioClick, a team-based video visit platform for patient visits that include physician visits, lifestyle intervention, and clinical research study conduction. CardioClick has attracted industry clinical sponsorship to test technologies designed for patient engagement and outcome improvement. This telemedicine platform is now being scaled across cardiovascular medicine and SHC. In addition, I study cell signaling in the heart and have developed molecular imaging probes that track to injured heart tissue or transplanted stem cells, such that we can visualize these injury or survival signals in real-time, non-invasively. In this capacity I am Co-Director of the Falk Cardiovascular MRI Facility. I am applying these imaging strategies in select high-risk patients.

Everyone has a plan until they get hit in the face.
— Mike Tyson

SELECTED PUBLICATIONS

Dose-dependent Cardioprotection of Moderate (32°C) Versus Mild (35°C) Therapeutic Hypothermia in a Porcine Acute Ischemia-reperfusion Injury Model. Dash R, Mitsutsake Y, Pyun W, Dawoud F, Lyons J, Tachibana A, Matsuura Y, Kolodgie FD, Virmani R, McConnell MV, Illindala U, Ikeno F, Yeung AC. *JACC Cardiovasc Interv.* 2018 Jan 22;11(2):195-205.

Tada Y. and Dash R. T1 Mapping for Infarct Characterization. T1-Mapping in Myocardial Disease. July 2018. Edited by Philip Yang. Copyright 2018. Chapter 6, pp 77-86.

Mn-Enhanced Magnetic Resonance Imaging Enables In Vivo Confirmation of Peri-Infarct Restoration Following Stem Cell Therapy in a Porcine Ischemia-Reperfusion Model. Dash, R., Kim, P. J., Matsuura, Y., Ikeno, F., Metzler, S., Huang, N. F., Lyons, J. K., Nguyen, P. K., Ge, X., Foo, C. W., McConnell, M. V., Wu, J. C., Yeung, A. C., Harnish, P., Yang, P. C. *Journal of the American Heart Association*; 2015; 4 (7).

Magnetic Resonance Imaging & Positron Emission Tomography Approaches to Imaging Vascular and Cardiac Inflammation. Amsallem M, Saito T, Tada Y, Dash R, McConnell MV. *Circ J.* 2016 May 25;80(6):1269-77.



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)

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INSTITUTE iti.stanford.edu

EDUCATION/TRAINING

BA Johns Hopkins

PHD Caltech

HONORS & AWARDS

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

King Faisal Prize

Behring-Heidelberger Prize, American Association of Immunologists

Novartis Prize for Basic Immunology

ELECTED MEMBER

National Academy of Sciences, USA

Institute of Medicine, National Academy of Sciences

Royal Society of London, UK

SCIENTIFIC ADVISORY BOARDS

Amgen, Chugai Pharmabody, 3T, Janux, Pact Bio, TCR Cure

CURRENT RESEARCH

My laboratory is interested in the molecular basis of T and B lymphocyte recognition, as well understanding the human immune system and its relationship to health and disease. These later efforts 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.

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

Identifying Specificity Groups in the T Cell Receptor Repertoire. Glanville, J., Huang, H., Nau, A., Hatton, O., Wagar, L.E., Rubelt, F., Ji, X., Han, A., Krams, S.M., Pettus, C., Haas, N., Lindestam-Arlehamn, C.S., Stte, A., Boyd, S.D., Scriba, T.J., Martinez, O.M., and Davis, M.M. *Nature*, 547(7661): 94-98, 2017.

Variation in the Human Immune System is Largely Driven by Non-heritable Influences. Brodin P, Jojic V, Gao T, Bhattacharya S, Angel CJ, Furman D, Shen-Orr S, Dekker CL, Swan GE, Butte AJ, Maecker HT, Davis MM. *Cell*; 2015 Jan 15; 160 (1-2): 37-47.

Transcript-indexed ATAC-seq Reveals Paired Single-cell T Cell Receptor Identity and Chromatin Accessibility for Precision Immune Profiling. Satpathy, A.T., Saligrama, N., Buenrostro, J.D., Wei, Y., Wu, B., Rubin, A.J., Granja, J.M., Lareau, C.A., Li, R., Qi, Y., Parker, K.R., Mumbach, M.R., Serratelli, W.S., Gennet, D.G., Schep, A.N., Corces, M.R., Kim, Y.H., Khavari, P.A., Greenleaf, W.J., Davis, M.M., and Chang, H.Y. *Nature Med* 24(5): 580-590, 2018.

Rebooting Human Immunology. Davis, M.M. and Brodin, P. *Ann Rev Immunology*. 36: 843-864 2018.



Vinicio A. de Jesus Perez, MD, FAHA, FCCP, ATSF

Associate Professor of Medicine with Tenure - Division of Pulmonary, Allergy and Critical Care Medicine

Co-Director, Stanford Translational Investigator Program

Co-Chair, DOM Diversity and Inclusion Committee

Chair, PHA PH Care for All Committee

Chair, International Pulmonary Vascular Diseases Consortium (iPVD)

Vice-chair, 3CPR Scientific & Clinical Education Lifelong Learning Committee

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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

American Society of Clinical

Investigation (ASCI) membership

Pulmonary Hypertension Association

Award for Outstanding K08

Be Heard Rare Challenge Disease

International Award

FELLOW, American College of Chest

Physicians

FELLOW, American Heart Association

FELLOW, American Thoracic Society

Keystone Symposia Fellowship

American Society of Clinical Invest.

Young Physician Scientist Award

ATS Pulmonary Circulation Assembly

Early Career award)

EDITORIAL BOARD

American Journal of Respiratory

and Critical Care Medicine, Pulmonary

Circulation, Circulation Research, AJP

Lung Cell Molecular Biology, PLoS One

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 pathways 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

Loss of Endothelial Derived WNT5a is Associated With Reduced Pericyte Recruitment and Small Vessel Loss in Pulmonary Arterial Hypertension. Ke Yuan, Elya Shamskhov, Mark Orcholski, Abinaya Nathan, Sushma Reddy, Hiroaki Honda, Vigneshwaran Mani, Yitian Zeng, Mehmet Ozen, Lingli Wang, Utkan Demirci, Wen Tian, Mark Nicolls and Vinicio A. de Jesus Perez. *Circulation*. 139(14):1710-1724 (2019).

Hydrogel-based Delivery of IL-10 Improves Treatment of Bleomycin-induced Lung Fibrosis in Mice. Elya Shamskhov, Michael Kratochvil, Mark Orcholski, Nadine Nagy, Gernot Kaber, Emily Steen, Swathi Balaji, Ke Yuan, Sundeeep Keswani, Ben Danielson, Max Gao, Carlos Medina, Abinaya Nathan, Ananya Chakraborty, Paul L. Bollyky and Vinicio A. de Jesus Perez. *Biomaterials*. 203:52-62 (2019).

A Unique Collateral Artery Development Program Promotes Neonatal Heart Regeneration. Soumyashree Das, Andrew B. Goldstone, Hanjay Wang, Justin Farry, Gaetano D'amato, Michael J. Paulsen, Anahita Eskandari, Camille E. Hironaka, Ragini Phansalkar, Bikram Sharma, Siyeon Rhee, Elya A. Shamskhov, Dritan Agalliu, Vinicio A. de Jesus Perez, Y. Joseph Woo and Kristy Red-Horse *Cell*. 176(5):1128-1142 (2019).

Beyond the Lungs: Systemic Manifestations of Pulmonary Arterial Hypertension. Nils P. Nickel, Ke Yuan, Peter Dorfmueller, Steve Provencher, Charly Lai, Sebastien Bonnet, Eric Austin, Carl Koch, Allison Morris, Frederic Perros, David Montani, Roham Zamanian and Vinicio A. de Jesus Perez. *American journal of respiratory and critical care medicine*, 2019 (in press).



Anne Dubin, MD

Professor of Pediatrics (Pediatric Cardiology) at the Lucile Salter Packard Children's Hospital
Director, Pediatric Arrhythmia

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EDUCATION/TRAINING

MD University of Rochester School of Medicine and Dentistry (1988)

INTERNSHIP Columbia Presbyterian Medical Center NY (1989)

RESIDENCY Columbia Presbyterian Medical Center NY (1991)

FELLOWSHIP
Children's Hospital of Philadelphia PA (1992)
Yale - New Haven Hospital CT (1995)

BOARD CERTIFICATION:

Pediatric Cardiology, American Board of Pediatric Cardiology (1998)

International Board of Heart Rhythm Examiners Pediatric Electrophysiology (2015)

American Board of Internal Medicine Adult Congenital Heart Disease (2015)

CLINICAL FOCUS

Pediatric Electrophysiology

CURRENT RESEARCH

I am most interested in the diagnosis and treatment of arrhythmia in pediatric heart failure, especially the use of resynchronization therapy in the pediatric and congenital heart population.

It's more than just the technology; it is our caring staff, colleagues, and modern facilities that make the difference for every patient.

SELECTED PUBLICATIONS

What have we learned in the last 20 years? A Comparison of a Modern Era Pediatric and Congenital Catheter Ablation Registry to Prior Pediatric Ablation Registries. Dubin AM, Jorgensen NW, Radbill AE, Bradley DJ, Silva JN, Tsao S, Kanter RJ, Tanel RE, Trivedi B, Young ML, Pflaum A, McCormack J, Seslar SP. *Heart Rhythm* 2018

Bridge to Success: A Better Method of Cryoablation for Atrioventricular Nodal Reentrant Tachycardia in Children. Reddy CD, Ceresnak SR, Motonaga KS, Avasarala K, Feller C, Trela A, Hanisch D, Dubin AM *Heart Rhythm* 2017; 14:1649-54

Pediatrics and Congenital Electrophysiology Society (PACES) Initiative on Device needs in Pediatric Electrophysiology, endorsed by PACES, FDA and Heart Rhythm Society. Dubin AM, Cannon BC, Saarel EV, Triedman JK, Berul CI, Bar-Cohen Y, Shah MJ, Paulsen J, Patel H, Reich J, Carlson MD, Stein K, Gilkerson JO, Kowal RC, Peiris V. *Heart Rhythm* 2018

A Novel Pacing Maneuver to Verify the Post-Pacing Interval minus the Tachycardia Cycle Length While Adjusting for Decremental Conduction: Using "Dual Chamber Entrainment" for Improved Supraventricular Tachycardia Discrimination. Kaiser D, Nasir JM, Liem B, Brodt C, Motonaga KS, Ceresnak SR, Turakhia MP, Dubin AM. *Heart Rhythm* 2018

A Pilot Study Assessing ECG versus ECHO Ventriculoventricular Optimization in Pediatric Resynchronization Patients. Punj, R., Hanisch, D., Motonaga, K. S., Rosenthal, D. N., Ceresnak, S. R., Dubin, A. M. *Journal of Cardiovascular Electrophysiology*; 2016; 27 (2): 210-216.



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EDUCATION/TRAINING

PHD Caltech (2003)

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

Vinculin Forms a Directionally Asymmetric Catch Bond With F-actin. Huang DL, Bax NA, Buckley CD, Weis WI, Dunn AR. *Science*. 2017 Aug 18;357(6352):703-706.

Single Molecule Force Measurements in Living Cells Reveal a Minimally Tensioned Integrin State. Chang AC, Mekhdjian AH, Morimatsu M, Denisin AK, Pruitt BL, Dunn AR. *ACS Nano*. 2016 Dec 27;10(12):10745-10752.

Energetics and Forces in Living Cells. Dunn, A. R., Price, A. *Physics Today*; 2015; 68 (2): 27-32.

Cell Adhesion. The Minimal Cadherin-catenin Complex Binds to Actin Filaments Under Force. Buckley, C. D., Tan, J., Anderson, K. L., Hanein, D., Volkmann, N., Weis, W. I., Nelson, W. J., Dunn, A. R. *Science*; 2014; 346 (6209).

Mechanical Control of the Sense of Touch by β -spectrin. Krieg, M., Dunn, A. R., Goodman, M. B. *Nature Cell Biology*; 2014; 16 (3): 224-233

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.



Daniel B. Ennis, PhD

Associate Professor, Department of Radiology, Stanford University
Director, Radiology Research, VA Palo Alto Health Care System

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EDUCATION/TRAINING

BS UCSD, Bioengineering

PHD Johns Hopkins, Biomedical Engineering

POST-DOC Stanford, Radiology and Cardiothoracic Surgery

HONORS & AWARDS

Society for Cardiovascular Magnetic Resonance, Fellow

Magnetic Resonance in Medicine, Deputy Editor

Imaging Technology Development (ITD) study section, Charter Member

CURRENT RESEARCH

The Cardiac Magnetic Resonance (CMR) Group develops translational cardiac and cardiovascular MRI techniques to study cardiovascular physiology and improve clinical care. Current research projects focus on: 1) characterizing several cardiac MRI biomarkers to detect the cardiomyopathy associated with Duchenne Muscular Dystrophy; and 2) developing MRI methods and a computational modeling framework to estimate changes in passive ventricular stiffness in patients with Heart Failure with Preserved Ejection Fraction (HFpEF). Our group is also very interested in further developing MRI methods that analyze cardiac structure, function, flow, and remodeling with particular emphasis on pulse sequence and gradient waveform design. One central aim is to increase the quantitative accuracy and reduce the image acquisition times for CMR exams.

The good life is one inspired by love and guided by knowledge. — Bertrand Russell

SELECTED PUBLICATIONS

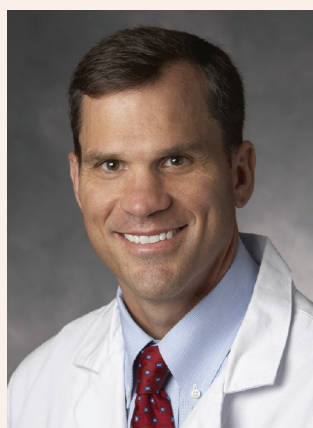
Highly Accelerated, Model-Free Diffusion Tensor MRI Reconstruction Using Neural Networks. Magnetic Resonance in Medicine. Aliotta, Nourzadeh H, Sanders J, Muller D, Ennis DB. *Med Phys*, 2019 Jan 24.

Time Optimized Four-dimensional Phase Contrast MRI with Real-time Convex Optimization of Gradient Waveforms and Fast Excitation Methods. Loecher M, Aliotta E, Magrath P, Ennis DB. *Magn Reson Med*, 2019 Mar 12.

High-Resolution Ex Vivo Microstructural MRI After Restoring Ventricular Geometry via 3D Printing. Functional Imaging and Modelling of the Heart. Cork TE, Perotti LE, Verzhbinsky IA, Aliotta E, Loecher M, Ennis DB. *FIMH*, 2019. Lecture Notes in Computer Science.

Patient Orientation Impacts Lead Tip Heating of Cardiac Active Implantable Medical Devices During MRI Exams. Martinez JA, Serano P, Ennis DB. *Radiology: Cardiothoracic Imaging*, 2019.

Estimating Aggregate Cardiomyocyte Strain Using In Vivo Diffusion and Displacement Encoded MRI. Verzhbinsky I, Magrath P, Aliotta E, Perotti LE, Ennis DB. *IEEE TMI*, 2019.



William Fearon, MD

Professor of Medicine - Cardiovascular Medicine
Director, Interventional Cardiology

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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

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

Division of Cardiovascular Medicine
Mentoring Award (2008)

Division of Cardiovascular Medicine
Teaching Award (2004, 2013, 2017,
2018)

American Society for Clinical
Investigation (2015)

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. For example, in collaboration with other members of the Cardiovascular Institute, we are investigating the effect of PCSK9 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

Accuracy of Fractional Flow Reserve Derived From Coronary Angiography. Fearon WF, Achenbach S, Engstrøm T, Assali A, Shlofmitz R, Jeremias A, Fournier S, J Kirtane A, Kornowski R, Greenberg G, Jubeh R, Kolansky DM, McAndrew T, Dressler O, Maehara A, Matsumura M, Leon MB, De Bruyne B. *Circulation*, 2019; 139:477-484.

Fractional Flow Reserve and Quality-of-Life Improvement After Percutaneous Coronary Intervention in Patients With Stable Coronary Artery Disease. Nishi T, Piroth Z, De Bruyne B, Jagic N, Möbius-Winkler S, Kobayashi Y, Derimay F, Fournier S, Barbato E, Tonino P, Jüni P, Pijls NHJ, Fearon WF. *Circulation*, 2018;138:1797-1804.

FAME 2 Trial Investigators. Clinical Outcomes and Cost-Effectiveness of Fractional Flow Reserve-Guided Percutaneous Coronary Intervention in Patients With Stable Coronary Artery Disease: Three-Year Follow-Up of the FAME 2 Trial (Fractional Flow Reserve Versus Angiography for Multivessel Evaluation). Fearon WF, Nishi T, De Bruyne B, Boothroyd DB, Barbato E, Tonino P, Jüni P, Pijls NHJ, Hlatky MA. *Circulation*, 2018;137:480-487.

Five-Year Outcomes with PCI Guided by Fractional Flow Reserve. Xaplanteris P, Fournier S, Pijls NHJ, Fearon WF, Barbato E, Tonino PAL, Engstrøm T, Käåb S, Dambrink JH, Rioufol G, Toth GG, Piroth Z, Witt N, Fröbert O, Kala P, Linke A, Jagic N, Mates M, Mavromatis K, Samady H, Irampen A, Oldroyd K, Campo G, Rothenbühler M, Jüni P, De Bruyne B; FAME 2 Investigators. *N Engl J Med*, 2018;379:250-259.



Jeffrey A. Feinstein, MD, MPH

Dunlevie Family Professor of Pulmonary Vascular Disease,
and Professor, by courtesy, of Bioengineering
Director, Vera Moulton Wall Center

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PROFILE profiles.stanford.edu/jeffrey-feinstein

EDUCATION/TRAINING

MD New York Medical College (1991)

MPH George Washington University,
Health Administration (1994)

MS Duke University, Biomedical
Engineering (1987)

INTERNSHIP & RESIDENCY

Children's Hospital National Medical
Center (1992, 1994)

FELLOWSHIP

Children's Hospital Boston (1998)
Children's Hospital National Medical
Center (1997)

BOARD CERTIFICATION

Pediatric Cardiology, ABP (1998)

CLINICAL FOCUS

Pulmonary Hypertension; Pulmonary
Vascular Disease; Pulmonary Vascular
Abnormalities; Congenital Heart
Defects; Biomechanical Engineering/
Bioengineering; Pediatric Cardiology

HONORS & AWARDS

The Dunlevie Family Professorship in
Pulmonary Vascular Disease

Medical Advisory Board, Alagille
Syndrome Alliance (2016–Present)

Medical Director, Pediatric Pulmonary
Hypertension Program, LPCH (1998–
Present)

Director, Vera Moulton Wall Center for
Pulmonary Vascular Disease, Stanford
University (2000–Present)

Director, Pediatric Cardiology Training
Program, Stanford University (2009–
2015)

Associate Chair, Education; Department
of Pediatrics (Fellowships), Stanford
University (2012–2016)

CURRENT RESEARCH

Research interests include (1) computer simulation and modeling of cardiovascular physiology with specific attention paid to congenital heart disease and its treatment, (2) the evaluation and treatment of pulmonary hypertension/pulmonary vascular diseases, and (3) development and testing of medical devices/therapies for the treatment of congenital heart disease and pulmonary vascular diseases.

SELECTED PUBLICATIONS

Pulmonary Lung Doppler Signals: Normative Data in a Pediatric Population Compared With Adults. Journal of Clinical Monitoring and Computing. Burstein, D. S., Hopper, R. K., McCarthy, E. K., Hall, K., Schatzberger, R., Palti, Y., Feinstein, J. A. *J Clin Monit Comput* (2019).

Evolution of Hemodynamic Forces in the Pulmonary Tree With Progressively Worsening Pulmonary Arterial Hypertension in Pediatric Patients. Yang, W., Dong, M., Rabinovitch, M., Chan, F. P., Marsden, A. L., Feinstein, J. A. *Biomech Model Mechanobiol*. 2019

Death or Resolution: The “Natural History” of Pulmonary Hypertension in Bronchopulmonary Dysplasia. Altit, G., Bhombal, S., Hopper, R. K., Tacy, T. A., Feinstein, J. *J Perinatol*. 2019 Jan 7.

Subcutaneous Treprostinil in Pediatric Patients With Failing Single-ventricle Physiology. Handler, S. S., Ogawa, M. T., Hopper, R. K., Sakarovitch, C., Feinstein, J. A. *J Heart Lung Trans* 2018.

Right Ventricular Stroke Work Correlates with Outcomes in Pediatric Pulmonary Arterial Hypertension. Yang, W., Marsden, A. L., Ogawa, M. T., Sakarovitch, C., Hall, K. K., Rabinovitch, M., Feinstein, J. A. *Pulm Circ*. 2018 Jul-Sep.

Relationship Between Pulmonary Vascular Resistance and Right Ventricular Dysfunction Assessed by MRI in Pediatric Pulmonary Arterial Hypertension. Hopper, R. K., Chen, H., Ogawa, M., Feinstein, J. A. *Amer Thoracic Soc*. 2018.



Michael Fischbein, MD, PhD

Associate Professor of Cardiothoracic Surgery (Adult Cardiac Surgery)

Director of Thoracic Aortic Surgery

Program Director, Department of Cardiothoracic Surgery

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EDUCATION/TRAINING

MD Boston University (1995)

PHD UCLA (2001)

RESIDENCY UCLA (2003)

FELLOWSHIP Stanford University (2006)

BOARD CERTIFICATION

Thoracic Surgery, American Board of Thoracic Surgery,
General Surgery, American Board of Surgery

CLINICAL FOCUS

Cardiothoracic Surgery
Aortic Diseases
Thoracic Surgery
Anomalous Coronary Artery (ACA)
Aortic Stenosis
Bicuspid Aortic Valve Disease
Coarctation of the Aorta
Coronary Artery Disease

HONORS & AWARDS

Donald Morton Research Award,
Department of Surgery - UCLA School of Medicine (2003)

Ronald K. Tompkins Golden Apple
Teaching Award, UCLA School of Medicine (2003)

Golden Scalpel Award for Teaching
Excellence, Division of General Surgery - UCLA School of Medicine (2003)

MEMBER

American Heart Assoc. Society of Thoracic Surgeons, San Francisco Surgical Society, Western Thoracic Surgical Society Assoc for Academic Surgery, American College of Surgeons, Society of University Surgeons

CURRENT RESEARCH

Our group is interested the molecular and genetic mechanisms of aortic aneurysm/dissection development, and the molecular mechanisms of aneurysm formation in Marfan Syndrome. Clinical research interests include thoracic aortic diseases (aneurysms, dissections).

SELECTED PUBLICATIONS

Anatomically Specific Reactive Oxygen Species Production Participates in Marfan Syndrome Aneurysm Formation. Emrich F, Penov K, Arakawa M, Dhablanian N, Burdon G, Pedroza AJ, Koyano TK, Kim YM, Raaz U, Connolly AJ, Iosef C, Fischbein MP. *J Cell Mol Med*, 2019; Aug 11.

Statins Reduce Thoracic Aortic Aneurysm Growth in Marfan Syndrome Mice via Inhibition of the Ras-Induced ERK (Extracellular Signal-Regulated Kinase) Signaling Pathway. Sato T, Arakawa M, Tashima Y, Tsuboi E, Burdon G, Trojan J, Koyano T, Youn YN, Penov K, Pedroza A, Shabazzi M, Palmon I, Nguyen M, Connolly A, Yamgaguchi A, Fischbein MP. *JAHA*, 2018; e008543.

Long-term miR-29b Suppression Reduces Aneurysm Formation in a Marfan Mouse Model. Okamura H, Emrich F, Trojan J, Chiu P, Dalal AR, Arakawa M, Sato T, Penov K, Koyano T, Pedroza A, Connolly AJ, Rabinovitch M, Alvira C, Fischbein MP. *Physiol Rep*. 2017 Apr;5(8).

Enhanced Caspase Activity Contributes to Aortic Wall Remodeling and Early Aneurysm Development in a Murine Model of Marfan Syndrome. Emrich FC, Okamura H, Dalal AR, Penov K, Merk DR, Raaz U, Hennigs JK, Chin JT, Miller MO, Pedroza AJ, Craig JK, Koyano TK, Blankenberg FG, Connolly AJ, Mohr FW, Alvira CM, Rabinovitch M, Fischbein MP. *Arterioscler Thromb Vasc Biol*.; 2015, Jan; 35 (1): 146-54.

Assessment of Elastin Deficit in a Marfan Mouse Aneurysm Model Using an Elastin-Specific Magnetic Resonance Imaging Contrast Agent. Okamura H, Pisani LJ, Dalal AR, Emrich F, Dake BA, Arakawa M, Onthank DC, Cesati RR, Robinson SP, Milanesi M, Kotek G, Smit H, Connolly AJ, Adachi H, McConnell M, Fischbein MP. *Circ Cardiovasc Imaging* 2014; July 7 (4): 690-6.

miR-29b Participates in Early Aneurysm Development in Marfan Syndrome. Merk D, Chin JT, Dake BA, Maegdefessel L, Miller MO, Kimura N, Tsao PS, Iosef C, Berry G, Mohr FW, Spin J, Alvira CM, Robbins RC, Fischbein MP. *miR-29b Participates in Early Aneurysm Development in Marfan Syndrome.* *Circ Research* 2011; 110 (2); 312-24.



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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

A Y-shaped Bifurcation-dedicated Stent for the Treatment of De Novo Coronary Bifurcation Lesions: An IVUS Analysis From the BRANCH Trial. Sakata K, Koo BK, Waseda K, Nakatani D, Yock PG, Whitbourn R, Worthley SG, Ormiston J, Webster M, Wilkins GT, Honda Y, Meredith IT, Fitzgerald PJ. *EuroIntervention*. 2014, Aug 30.

Baseline and 9 Months IVUS Analysis of the Bifurcation-dedicated Biolimus A9-eluting Axxess Stent System: The DIVERGE IVUS Substudy. Buysschaert I, Sanidas E, Hasegawa T, Koo BK, Honda Y, Fitzgerald PJ, Verheye S. *Catheter Cardiovasc Interv*.; 2014, Dec 1; 84(7):1062-70.



Dominik Fleischmann, MD

Professor, Radiology
Chief, Cardiovascular Imaging
Director of CT, Stanford HealthCare
Medical Director, Stanford 3DQ Lab

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radiology.stanford.edu/patient/clinical_sections/computedtomography
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) (2009-201)

FELLOW

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

MEMBER

American Heart Association
North American Society for
Cardiovascular Imaging

ASSOCIATE EDITOR

Radiology (Cardiac Imaging)

DEPUTY EDITOR

Radiology – Cardiothoracic Imaging

EXECUTIVE & STEERING COMMITTEE

MEMBER Stanford Cardiovascular
Institute

CURRENT RESEARCH

My research area broadly covers cardiovascular imaging, ranging from technical optimization of image acquisition for improving temporal and spatial resolution, to the application of novel imaging technologies for detecting, staging and treatment planning of cardiovascular diseases, post-processing and modelling, and individual risk stratification based on data extracted from high-resolution imaging.

I have a strong clinical and research interest in acute aortic diseases, where my lab develops novel clinically applicable tools to measure and monitor patients with aortic aneurysms and dissections. We are the primary site of a multicenter international effort to improve treatment decisions for patients with so-called uncomplicated type B aortic dissection.

Currently we only use a tiny fraction of the wealth of information contained in modern multidimensional imaging data. This is the time to exploit these data.

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

SELECTED PUBLICATIONS

Acute Limited Tears of the Thoracic Aorta. Chin AS, Willemink MJ, Kino A, Hinostroza V, Sailer AM, Fischbein MP, Dake MD, Mitchell RS, Berry G, Miller DC, Fleischmann D. *J Am Coll Cardiol.* 2018 June 19;71(24):2773-2785.

Incremental Value of Calcifications of the Aortomitral Continuity After Transcatheter Aortic Valve Replacement. Willemink MJ, Maret E, Moneghetti KJ, Kim JB, Haddad F, Kobayashi Y, Nishi T, Cauwenberghs N, Kuznetsova T, Higashigaito K, Sailer AM, Yeung AC, Lee AM, Miller DC, Fischbein M, Fearon WF, Fleischmann D. *Radiology: Cardiothoracic Imaging*, 2019.

Improving Spatial Resolution at CT: Development, Benefits, and Pitfalls. Wang J, Fleischmann D. *Radiology.* 2018 June 26;289(1).

The Effect of Iodinated Contrast Medium Volume on Post-contrast Acute Kidney Injury after Contrast-enhanced CT in 3,450 Patients. Koci M, Graber-Naidich A, Sucha D, Mastrodicasa D, Turner VL, Cheng XS, Willemink MJ, Fleischmann D. *Oral presentation at Radiological Society of North America Annual Meeting, Chicago, IL Dec 2019.*



Victor Froelicher, MD

Professor Emeritus, Medicine - Cardiovascular Medicine
 Professor (by courtesy), Orthopedics
 Consultant, Stanford Sports Cardiology Clinic
 VAPAHSC Cardiologist Consultant

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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

Ambulatory and Resting
 Elctrocardiography, Sports Cardiology

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

CURRENT RESEARCH

My research and clinical interests include cardiovascular screening of athletes of all ages, non-invasive electrocardiography (rest and ambulatory), ECG patches, atrial fibrillation, and automated arrhythmia analysis.

SELECTED PUBLICATIONS

QT Corrections for Long QT Risk Assessment: Implications for the Preparticipation Examination. Hadley D, Hsu D, Pickham D, Drezner JA, Froelicher VF. *Clin J Sport Med.* 2019 Jul;29(4):285-291.

Blood Pressure in Athletic Preparticipation Evaluation and the Implication for Cardiac Remodelling. Hedman K, Moneghetti KJ, Christle JW, Bagherzadeh SP, Amsallem M, Ashley E, Froelicher V, Haddad F. *Heart.* 2019 Aug;105(16):1223-1230.

Comparison of QT Interval Measurement Methods and Correction Formulas in Atrial Fibrillation. Tooley J, Ouyang D, Hadley D, Turakhia M, Wang P, Ashley E, FroelicherV, Perez M. *Am J Cardiol.* 2019 Jun 01;123(11):1822-1827.

Limitations of Electrocardiography for Detecting Left Ventricular Hypertrophy or Concentric Remodeling in Athletes. Hedman K, Moneghetti KJ, Hsu D, Christle JW, Patti A, Ashley E, Hadley D, Haddad F, Froelicher V. *The American Journal of Medicine.* 2019 Nov 15.



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
Division Chief, Canary Center for Cancer Early Detection at Stanford
Division Chief, Molecular Imaging Program at Stanford (MIPS)
Director, Precision Health and Integrated Diagnostics Center (PHIND)

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DEPARTMENT radiology.stanford.edu

PROGRAM mips.stanford.edu

EDUCATION/TRAINING

MD and 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

IEEE Marie Skłodowska--Curie Award

Benedict Cassen Prize

J. Allyn Taylor International Prize in
Medicine

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

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

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

National Academy of Medicine
National Academy of Inventors
American Association for the
Advancement of Science
Stanford Cardiovascular Institute

CURRENT RESEARCH

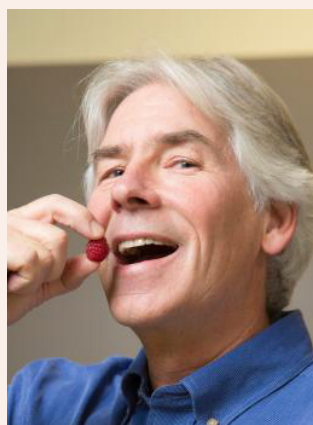
My laboratory is developing imaging assays to monitor fundamental cellular/molecular events in living subjects including patients. Technologies such as micro positron emission tomography (microPET), bioluminescence optical imaging, fluorescence optical imaging, micro computerized axial tomography (microCAT), ultrasound, photoacoustics, and 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 early cancer detection. 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.

SELECTED PUBLICATIONS

Evaluation of Integrin $\alpha v \beta 6$ Cystine Knot PET Traces to Detect Cancer and Idiopathic Pulmonary Fibrosis. R.H. Kimura, L. Wang, B. Shen, L. Huo, W. Tummers, F.V. Filipp, H.H. Guo, T. Haywood, L. Abou-Elkacem, L. Barrato, F. Habte, R. Devulapally, T.H. Witney, Y. Cheng, S. Tikole, S. Chakraborti, J. Nix, C.A. Bonagura, N. Hatami, J.J. Mooney, T. Desai, S. Turner, R.S. Gaster, A. Otte, B.C. Visser, G.A. Poultsides, J. Norton, W. Park, M. Stolowitz, K. Lau, E. Yang, A. Natarajan, O. Illovich, S. Srinivas, A. Srinivasan, R. Paulmurugan, J. Willmann, F.T. Chin, Z. Cheng, A. Iagaru, F. Li, S.S. Gambhir. *Nature Communications*, 10: 4673, 2019.

In Vivo Translations of the CIRPI System – Revealing Molecular Pathology of Rabbit Aortic Atherosclerotic Plaques. R. Zaman, S. Yousufi, H. Chibana, F. Ikeno, S.R. Long, S.S. Gambhir, F.T. Chin, M.V. McConnell, L. Xing, A. Yeung. *Journal of Nuclear Medicine*, [E-pub ahead of print] 2019.

A Dual-Modality Hybrid Imaging System Harnesses Radioluminescence and Sound to Reveal Molecular Pathology of Atherosclerotic Plaques. R.T. Zaman, S. Yousefi, S.R. Long, T. Saito, M. Mandella, Z. Qiu, R. Chen, C.H. Contag, S.S. Gambhir, F.T. Chin, B.T. Khuri-Yakub, M.V. McConnell, K.K. Shung, L. Xing. *Scientific Reports*, 8(1): 8992, 2018.



EDUCATION/TRAINING

PHD University of California, Berkeley

HONORS & AWARDS

Outstanding Faculty Advisor, Program in Human Biology (2011-2012)

Teaching Award, Stanford Prevention Research Center (2011)

Teaching Award, Stanford Prevention Research Center (2005)

Christopher Gardner, PhD

Rehnborg Farquhar Professor

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CURRENT RESEARCH

I have been involved in more than a dozen human intervention trials involving more than 2,000 participants. These have examined the potential health benefits of garlic, soy, antioxidants, fish oil, ginkgo biloba, vegetarian diets, and weight loss diets. In the past few years my long-term research interests have shifted to include a second line of inquiry that falls more under the umbrella of food systems research. This shift came from the realization and appreciation that focusing on "health" as a motivator can drastically limit the potential impact for change. This led me to seek out colleagues across all seven of Stanford's schools, including those in the fields of business, law, education, earth sciences, and medicine, as well as many disciplines from the school of humanities and sciences. My long-term vision is to create a world-class Stanford Food Systems Initiative and build on the idea that Stanford is uniquely positioned geographically, culturally, and academically, to address national and global crises in obesity and diabetes that are directly related to our broken food systems. My current nutrition and food research involves institutional food settings such as universities, worksites, hospitals, schools, and retirement communities. I serve on the Scientific Advisory board of the Culinary Institute of America and have many new colleagues that are chefs who are striving to elevate the unapologetic deliciousness of food, while at the same time including human and environmental health. My long-term goal is to contribute to and accelerate positive changes in the food environment and social norms.

The river delights to lift us free, if only we dare let go. Our true work is this voyage, this adventure.

— Richard Bach

SELECTED PUBLICATIONS

Effect of Low-fat vs. Low-carbohydrate Diet on 12-month Weight Loss in Overweight Adults and the Association With Genotype Pattern or Insulin Secretion: A Randomized Clinical Trial [the Diet Intervention Examining The Factors Interacting with Treatment Success (DIETFITS)] study. Gardner CD, Trepanowski JF, Del Gobbo LC, Hauser ME, Rigdon J, Ioannidis JPA, Desai M, King AC. *JAMA* 2018;319(7):667-79.

Maximizing the Intersection of Human Health and the Health of the Environment Regarding the Amount and Type of Protein Produced and Consumed in the US. Gardner CD, Hartle JC, Garrett RD, Offringa LC, Wasserman AS. *Nutr Rev* 2019;77:197-215.

Nutrition Therapy for Adults With Diabetes or Prediabetes: A Consensus Report. Evert AB, Dennison M, Gardner CD, Garvey WT, Lau KHK, MacLeod J, Mitri J, Pereira RF, Rawlings K, Robinson S, Saslow L, Uelmen S, Urbanski PB, Yancy WS Jr. *Diabetes Care*. 2019 May;42(5):731-754.

Increasing Vegetable Intake by Emphasizing Tasty and Enjoyable Attributes: A Randomized Controlled Multi-site Intervention for Taste-focused Labeling. Turnwald B, Gardner CD, Crum A. et al., *Psych Science*. 2019;30:1603-1615.

Changes in Blood Lipid Concentrations Associated With Changes in Intake of Dietary Saturated Fat in the Context of a Healthy Low-carbohydrate Diet: A Secondary Analysis of the DIETFITS trial. Shih CW, Hauser ME, Aronica L, Rigdon J, Gardner CD. *Am J Clin Nutr*. 2019;109:433-441.

Food Revolution. Gardner CD, Hauser ME. *Am J Lifestyle Med*. 2017;11(5):387-96.



Francois Haddad, MD

Clinical Associate Professor, Medicine (Cardiovascular)
Director, Stanford CVI Biomarker and Phenotypic Core Laboratory

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EDUCATION/TRAINING

MD University of Montreal

PHD(c) University of Montreal

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

Precision Medicine and Biomarker focused research

Cardio-immunology

Heart Transplantation

HONORS & AWARDS

American Heart Association 3CPR Council

Fellow American Heart Association

Expert Panelist, American Thoracic Association

Task Force member, WHO Pulmonary Hypertension Committee (2013 - 2018)

Right Heart Expert Panel, American Thoracic Society (2015 - 2018)

CURRENT RESEARCH

My research focuses on precision cardiovascular health. Our laboratory focuses on (1) identifying the most useful imaging and circulating biomarkers to guide management of cardiovascular health and disease; (2) on elucidating the mechanisms of heart failure with preserved ejection fraction and metabolic cardiomyopathy; (3) on developing novel therapeutics for right heart failure and (4) on cardio-immunology. Our laboratory focuses on applying precision imaging, exercise testing and biomarker to facilitate translational studies in heart failure, pulmonary hypertension, diabetes mellitus and stem cell therapy.

Our mission is to contribute to precision cardiovascular health through comprehensive physiological phenotyping and a focused approach to biomarker discovery. We are developing new imaging and biomarker platforms as well as new computational approaches to biomarker discovery.

SELECTED PUBLICATIONS

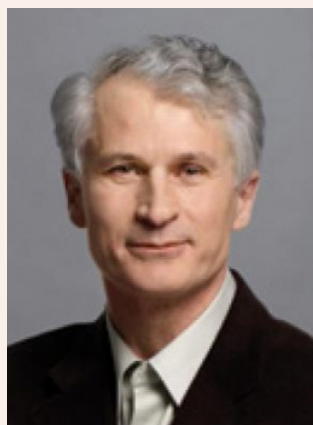
A Longitudinal Big Data Approach for Precision Health. Schüssler-Fiorenza Rose SM, Contrepois K, Moneghetti KJ, Zhou W, Mishra T, Mataraso S, Dagan-Rosenfeld O, Ganz AB, Dunn J, Hornburg D, Rego S, Perelman D, Ahadi S, Sailani MR, Zhou Y, Leopold SR, Chen J, Ashland M, Christle JW, Avina M, Limcaoco P, Ruiz C, Tan M, Butte AJ, Weinstock GM, Slavich GM, Sodergren E, McLaughlin TL, Haddad F, Snyder MP. *Nat Med.* 2019 May;25(5):792-804.

Approaching Higher Dimension Imaging Data Using Cluster-Based Hierarchical Modeling in Patients with Heart Failure Preserved Ejection Fraction. Kobayashi Y, Tremblay-Gravel M, Boralkar KA, Li X, Nishi T, Amsallem M, Moneghetti KJ, Bouajila S, Selej M, Ozen MO, Demirci U, Ashley E, Wheeler M, Knowlton KU, Kouznetsova T, Haddad F. *Sci Rep.* 2019 Jul 18;9(1):10431.

The 2013 ACC/AHA Risk Score and Subclinical Cardiac Remodeling and Dysfunction: Complementary in Cardiovascular Disease Prediction. Cauwenberghs N, Hedman K, Kobayashi Y, Vanassche T, Haddad F, Kuznetsova T. *Int J Cardiol.* 2019 Dec 15;297:67-74.

Autoantibody Profiling on a Plasmonic Nano-gold Chip for the Early Detection of Hypertensive Heart Disease. Li X, Kuznetsova T, Cauwenberghs N, Wheeler M, Maecker H, Wu JC, Haddad F, Dai H. *Proc Natl Acad Sci USA.* 2017 Jul 3;114(27):7089-7094.

Noninvasive Imaging in the Assessment of the Cardiopulmonary Vascular Unit. Noordegraaf, A. V., Haddad, F., Bogaard, H. J., Hassoun, P. M. *Circulation*; 2015; 131 (10): 899-913.



Frank Hanley MD

Lawrence Crowley, MD Endowed Professor in Child Health
Cardiothoracic Surgery

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EDUCATION/TRAINING

MD Tufts University

INTERNSHIP UCSF Medical Center

RESIDENCY UCSF Medical Center

FELLOWSHIP UCSF Medical Center

BOARD CERTIFICATION

Thoracic Surgery, ABTS

CLINICAL FOCUS

Cardiac Surgery

Cardiothoracic Surgery, Pediatric

Thoracic Surgery

HONORS & AWARDS

Outstanding Graduating Student in Surgery (Martin J Loeb Award), Tufts Medical School (1978)

Alpha Omega Alpha medical society, University of California, San Francisco (1986)

Outstanding Resident Teaching Award, University of California, San Francisco (1986)

Outstanding Surgical Chief Resident Award, University of California, San Francisco (1986)

Excellence in Teaching Award in the Department of Surgery, University of California, San Francisco (1992-94)

Lawrence Crowley, MD, Endowed Professorship in Child Health, Stanford (2004)

CURRENT RESEARCH

Dr. Hanley's research and clinical work focuses on the development of interventional techniques for fetal and neonatal treatment of congenital heart disease, pulmonary, vascular physiology, and the neurologic impact of open-heart surgery. He developed and pioneered the unifocalization procedure, in which a single procedure is used to repair a complex and life-threatening congenital heart defect rather than several staged open-heart surgeries as performed by other surgeons. Currently, Lucile Packard Children's Hospital is a worldwide referral site for patients requiring these procedures. Hanley is also actively involved in exploring new approaches for the surgical repair of pediatric heart disease and is developing evidence-based guidelines for clinical care.

SELECTED PUBLICATIONS

Postoperative Outcomes of Children With Tetralogy of Fallot, Pulmonary Atresia, and Major Aortopulmonary Collaterals Undergoing Reconstruction of Occluded Pulmonary Artery Branches Asija, R., Koth, A. M., Velasquez, N., Chan, F. P., Perry, S. B., Hanley, F. L., McElhinney, D. *Annals of Thoracic Surgery*. 2016; 101 (6): 2329-2334.

Pulmonary Valve Repair for Patients With Acquired Pulmonary Valve Insufficiency. Said, S. M., Mainwaring, R. D., Ma, M., Tacy, T. A., Hanley, F. L. *Annals of Thoracic Surgery*. 2016; 101 (6): 2294-2301.

Surgical Repair of 115 Patients With Anomalous Aortic Origin of a Coronary Artery From a Single Institution. Mainwaring, R. D., Murphy, D. J., Rogers, I. S., Chan, F. P., Petrossian, E., Palmon, M., Hanley, F. L. *World Journal for Pediatric & Congenital Heart Surgery*. 2016; 7 (3): 353-359

Exploring the Role of Polycythemia in Patients With Cyanosis After Palliative Congenital Heart Surgery. Siehr, S. L., Shi, S., Hao, S., Hu, Z., Jin, B., Hanley, F., Reddy, V. M., McElhinney, D. B., Ling, X. B., Shin, A. Y. *Pediatric Critical Care Medicine*. 2016; 17 (3): 216-222

Mitral Stenosis and Aortic Atresia-A Risk Factor for Mortality After the Modified Norwood Operation in Hypoplastic Left Heart Syndrome. Siehr, S. L., Maeda, K., Connolly, A. A., Tacy, T. A., Reddy, V. M., Hanley, F. L., Perry, S. B., Wright, G. E. *Annals of Thoracic Surgery*. 2016; 101 (1): 162-168.

Critical Role of Coaptive Strain in Aortic Valve Leaflet Homeostasis: Use of a Novel Flow Culture Bioreactor to Explore Heart Valve Mechanobiology. Maeda, K., Ma, X., Hanley, F. L., Riemer, R. K. *Journal of the American Heart Association*. 2016; 5 (8).



Robert A. Harrington, MD

Arthur L. Bloomfield Professor of Medicine

Chair, Department of Medicine, Stanford University School of Medicine

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DEPARTMENT medicine.stanford.edu

EDUCATION/TRAINING

MD Tufts University

MEDICINE RESIDENCY

University of Massachusetts

INTERVENTIONAL

CARDIOLOGY FELLOWSHIP

Duke University

BOARD CERTIFICATION

ABIM Internal Medicine, ABIM

Cardiovascular Disease, ABIM

Interventional Cardiology

CLINICAL FOCUS

Cardiovascular Disease

HONORS & AWARDS

Elected member: Institute of Medicine/
National Academy of Medicine

Elected member: Association of
University Cardiologists

Elected member: Association of
American Physicians

Master, American College of Cardiology

2017 Clinical Research Prize, American
Heart Association

President-elect 2018-19, American Heart
Association

President 2019-2020, American Heart
Association

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

Alirocumab and Cardiovascular Outcomes after Acute Coronary Syndrome. Schwartz GG, Steg PG, Szarek M, Bhatt DL, Bittner VA, Diaz R, Edelberg JM, Goodman SG, Hanotin C, Harrington RA, Jukema JW, Lecorps G, Mahaffey KW, Moryusef A, Pordy R, Quintero K, Roe MT, Sasiela WJ, Tamby JF, Tricoci P, White HD, Zeiher AM; ODYSSEY OUTCOMES Committees and Investigators. *N Engl J Med.* 2018 Nov 29;379(22):2097-2107.

Alirocumab Reduces Total Nonfatal Cardiovascular and Fatal Events in the ODYSSEY OUTCOMES Trial. Szarek M1, White HD2, Schwartz GG3, Alings M4, Bhatt DL5, Bittner VA6, Chiang CE7, Diaz R8, Edelberg JM9, Goodman SG10, Hanotin C11, Harrington RA12, Jukema JW13, Kimura T14, Kiss RG15, Lecorps G11, Mahaffey KW12, Moryusef A9, Pordy R16, Roe MT17, Tricoci P18, Xavier D19, Zeiher AM20, Steg PG21; ODYSSEY OUTCOMES Committees and Investigators. *J Am Coll Cardiol.* 2018 Oct 27.

Planning and Conducting the ISCHEMIA Trial. Maron DJ, Harrington RA, Hochman JS. *Circulation.* 2018 Oct 2;138(14):1384-1386.

Evaluating Health Technology Through Pragmatic Trials: Novel Approaches to Generate High-Quality Evidence. Peterson ED, Harrington RA. *JAMA.* 2018 Jul 10;320(2):137-138.

Mobile Health Advances in Physical Activity, Fitness, and Atrial Fibrillation: Moving Hearts. McConnell MV, Turakhia MP, Harrington RA, King AC, Ashley EA. *J Am Coll Cardiol.* 2018 Jun 12;71(23):2691-2701.

Canakinumab for Atherosclerotic Disease. Harrington RA. *N Engl J Med.* 2018 Jan 11;378(2):199-200.

What This Computer Needs Is a Physician: Humanism and Artificial Intelligence. Verghese A, Shah NH, Harrington RA. *JAMA.* 2018 Jan 2;319(1):19-20.



Paul A. Heidenreich, MD, MS

Professor, Medicine - Cardiovascular Medicine
 Professor (by courtesy), Health Research and Policy
 Vice-Chair for Quality, Department of Medicine
 Director of Echocardiography, VA Palo Alto Health Care System

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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. I am the Director of Echocardiography, VA Palo Alto Health Care System and a Research Associate of Primary Care and Outcomes Research Center.

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

2018 AHA/ACC/AACVPR/AAPA/ABC/ACPM/ADA/AGS/APhA/ASPC/NLA/PCNA Guideline on the Management of Blood Cholesterol: A Report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines. Grundy SM, Stone NJ, Bailey AL, Beam C, Birtcher KK, Blumenthal RS, Braun LT, de Ferranti S, Faiella-Tommasino J, Forman DE, Goldberg R, Heidenreich PA, Hlatky MA, Jones DW, Lloyd-Jones D, Lopez-Pajares N, Ndumele CE, Orringer CE, Peralta CA, Saseen JJ, Smith SC Jr, Sperling L, Virani SS, Yeboah J. *J Am Coll Cardiol*. 2018 Nov 8.

Association Between Offering Limited Left Ventricular Ejection Fraction Echocardiograms and Overall Use of Echocardiography. Sandhu AT, Parizo J, Moradi-Ragheb N, Heidenreich PA. *JAMA Intern Med*. 2018 Sep 1;178(9):1270-1272.

US Department of Justice Investigations of Implantable Cardioverter-Defibrillators and Quality Improvement in Health Care. Heidenreich PA. *JAMA*. 2018 Jul 3;320(1):40-42.

Cost-Effectiveness of Sacubitril-Valsartan in Patients Who Have Heart Failure With Reduced Ejection Fraction. Sandhu AT, Ollendorf DA, Chapman RH, Pearson SD, Heidenreich PA. *Ann Intern Med*. 2017 Apr 18;166(8):607-608.



Sarah Heilshorn, PhD

Lee Otterson Faculty Scholar
Associate Professor, Materials Science and Engineering
Associate Professor (by courtesy), Chemical Engineering
Associate Professor (by courtesy), Bioengineering

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EDUCATION/TRAINING

MS California Institute of Technology

PHD California Institute of Technology

RESEARCH FELLOWSHIP UC Berkeley

HONORS & AWARDS

NIH Director's New Innovator Award

National Science Foundation Career Award

UK-US Stem Cell Collaboration Development Award

Young Talent Award, State Key Laboratory of Molecular Engineering Polymers, China

ASSOCIATE EDITOR

Science Advances

ELECTED POSITIONS

Board of Directors, Materials Research Society

Fellow, Royal Society of Chemistry

Fellow, American Institute for Medical and Biological Engineering

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.

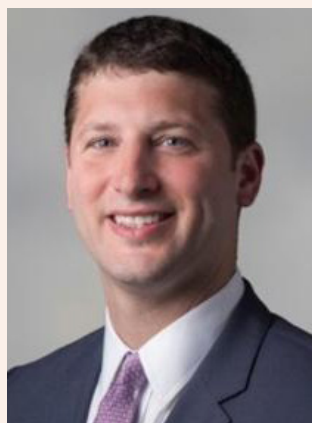
SELECTED PUBLICATIONS

Engineered Stem Cell Mimics to Enhance Stroke Recovery. George PM, Oh B., Dewi RE, Hua T., Cai L., Levinson A., Liang X., Krajina BA, Bliss TM, Heilshorn SC, Steinberg GK. *Biomaterials*, 2018, 178:63-72.

Bioengineering Strategies to Accelerate Stem Cell Therapeutics. Madl CM, Heilshorn SC, Blau H. *Nature*, 2018, 557:335-342.

Protein-engineered Hydrogels Enhance the Survival of Induced Pluripotent Stem Cell-derived Endothelial Cells for Treatment of Peripheral Arterial Disease. Foster A., Dewi R., Cai L., Hou L., Strassberg Z., Alcazar C., Heilshorn SC., Huang N. *Biomaterials Science*, 2018, 6:614-622.

Maintenance of Neural Progenitor Cell Stemness in 3D Hydrogels Requires Matrix Remodelling. Madl CM, LeSavage BL, Dewi R., Dinh C., Stowers R., Khariton M., Lampe K., Nguyen D., Chaudhuri O., Enejder A., Heilshorn SC. *Nature Materials*, 2017, 16:1233-1242.



William Hiesinger, MD

Assistant Professor, Department of Cardiothoracic Surgery
Surgical Director, Mechanical Circulatory Support Program

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EDUCATION/TRAINING

MD University of Pennsylvania

BA Dartmouth College

SURGICAL 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

Keith Reemtsma Surgical Resident of the Year Award, UPenn (2014)

Jonathan E. Rhoads Research Award, UPenn (2011)

Vivien Thomas Young Investigator Award Finalist, AHA (2010)

Alpha Omega Alpha (AOA) Honor Medical Society, UPenn (2007)

Clyde F. Baker Research Prize, Department of Surgery, UPenn (2007)

I. S. Ravdin Prize, Department of Surgery, UPenn (2007)

COMMITTEES

Society of Thoracic Surgeons Workforce on Surgical Treatment of End-Stage Cardiopulmonary Disease, National Committee (2017 - Present)

American Heart Association, Council for Cardiothoracic & Vascular Surgery (2017 - Present)

CURRENT RESEARCH

My research focus is on the application of novel computational and bioengineering methods towards understanding and treating heart failure. My research group spans the disciplines of cellular and molecular biology, protein engineering, machine learning, and fluid mechanics. Our current projects include the development of a novel precision engineered chemokine platform to treat heart failure, and the application of single cell transcriptomics to understand the effects of chemokines in myocardial recovery. Additionally, we are developing a custom machine learning pipeline to predict outcomes from pre-operative echocardiograms alone, and we are exploring the use of computational fluid dynamics to understand how changes in blood flow influences outcomes in our patients.

SELECTED PUBLICATIONS

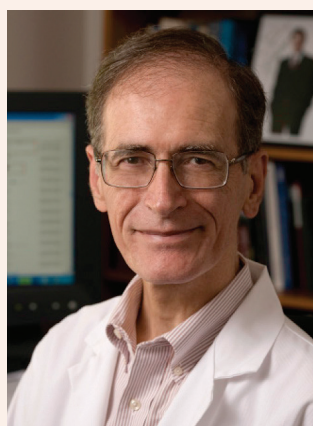
Use of Patient-Specific Computational Models for Optimization of Aortic Insufficiency after Implantation of Left Ventricular Assist Device. Kasinpila P, Kong S, Fong R, Shad R, Kaiser A, Marsden A, Woo YJ, Hiesinger W. *J Thoracic Cardiovasc Surg* 2020 (in press).

A Modified Implantation Technique for Temporary Right Ventricular Assist Device: Enabling Ambulation and Less Invasive Decannulation. Rinewalt D, Shudo Y, MacArthur JW, Woo YJ, Hiesinger W. *J Card Surg*. 2019 Oct;34(10):1083-1085.

Building a Deter Bridge: Remodeling, Recovery, and a Better Understanding of the Biologic Foundation of Mechanical Circulatory Support. Hiesinger W, Atluri P. *J Thorac Cardiovasc Surg*. 2015 Nov;150(5):1342-3.

Computational Protein Design to Reengineer Stromal Cell-derived Factor-1 α Generates an Effective and Translatable Angiogenic Polypeptide Analog. Hiesinger W, Perez-Aguilar JM, Atluri P, Marotta NA, Frederick JR, Fitzpatrick JR 3rd, McCormick RC, Muenzer JR, Yang EC, Levit RD, Yuan LJ, MacArthur JW, Saven JG, Woo YJ. *Circulation*. 2011 Sep 13;124(11 Suppl):S18-26.

Oxygen-dependent Quenching of Phosphorescence Used to Characterize Improved Myocardial Oxygenation Resulting From Vasculogenic Cytokine Therapy. Hiesinger W, Vinogradov SA, Atluri P, Fitzpatrick JR 3rd, Frederick JR, Levit RD, McCormick RC, Muenzer JR, Yang EC, Marotta NA, MacArthur JW, Wilson DF, Woo YJ. *J Appl Physiol*. 2011 May;110(5):1460-5.



Mark Hlatky, MD

Professor, Medicine - Primary Care and Outcomes Research
Professor, Medicine - Cardiovascular Medicine

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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

DISTINGUISHED SCIENTIST AWARD

American College of Cardiology (ACC)
American Heart Association (AHA)

LIFETIME ACHIEVEMENT AWARD

AHA Quality of Care and Outcomes
Research Council

FELLOW

American College of Cardiology;
American Heart Association

MEMBER

ACC/AHA Task Force on Clinical Practice
Guidelines;
AHA Clinical Cardiology Council
AHA Quality of Care and Outcomes
Research Council

SCIENTIFIC ADVISOR

Office of Clinical Affairs, Blue Cross Blue
Shield Association

FORMER CHAIR

Dept. 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 introduced 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). Currently, I am leading the EPOCH (Effect of Preeclampsia on Cardiovascular Health) study.

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

Hypoglycemia and Elevated Troponin in Patients With Diabetes and Coronary Artery Disease. Rezende PC, Everett BM, Brooks MM, Vlachos H, Orchard TJ, Frye RL, Bhatt DL, Hlatky MA. *J Am Coll Cardiol* 2018;72:1778-1786.

PCSK9 inhibitors: Economics and Policy. Hlatky, M.A., Kazi, D.S.; *J Am Coll Cardiol* 2017; 70:2677-2687.

Functional Testing or Coronary Computed Tomography Angiography in Patients With Stable Coronary Artery Disease. Jørgensen ME, Andersson C, Nørgaard BL, Abdulla J, Shreibati JB, Torp-Pedersen C, Gislason GH, Shaw RE, Hlatky MA. *J Am Coll Cardiol* 2017; 69:1761-1770.

Economic Outcomes of Treatment Strategies for Type 2 Diabetes Mellitus and Coronary Artery Disease in the Bypass Angioplasty Revascularization Investigation 2 Diabetes Trial. Hlatky, M. A., Boothroyd, D. B., Melsop, K. A., Kennedy, L., Rihal, C., Rogers, W. J., Venkitachalam, L., Brooks, M. M.; *Circulation*; 2009; 120 (25): 2550-U69

Criteria for Evaluation of Novel Markers of Cardiovascular Risk: A Scientific Statement From the American Heart Association. Hlatky, M. A., Greenland, P., Arnett, D. K., Ballantyne, C. M., Criqui, M. H., Elkind, M.S., Go, A. S., Harrell, F. E., Hong, Y., Howard, B. V., Howard, V. J., Hsue, P. Y., Kramer, C. M., McConnell, J. P., Normand, S. T., O'Donnell, C. J., Smith, S. C., Wilson, P. W.; *Circulation*; 2009; 119 (17): 2408-2416.

Coronary Artery Bypass Surgery Compared With Percutaneous Coronary Interventions for Multivessel Disease: A Collaborative Analysis of Individual Patient Data From Ten Randomised Trials. Hlatky, M. A., Boothroyd, D. B., Bravata, D. M., Boersma, E., Booth, J., Brooks, M. M., Carrie, D., Clayton, T. C., Danchin, N., Flather, M., Hamm, C. W., Hueb, W. A., Kaehler, J., Kelsey, S. F., King, S. B., Kosinski, A. S., Lopes, N., McDonald, K. M., Rodriguez, A., Serruys, P., Sigwart, U., Stables, R. H., Owens, D. K., Pocock, S. J.; *Lancet*; 2009; 373 (9670): 1190-1197.



Yasuhiro Honda, MD, FACC, FAHA

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

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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 145 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 420 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

Randomized Comparison Between Everolimus-eluting Polymeric Bioresorbable Scaffold and Metallic Stent: A Multimodality Imaging Assessment at 3 Years. Onuma Y, Honda Y, Asano T, Shiomi H, Kozuma K, Ozaki Y, Namiki A, Yasuda S, Ueno a, Ando K, Furuya J, Igarashi K, Tanabe K, Okada K, Kitahara H, Kusano H, Rapoza R, Simonton C, Popma JJ, Stone G, Fitzgerald PJ, Serruys PW and Kimura T. *JACC Cardiovasc Interv.* (in press), 2019.

Early Invasive Assessment of the Coronary Microcirculation Predicts Subsequent Acute Rejection After Heart Transplantation. Okada K, Honda Y, Luikart H, Yock PG, Fitzgerald PJ, Yeung AC, Valantine HA, Khush KK and Fearon WF. *Int J Cardiol.*, 2019;290:27-32.

Cardiac Function Response to Stenting in Atherosclerotic Renal Artery Disease With and Without Heart Failure: Results From the Carmel Study. Kawarada O, Kume T, Zen K, Nakamura S, Hozawa K, Akimitsu T, Asano H, Ando H, Yamamoto Y, Yamashita T, Shinozaki N, Odashiro K, Sato T, Yuba K, Sakanoue Y, Uzu T, Okada K, Fitzgerald PJ, Honda Y and Yasuda S. *ESC Heart Fail.*, 2019;6:319-327.

Comparison With 40-MHz IVUS Referenced to Optical Coherence Tomography. Okada K, Kitahara H, Mitsutake Y, Tanaka S, Kimura T, Yock PG, Fitzgerald PJ, Ikeno F and Honda Y. Assessment of bioresorbable scaffold with a novel high-definition 60 MHz IVUS imaging system: *Catheter Cardiovasc Interv.*, 2018;91:874-883.

Bioresorbable Scaffold for Treatment of Coronary Artery Lesions: Intravascular Ultrasound Results From the ABSORB Japan Trial. Okada K, Honda Y, Kitahara H, Otagiri K, Tanaka S, Hollak MB, Yock PG, Popma JJ, Kusano H, Cheong WF, Sudhir K, Fitzgerald PJ and Kimura T. *JACC Cardiovasc Interv.*, 2018;11:648-661.

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

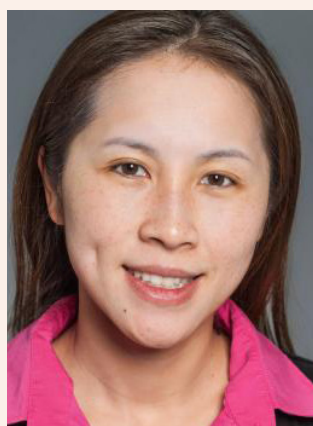
Stanford Trans-Pacific Cardiovascular Research Scholarship Program

FELLOW

American College of Cardiology;
American Heart Association

EDITORIAL BOARD

Cardiovascular Intervention and Therapeutics



Ngan F. Huang, PhD

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

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EDUCATION/TRAINING

PHD UC Berkeley and UCSF

BS Massachusetts Institute of Technology

HONORS & AWARDS

Society for Vascular Medicine Jay D. Coffman Young Investigator Award First Place

American Heart Association, Council on Peripheral Vascular Disease Robert W Hobson II MD Early Career Investigator Award

Rising Star Award, Cellular and Molecular Bioengineering Annual Conference

Young Innovator Award, Biomedical Engineering Society

Young Innovator Award, Tissue Engineering and Regenerative Medicine-Americas

American Heart Association, Council on Peripheral Vascular Disease, Jay D. Coffman Young Investigator Award, 2nd Place

Fellow of the American Heart Association (FAHA)

STEERING COMMITTEE MEMBER

Stanford Cardiovascular Institute

MEMBER

Bio-X; Child Health Research Institute
CHEM-H (Stanford Chemistry, Engineering & Medicine for Human Health)

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 spatially patterned 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 tissues. We are also collaborating with industry partners to develop biomaterials-based approaches for treatment of critical limb ischemia and volumetric muscle loss and in small and large animal models.

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

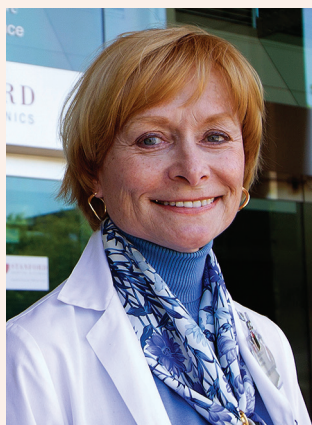
SELECTED PUBLICATIONS

Treatment of Volumetric Muscle Loss Using Spatially Patterned Scaffolds Enhances Vascular Organization and Functional Integration. Nakayama KH, Quarta M, Paine P, Alcazar C, Karakikes I, Garcia V, Abilez O, Calvo NS, Simmons CS, Rando TA, Huang NF. *Commun Biol*, 2:170, 2019.

Vascularization of Engineered Spatially Patterned Myocardial Tissue Derived From Human Pluripotent Stem Cells In Vivo. Wanjare M, Kawamura M, Hu C, Alcazar C, Wang H, Woo YJ, Huang NF. *Front Bioeng Biotechnol*, 7:208, 2019.

Aligned Nanofibrillar Scaffolds for Controlled Delivery of Modified mRNA. Zaitseva T, Alcazar C, Zamani M, Hou L, Sawamura S, Yakubov E, Hopkins M, Woo YJ, Paukshto M, Huang NF. *Tissue Eng Part A*, 2019 25:121-130.

Big Bottlenecks in Cardiovascular Tissue Engineering. Huang NF, Serpooshan V, Morris VB, Sayed N, Pardon G, Abilez OJ, Nakayama KH, Pruitt BL, Wu SM, Yoon Y, Zhang J, Wu JC. *Commun Biol*, 1:199, 2018.



Sharon Hunt, MD

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

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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 Ryland 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

Dr. Hunt is a pioneering figure in the field of cardiology and has received numerous awards, including the Lifetime Achievement Award from the International Society for Heart and Lung Transplantation. Her research and clinical work focus on advancing long-term postoperative care for heart transplant recipients. She enjoys both taking care of patients and the opportunity to mentor cardiology fellows at Stanford.

The holy grail of immune tolerance remains beyond our reach at this time, but has the potential to completely alter the heart transplant landscape.

SELECTED PUBLICATIONS

Women Leaders in Cardiac Transplantation: A Historical and Personal Perspective. Hunt SA. *Circulation*. 2019;139:1005-1006.

Less Risky Immunosuppression in Heart Transplantation? Hunt SA. *J Amer Coll Cardiology*. 2019;73(21):2689-90.

Innovations in Ventricular Assist Devices for End Stage Heart Failure. Miller RJH, Teuteberg JJ, Hunt SA. *Annu Rev Med*. 2019;70:33-44.

Cardiac Allograft Vasculopathy: It Really Has Changed Over Time. Hunt, SA. *JACC: Heart Failure*. 2017;5:902-3.

Major Advantages and Critical Challenge for Proposed United States Heart Allocation System. Stevenson LW, Kormos RL, Young JB, Kirklin JK, Hunt SA. *J Heart Lung Transplant*. 2016; 35:547-549.

Heart Transplant Recipient Selection Issues: Limited assets, Infinite possibilities. Hunt SA. *J Heart Lung Transplant* 31:675-6, 2012.

Clinical and Functional Correlates of Early Microvascular Dysfunction After Heart Transplantation. Haddad F, Khazanie P, Deuse T, Weisshaar D, Zhou J, Nam CW, Vu TA, Gomari FA, Skhiri M, Simos A, Schnittger I, Vrtovc B, Hunt SA, Fearon WF. *Circ Heart Fail* 5:759-768, 2012.



John P. A. Ioannidis, MD, DSc

C.F. Rehnberg Professor in Disease Prevention
 Professor, Medicine - Stanford Prevention Research Center
 and Health Research and Policy
 Professor (by courtesy), Statistics
 Professor (by courtesy), Biomedical Data Science
 Co-Director, Meta-Research Innovation Center at Stanford (METRICS)

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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

Chanchlani Award for Global Health

Medal for Distinguished Service, Teachers College, Columbia University

Honorary PhDs from Erasmus University Rotterdam, University of Athens, and University of Tilburg

Einstein Fellow

ELECTED MEMBER

U.S. National Academy of Medicine

European Academy of Sciences and Arts

Association of American Physicians (also elected Councilor)

European Academy of Cancer Sciences

American Epidemiological Society

FORMER PRESIDENT

Society for Research Synthesis

Methodology

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 understanding how to improve research practices and in the interdisciplinary enhancement of existing research methods for study design and analysis in biomedicine and beyond.

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

The Importance of Predefined Rules and Prespecified Statistical Analyses do not Abandon Significance. Ioannidis, JA. *JAMA*, 2019; 321 (21): 2067–68.

A Standardized Citation Metrics Author Database Annotated for Scientific Field. Ioannidis, JP., Baas, J., Klavans, R., Boyack, K. W. *PLoS Biology*, 2019; 17 (8): e3000384.

Reproducible Research Practices, Transparency, and Open Access Data in the Biomedical Literature, 2015-2017. Wallach, J. D., Boyack, K. W., Ioannidis, JP. *PLoS Biology*, 2018; 16 (11): e2006930.

The Proposal to Lower P Value Thresholds to .005. Ioannidis, JPA. *JAMA*, 2018; 319 (14): 1429–30.

Meta-research: Why Research on Research Matters. Ioannidis, JA. *PLOS Biology*, 2018; 16 (3): e2005468.

Meta-assessment of Bias in Science. Fanelli, D., Costas, R., Ioannidis, JP. *Proceedings of the National Academy of Sciences of the USA*, 2017; 114 (14): 3714–3719.



Michael S. Kapiloff, MD, PhD

Associate Professor (Research) of Ophthalmology and, by courtesy, of Medicine (Cardiovascular Medicine)

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EDUCATION/TRAINING

PHD University of California, San Diego

MD University of California, San Diego

RESIDENCY

University of Utah and Primary Children's Medical Centers

RESEARCH FELLOWSHIP

Oregon Health and Science University

HONORS & AWARDS

FELLOW

American Heart Association (2008)
American Physiological Society, Cardiovascular Section (2014)

MEMBER

American Society for Clinical Investigation (2011)

Micah Batchelor Award For Excellence In Children's Health Research, University of Miami (2013)

CURRENT RESEARCH

Dr. Kapiloff is currently involved in full-time basic science and translational research. His laboratory studies the basic molecular mechanisms underlying the response of the retinal ganglion cell and cardiac myocyte to disease. The longstanding interest of his laboratory is the role in intracellular signal transduction of multimolecular complexes organized by scaffold proteins. Recently, his lab has been involved in the translation of these concepts into new therapies, including the development of new AAV gene therapy biologics for the prevention and treatment of heart failure and for neuroprotection in the eye.

As we acquire a more profound understanding of the molecular underpinnings of the function of our hearts, new therapies will emerge that will provide new hope for diseases that we only assume will take so many of our loved ones away from us.

SELECTED PUBLICATIONS

Regulation of Neuronal Survival and Axon Growth by a Perinuclear cAMP Compartment. Boczek, T., Cameron, E.G., Yu, W., Xia, X., Shah, S.H., Chabeco, B.C., Galvao, J., Nahmou, M., Li, J., Thakur, H., Goldberg, J.L., and Kapiloff, M.S. *Journal of Neuroscience*, 39(28):5466-5480, 2019.

The Scaffold Protein Muscle A-Kinase Anchoring Protein Beta Orchestrates Cardiac Myocyte Hypertrophic Signaling Required for the Development of Heart Failure. Kritzer, M.D., Li, J., Passariello, C.L., Gayanilo, M., Thakur, H., Dayan, J., Dodge-Kafka, K.L., and Kapiloff, M.S. *Circulation: Heart Failure*, 7 (4):663-672, 2014.

Anchored p90 Ribosomal S6 Kinase 3 is Required for Cardiac Myocyte Hypertrophy. Li, J., Kritzer, M.D., Michel, J.J., Le, A., Thakur, H., Gayanilo, M., Passariello, C.L., Negro, A., Daniai, J.B., Oskouei, B., Sanders, M., Hare, J.M., Hanauer, A., Dodge-Kafka, K.L., and Kapiloff, M.S. *Circulation Research*, 112: 128-139, 2013.

The Protein Kinase A Anchoring Protein mAKAP Coordinates Two Integrated cAMP Effector Pathways. Dodge-Kafka, K.L., Souhayer, J., Pare, G.C., Michel, J.J.C., Langeberg, L.K., Kapiloff, M.S., and Scott, J.D. *Nature*, 437: 574-578, 2005.



Ioannis Karakikes, PhD

Assistant Professor (Research) - Cardiothoracic Surgery

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EDUCATION/TRAINING

PHD University of Essex, UK

POSTDOCTORAL TRAINING

Imperial College, London, UK
Ichan School of Medicine, NY

HONORS & AWARDS

Best Manuscript Award, *Circulation Research* 2018

K99/R00 Pathway to Independence Award, NIH/NHLBI (2012)

CURRENT RESEARCH

The Karakikes Lab aims to uncover fundamental new insights into the molecular mechanisms and functional consequences of pathogenic mutations associated with familial cardiovascular diseases.

The overarching goal of our studies is to improve our understanding of the pathogenesis of familial cardiomyopathies, such as Hypertrophic Cardiomyopathy (HCM) and Dilated Cardiomyopathy (DCM). We utilize isogenic human induced pluripotent stem cells (iPSCs) as a platform for disease modeling to gain insights on how rare mutations affect the cardiomyocyte biology. By establishing a better understanding of the biology of the disease, our studies represent a first definitive step in elucidating the genotype-phenotype associations in HCM and DCM toward applying a precision medicine approach to the treatment of genetic cardiomyopathies.

SELECTED PUBLICATIONS

A Mutation in MYBPC3 Causes Hypertrophic Cardiomyopathy via Chronic Activation of Nonsense-Mediated Decay. Seeger T, Shrestha R, Chen C, Lam CK, Lau E, McKeithan WL, Matthew Greenhaw, Lee J, , Soah Lee, Mark Mercola, Fan Yang, Karakikes I, Wu JC. *Circulation*. 2019

A Comprehensive TALEN-Based Knockout Library for Generating Human Induced Pluripotent Stem Cell-Based Models for Cardiovascular Diseases. Karakikes I, Termglinchan V, Cepeda D, Lee J, Diecke S, Hendel A, Itzhaki I, Ameen M, Shrestha R, Wu H, Ma N, Shao N, Seeger T, Woo N, Wilson KD, Matsa M, Porteus M, V Sebastiano V, Wu JC. *Circulation Research*. 2017 12;120(10):1561-1571

Correction of Human Phospholamban R14del Mutation Associated With Cardiomyopathy Using Targeted Nucleases and Combination Therapy. Karakikes, I., Stillitano, F., Nonnenmacher, M., Tzimas, C., Sanoudou, D., Termglinchan, V., Kong, C., Rushing, S., Hansen, J., Ceholski, D., Kolokathis, F., Kremastinos, D., Katoulis, A., Ren, L., Cohen, N., Gho, J. M., Tsiapras, D., Vink, A., Wu, J. C., Asselbergs, F. W., Li, R. A., Hulot, J., Kranias, E. G., Hajjar, R. J. *Nature Communications*. 2015; 6.

Human Induced Pluripotent Stem Cell-Derived Cardiomyocytes Insights into Molecular, Cellular, and Functional Phenotypes. Karakikes, I., Ameen, M., Termglinchan, V., Wu, J. C.; *Circulation Research*. 2015; 117 (1): 80-88.



Kiran Kaur Khush, MD

Associate Professor, Medicine - Cardiovascular Medicine

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PROFILE med.stanford.edu/profiles/kiran-khush

LAB dalia.gonzalez@stanford.edu

EDUCATION/TRAINING

MD Harvard University, University of California, San Francisco

RESIDENCY / CARDIOLOGY FELLOWSHIPS

University of California, San Francisco

BOARD CERTIFICATION

Advanced Heart Failure and Transplant Cardiology, American Board of Internal Medicine Cardiovascular Disease

HONORS & AWARDS

R01 Research Project Grant, NIH (2019)

International Society for Heart and Lung Transplantation/Enduring Hearts Award (2018)

R01 Research Project Grant, National Institutes of Health (2014)

CURRENT RESEARCH

As Director of Heart Transplant Research in the Division of Cardiovascular Medicine, my research focuses on the evaluation and selection of donors for heart transplantation; the pathogenesis of post-transplant complications, including acute rejection and cardiac allograft vasculopathy; and non-invasive diagnosis of post-transplant complications. I serve as Associate Director of the International Society for Heart and Lung Transplantation (ISHLT) Thoracic Transplant Registry and as the heart transplant lead for the ISHLT 2020 annual scientific sessions. I am Associate Editor for the American Journal of Transplantation and am on the editorial boards of the Journal of Heart and Lung Transplantation and Circulation Heart Failure. I am also the Program Director of the Advanced Heart Failure and Transplant Cardiology fellowship at Stanford.

SELECTED PUBLICATIONS

Donor-derived Cell-free DNA Predicts Allograft Failure and Mortality After Lung Transplantation. Agbor-Enoh S, Wang Y, Tunc I, Jang MK, Davis A, De Vlaminc I, Luikart H, Shah PD, Timofte I, Brown AW, Marishta A, Bhatti K, Gorham S, Fiedli U, Wylie J, Grimm D, Goodwin N, Yang Y, Patel K, Zhu J, Iacono A, Orens JB, Nathan SD, Marboe C, Berry GJ, Quake SR, Valentine HA, Khush KK. *EBioMedicine* 2019, Jan 25.

The International Thoracic Organ Transplant Registry of the International Society for Heart and Lung Transplantation: Thirty-Sixth Adult Heart Transplantation Report-2019; Focus Theme: Donor and Recipient Size Match. Khush KK, Cherikh WS, Chambers DC, Harhay MO, Hayes D Jr, Hsich E, Meiser B, Potena L, Robinson A, Rossano JW, Sadavarte A, Singh TP, Zuckermann A, Stehlik J. *Journal of Heart and Lung Transplantation*, 2019 Oct 38(10) 1056-1066.

Non-Invasive Detection of Graft Injury after Heart Transplantation Using Donor-Derived Cell-Free DNA: A Prospective Multi-Center Study. Khush KK, Patel J, Pinney S, Kao A, Alharethi R, DePasquale E, Ewald G, Berman P, Kanwar M, Hiller D, Yee J, Woodward R, Hall S, Kobashigawa J. *American Journal of Transplantation*, 2019 Oct 19(10) 2889-2899.

Survival Outcomes after Heart Transplantation: Does Recipient Sex Matter? Moayed Y, Fan CPS, Cherikh WS, Stehlik J, Teuteberg JJ, Ross HR, Khush KK. *Circulation Heart Failure*, 2019 Oct 12(1) e006218.

Optimizing Use of Heart Transplant in the United States. Sandhu AT, Woo YJ, Khush KK. *JAMA*, 2019 Nov 12, 322(19) 1772-1774.



Joshua W. Knowles, MD, PhD, FAHA, FACC

Assistant Professor, Medicine - Cardiovascular Medicine

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FOUNDATION thefhfoundation.org

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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 Research Advisor of 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

STEERING COMMITTEE

Stanford Cardiovascular Institute

CURRENT RESEARCH

Dr. Knowles is a physician-scientist whose overall research theme has been the genetic basis of cardiovascular disease across the continuum from discovery, to the development of model systems, to the translation of these findings both into the clinic and the public health aspect of genetics. His discovery and basic translational efforts center on understanding the genetic basis cardiovascular disease using GWAS studies coupled with exploration in model systems. His clinical translational focus is on Familial Hypercholesterolemia (FH) and he is the volunteer Chief Research Advisor of the FH Foundation (FHF) which is a patient-led organization dedicated to increasing awareness of FH, identifying and treating patients with FH and screening family members to prevent deleterious outcomes. He helped lead the FHF efforts to establish a national patient registry (CASCADE FH), apply for an ICD10 code for FH and is now using cutting-edge “big-data” approaches to identify previously undiagnosed FH patients in electronic medical records (FIND FH). He has published over 100 papers with research projects currently funded by the National Institutes of Health, the American Heart Association, the American Diabetes Association and the Doris Duke Charitable Foundation.

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

SELECTED PUBLICATIONS

Longitudinal Low Density Lipoprotein Cholesterol Goal Achievement and Cardiovascular Outcomes Among Adult Patients With Familial Hypercholesterolemia: The CASCADE FH Registry. Duell PB, Gidding SS, Andersen RL, Knickelbine T, Anderson L, Gianos E, Shrader P, Kindt I, O'Brien EC, McCann D, Hemphill LC, Ahmed CD, Martin SS, Larry JA, Ahmad ZS, Kullo IJ, Underberg JA, Guyton J, Thompson P, Wilemon K, Roe MT, Rader DJ, Cuchel M, Linton MF, Shapiro MD, Moriarty PM, Knowles JW. *Atherosclerosis*. 2019 Oct;289:85-93.

Finding Missed Cases of Familial Hypercholesterolemia in Health Systems Using Machine Learning Banda JM, Sarraju A, Abbasi F, Parizo J, Pariani M, Ison H, Briskin E, Wand H, Dubois S, Jung K, Myers SA, Rader DJ, Leader JB, Murray MF, Myers KD, Wilemon K, Shah NH, Knowles JW. *NPJ Digit Med*. 2019 Apr 11;2:23.

No Evidence of a Causal Association of Type 2 Diabetes and Glucose Metabolism With Atrial Fibrillation. Harati H, Zanetti D, Rao A, Gustafsson S, Perez M, Ingelsson E, Knowles JW. *Diabetologia*. 2019 May;62(5):800-804.

Cardiovascular Disease: The Rise of the Genetic Risk Score. Knowles JW, Ashley EA. *PLoS Med*. 2018 Mar 30;15(3):e1002546.

Nat1 Deficiency Is Associated with Mitochondrial Dysfunction and Exercise Intolerance in Mice Chennamsetty I, Coronado M, Contrepois K, Keller MP, Carcamo-Orive I, Sandin J, Fajardo G, Whittle AJ, Fathzadeh M, Snyder M, Reaven G, Attie AD, Bernstein D, Quertermous T, Knowles JW. *Cell Rep*. 2016 Oct 4;17(2):527-540.



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

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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

Louis and Artur Lucian Award, McGill
University

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 my lab is to characterize the structure and mechanism of activation of G protein coupled receptors (GPCRs). GPCRs are the largest group of cellular receptors for hormones and neurotransmitters in the 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 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 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

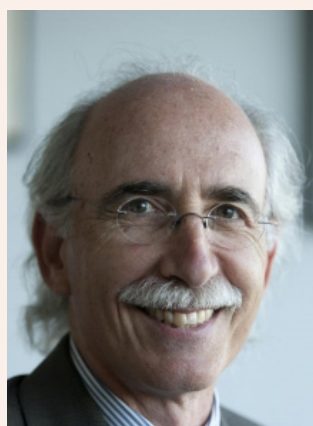
Structure of the Mu-opioid Receptor-Gi Protein Complex. Koehl, A., Hu, H., Maeda, S., Zhang, Y., Qu, Q., Paggi, J.M., Latorraca, N.R., Hilger, D., Dawson, R., Matile, H., Schertler, G.F.X., Granier, S., Weis, W.I., Dror, R.O., Manglik, A., Skiniotis, G. and Kobilka, B.K. *Nature*, 558(7711), 547-552 (2018).

Structural Insights Into Binding Specificity, Efficacy and Bias of a Beta2AR Partial Agonist. Masureel, M., Zou, Y., Picard, L.P., van der Westhuizen, E., Mahoney, J.P., Rodrigues, J., Mildorf, T.J., Dror, R.O., Shaw, D.E., Bouvier, M., Pardon, E., Steyaert, J., Sunahara, R.K., Weis, W.I., Zhang, C. and Kobilka, B.K. *Nat Chem Biol*, 14(11), 1059-1066 (2018).

Structural Insights Into the Process of GPCR-G Protein Complex Formation. Liu, X., Xu, X., Hilger, D., Aschauer, P., Tiemann, J.K.S., Du, Y., Liu, H., Hirata, K., Sun, X., Guixa-Gonzalez, R., Mathiesen, J.M., Hildebrand, P.W. and Kobilka, B.K. *Cell*, 177(5), 1243-1251 e12 (2019).

Structural Insights Into the Activation of Metabotropic Glutamate Receptors. Koehl, A., Hu, H., Feng, D., Sun, B., Zhang, Y., Robertson, M.J., Chu, M., Kobilka, T.S., Laermans, T., Steyaert, J., Tarrasch, J., Dutta, S., Fonseca, R., Weis, W.I., Mathiesen, J.M., Skiniotis, G. and Kobilka, B.K. *Nature* 2019.

Structures of the M1 and M2 Muscarinic Acetylcholine Receptor/G-protein Complexes. Maeda, S., Qu, Q., Robertson, M.J., Skiniotis, G. and Kobilka, B.K. *Science*, 364(6440), 552-557 (2019).



Fredric Kraemer, MD

Stanford University Professor in Endocrinology

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EDUCATION/TRAINING

MD New York University School of Medicine

INTERNSHIP Kings County Hospital

RESIDENCY Kings County Hospital

FELLOWSHIP

Stanford University School of Medicine

BOARD CERTIFICATION

Endocrinology, Diabetes, and Metabolism (ABIM)

HONORS & AWARDS

Stanford University Professorship in Endocrinology, Stanford University (2002)

SmithKline Beecham Junior Faculty Award In Diabetes, SmithKline Beecham (1998)

Hume Faculty Scholar, Stanford University (1984-1988)

Mellon Foundation Fellow, Stanford University (1983-1984)

Special Emphasis Research Career Award, NIH (1982-1987)

CURRENT RESEARCH

Our research interests are in the general area of cellular lipid and lipoprotein metabolism. The work is aimed primarily at understanding the mechanisms regulating cholesterol and triglyceride accumulation in cells. We utilize a variety of techniques from cell biology, biochemistry, and molecular biology. Current research projects focus on the trafficking of cholesterol for steroid hormone synthesis, uptake and mobilization of fatty acids by cells and interplay between adipose cell and bone metabolism.

SELECTED PUBLICATIONS

Tissue Specific Ablation of ACSL4 Results in Disturbed Steroidogenesis. Wang W., Hao X., Han L., Yan Z., Shen W.-J., Hasbargen K., Bittner S., Cortez Y., Greenberg A.S., Azhar S., Kraemer F.B. *Endocrinology* 160:2517-2528, 2019.

Liver-specific Knockdown of Long-chain Acyl-CoA Synthetase 4 Reveals its Key Role in VLDL-TG Metabolism and Phospholipid Synthesis in Mice Fed a High-fat Diet. Singh A.B., Kan C.F.K., Kraemer F.B., Sobel R.A., Liu J. *Am. J. Physiol. Endocrinol. Metab.* 316:E880-E894, 2019.

Plasma Membrane Cholesterol Trafficking in Steroidogenesis. Deng B., Shen W.-J., Dong D., Azhar S., Kraemer F.B. *FASEB J.* 33:1389-1400, 2019.

SR-B1: A Unique Multifunctional Receptor for Cholesterol Influx and Efflux. Shen W.-J., Azhar S., Kraemer F.B. *Annu. Rev. Physiol.* 80:95-116, 2018.

WNT-activated Bone Grafts Repair Osteonecrotic Lesions in Aged Animals. Salmon B., Liu B., Shen E., Chen T., Li J., Gillette M., Ransom R.C., Ezran M., Johnson C.A., Castillo A.B., Shen W.-J., Kraemer F.B., Smith A.A., Helms J.A. *Sci. Rep.* 7(1):14254, 2017.

SNARE-mediated Cholesterol Movement to Mitochondria Supports Steroidogenesis in Rodent Cells. Lin Y., Hou X., Hanssen R., Khor V.K., Cortez Y., Roseman A.N., Azhar S., Kraemer F.B. *Mol. Endocrinol.* 30:234-247, 2016.



Mark A. Krasnow, MD, PhD

Endowed Chair, The Paul and Mildred Berg Professorship in Biochemistry
Investigator, Howard Hughes Medical Institute
Executive Director, Wall Center for Pulmonary Vascular Diseases

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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. I am an Investigator at the Howard Hughes Medical Institute and the Executive Director of the Vera Moulton Wall Center for Pulmonary Vascular Disease.

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

Breathing Control Center Neurons That Promote Arousal in Mice. Yackle K, Schwarz LA, Kam K, Sorokin JM, Huguenard JR, Feldman JL, Luo L, Krasnow MA. *Science*. 2017 Mar 31;355(6332):1411-1415.

Oxygen Regulation of Breathing Through an Olfactory Receptor Activated by Lactate. Chang, A. J., Ortega, F. E., Riegler, J., Adison, D. V., Krasnow, M. A.; *Nature*; 2015; 527 (7577): 240.

Formation of a Neurosensory Organ by Epithelial Cell Slithering. Kuo, C. S., Krasnow, M. A.; *Cell*; 2015; 163 (2): 394-405.

Subcellular Trafficking of FGF Controls Tracheal Invasion of Drosophila Flight Muscle. Peterson SJ, Krasnow MA. *Cell*. 2015 Jan 15; 160 (1-2): 313-23.

Reconstructing Lineage Hierarchies of the Distal Lung Epithelium Using Single-cell RNA-seq. Treutlein B, Brownfield DG, Wu AR, Neff NF, Mantalas GL, Espinoza FH, Desai TJ, Krasnow MA, Quake SR.; *Nature*; 2014 May 15; 509 (7500): 371-5.

Alveolar Progenitor and Stem Cells in Lung Development, Renewal and Cancer. Desai TJ, Brownfield DG, Krasnow MA; *Nature*; 2014; Mar 13; 507 (7491): 190-4.



Calvin Kuo, MD, PhD

Maureen Lyles D'Ambrogio Professor, Medicine - Hematology
Professor, by courtesy, of Chemical and Systems Biology
Co-Lead, Cancer Biology Program, Stanford Cancer Institute
Vice Chair, Department of Medicine

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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

PRESIDENT-ELECT

American Heart Association Silicon
Valley Chapter

ELECTED MEMBER

American Society for Clinical
Investigation

American Association of Physicians

CURRENT RESEARCH

A major focus of my laboratory is the definition of molecular mechanisms of central nervous system angiogenesis and blood-brain barrier regulation, 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. We are interested in developing novel pharmacologic modulators of blood-brain barrier permeability. We also study the endothelial-expressed miR-126/Egfl7 locus using floxed mouse alleles. Additional parts of the lab work in stem cell biology and 3D organoid culture of diverse human organs. This has led to a strong interest in lung stem cell biology and regenerative medicine.

If we knew what we were doing it wouldn't be called
research, would it? — Albert Einstein

SELECTED PUBLICATIONS

Essential Regulation of CNS Angiogenesis by the Orphan G Protein-coupled Receptor GPR124. Kuhnert F, Mancuso MR, Wang H, Young WL, Heilshorn S and Kuo CJ. *Science*. Nov 12;330(6006):985-9. (2010).

Oligodendrocyte Precursors Migrate Along Vasculature in the Developing Nervous System. Tsai HH, Munji R, Davalos D, Tien AC, Kuo CJ, Chan JR, Daneman D, Fancy SPJ. *Science* (2016) Jan 22;351(6271):379-84.

Gpr124 is Essential for Blood-brain Barrier Integrity in Central Nervous System Disease. Chang J, Mancuso MR, Maier C, Liang X, Yuki K, Yang L, Kwong JW, Wang J, Rao V, Vallon M, Kosinski C, Zhang JJ, Mah AT, Xu L, Li L, Gholamin S, Reyes TF, Li R, Kuhnert F, Corney DC, Cheshier SH, Shortliffe LD, Wu X, Snyder M, Chan P, Giffard RG, Chang HY, Andreasson K, Kuo CJ. *Nature Medicine* (2017) Mar 13.

Oncogenic Transformation of Diverse Gastrointestinal Tissues in Primary Organoid Culture. Li X, Nadauld L, Ootani A, Corney DC, Pai RK, Gevaert O, Cantrell MA, Rack PG, Neal JT, Chan CW, Yeung T, Gong X, Yuan J, Wilhelmy J, Robine S, Attardi LD, Plevritis SK, Hung KE, Chen CZ, Ji HP, Kuo CJ. *Nature Medicine*. (2014) Jul;20(7):769-77.

Surrogate Wnt Agonists That Phenocopy Canonical Wnt and Beta-catenin Signalling. Janda CY, Dang LT, You C, Chang J, de Lau W, Zhong ZA, Yan KS, Marecic O, Siepe D, Li X, Moody JD, Williams BO, Clevers H, Piehler J, Baker D, Kuo CJ, Garcia KC. *Nature* (2017) May 11;545(7653):234-237.



Anson Lee, MD

Assistant Professor of Cardiothoracic Surgery (Adult Cardiac Surgery)

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EDUCATION/TRAINING

MD Washington University School of Medicine

INTERNSHIP Washington University School of Medicine

RESIDENCY Washington University School of Medicine

FELLOWSHIP Washington University School of Medicine

BOARD CERTIFICATION
Thoracic and Cardiovascular Surgery (ABTS)

CLINICAL FOCUS

Arrhythmia Surgery

Atrial Fibrillation

Adult Cardiac Surgery

Heart and lung transplantation

HONORS & AWARDS

Thoracic Surgical Foundation STSA Research Award

Bio-X Interdisciplinary Initiatives Program Seed Grant

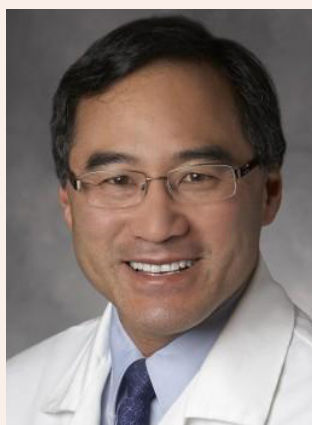
CURRENT RESEARCH

My lab is working to advance the understanding of the mechanisms of cardiac arrhythmias and to apply that understanding to develop potential therapies to treat atrial fibrillation and other disorders of cardiac rhythm. We have investigations at the genomic level, whole organ tissue level, and clinical studies in humans. We are developing new high resolution mapping tools to characterize atrial fibrillation, and are using cell culture to examine arrhythmias at the cellular level. Utilizing the knowledge from these investigations, we are also developing minimally invasive surgical techniques to treat arrhythmia.

We have to do better. If our success rates with coronary artery disease were as bad as our results with atrial fibrillation, we would all be out of business.

SELECTED PUBLICATIONS

Maze Permutations During Minimally Invasive Mitral Valve Surgery. Lee AM. *Ann Cardiothorac Surg*. 2015 Sep;4(5):463-8.



David Lee, MD

Associate Professor of Medicine (Cardiovascular Medicine)

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EDUCATION/TRAINING

MD University of Minnesota

RESIDENCY Stanford University

FELLOWSHIP Stanford University

BOARD CERTIFICATION

Interventional Cardiology (ABIM)

CLINICAL FOCUS

Cardiology

Interventional Cardiology

HONORS & AWARDS

President, Western States Affiliate,
American Heart Association

CURRENT RESEARCH

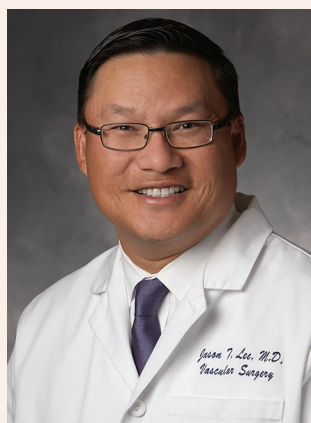
My current research is largely focused on developing new technology for interventional cardiology. I helped develop catheter-based renal denervation as a treatment for hypertension, and my current studies have focused on RDN as primary therapy alone or in combination with medications. My other projects include a novel set of devices for mitral valve interventions and a large-bore vascular closure device.

SELECTED PUBLICATIONS

Catheter-based Renal Denervation in Patients With Uncontrolled Hypertension in the Absence of Antihypertensive Medications (SPYRAL HTN-OFF MED): A Randomised, Sham-controlled, Proof-of-concept Trial. Townsend RR, Mahfoud F, Kandzari DE, Kario K, Pocock S, Weber MA, Ewen S, Tsioufis K, Tousoulis D, Sharp ASP, Watkinson AF, Schmieder RE, Schmid A, Choi JW, East C, Walton A, Hopper I, Cohen DL, Wilensky R, Lee DP, Ma A, Devireddy CM, Lea JP, Lurz PC, Fengler K, Davies J, Chapman N, Cohen SA, DeBruin V, Fahy M, Jones DE, Rothman M, Böhm M; SPYRAL HTN-OFF MED trial investigators*. *Lancet* 2017; 390:2160-2170.

Prasugrel Plus Aspirin Beyond 12 Months is Associated With Improved Outcomes After TAXUS Liberté Paclitaxel-eluting Coronary Stent Placement. Garratt KN, Weaver WD, Jenkins RG, Pow TK, Mauri L, Kereiakes DJ, Winters KJ, Christen T, Allocco DJ, Lee DP. *Circulation* 2015;131(1):62-73.

Twelve or 30 Months of Dual Antiplatelet Therapy After Drug-eluting Stents. Mauri L, Kereiakes DJ, Yeh RW, Driscoll-Shempp P, Cutlip DE, Steg PG, Normand SL, Braunwald E, Wiviott SD, Cohen DJ, Holmes DR Jr, Krucoff MW, Hermiller J, Dauerman HL, Simon DI, Kandzari DE, Garratt KN, Lee DP, Pow TK, Ver Lee P, Rinaldi MJ, Massaro JM; DAPT Study Investigators. *N Engl J Med.* 2014;371:2155-66.



Jason T. Lee, MD

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

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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
 Fenestrated/Parallel/Branched Aortic
 Repair

Thoracic Dissection/Thoracoabdominal
 Aneurysm Therapy

Surgical Simulation and Education

Vascular Disorders in Athletes

Thoracic Outlet Syndrome

HONORS & AWARDS

Society for Vascular Surgery

Distinguished Fellow

Department of Surgery Inaugural Seed

Grant (2018)

Coulter Foundation Translational Grant
 (2018)

Henry J. Kaiser Family Foundation
 Teaching Award Society for Vascular
 Surgery E.J. Wyllie Traveling

Fellowship Stanford Program in
 Biodesign, Mentorship Award

SECRETARY-TREASURER

Association for Program Directors in
 Vascular Surgery (APDVS) (2016-current)

SECRETARY

Peripheral Vascular Surgery Society
 (2016-current)

CURRENT RESEARCH

My clinical research interests focus on developing and refining endovascular techniques to treat complex aortic pathology related to aneurysms and dissections, particularly as Stanford's local principal investigator for numerous endograft trials, and having also accumulated one of the largest series of fenestrated and snorkel/chimney procedures for juxtarenal 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. I am the Director of Endovascular Surgery and Program Director of our top-notch Vascular Surgery Residency/Fellowship.

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

Polar Orientation of Renal Grafts Within the Proximal Seal Zone Affects Risk of Early Type 1a Endoleak Following Chimney EVAR. Tran K, Ullery BW, Itoga N, Lee JT. *J Vasc Surg* 2018;67:1034-41.

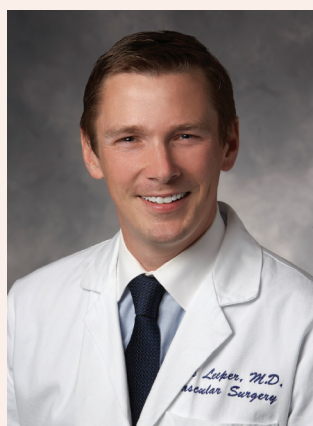
Infrarenal EVAR With Large Device (34-36mm) Diameters are Associated With Higher Risk of Proximal Fixation Failure. McFarland G, Tran K, Downey W, Chandra V, Mell MW, Harris EJ, Dalman RL, Lee JT. *J Vasc Surg* 2019;69:385-93.

Early Real-world Experience With Endoanchors Based on Indication. Ho VT, George EL, Dua A, Lavingia KS, Dake MD, Lee JT. *Ann Vasc Surg*, epub ahead of print Jun 12, 2019.

Duplex Ultrasound Surveillance of Renal Branch Grafts After FEVAR. Tran K, McFarland G, Sgroi MD, Lee JT. *J Vasc Surg*, epub ahead of print Jul 18, 2019.

Early Experience With the Octopus Endovascular Strategy in the Treatment of TAAAs. Dua A, Lavingia K, Dake MD, Lee JT. *Ann Vasc Surg*, epub ahead of print Aug 5, 2019.

Automated Quantification of Diseased Thoracic Aortic Longitudinal Centerline and Surface Curvatures. Bondesson J, Suh GY, Lundh T, Lee JT, Dake MD, Cheng CP. *J Biomech Eng*, epub ahead of print Oct 1, 2019.



Nicholas Leeper, MD

Professor, Surgery - Vascular Surgery
 Professor, Medicine - Cardiovascular Medicine
 Chief, Vascular Medicine
 Director, Vascular Research

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EDUCATION/TRAINING

MD University of Chicago

INTERNAL MEDICINE RESIDENCY
 UCSF

CARDIOLOGY FELLOWSHIP
 Stanford University

VASCULAR MEDICINE FELLOWSHIP
 Stanford University

BOARD CERTIFICATION
 Cardiovascular Disease, ABIM
 Vascular Medicine, ABVM

CLINICAL FOCUS

Vascular Medicine

HONORS & AWARDS

AWARDS

Established Investigator Award,
 American Heart Association

Distinguished Research in Vascular
 Biology Award, ATVB Council

Jeremiah Stamler Distinguished Young
 Investigator Research Award

Jay D. Coffman Young Investigator,
 Society for Vascular Medicine

CHAIR
 Gordon Research Conference on
 Atherosclerosis, Incoming Chair

ATVB Early Career Committee,
 Immediate Past Chair

STEERING COMMITTEE
 Stanford Cardiovascular Institute

TRUSTEE
 Society for Vascular Medicine

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 to prioritize candidates for molecular investigation. Currently, our main focus is on a process known as "efferocytosis" (Latin: to carry the dead to the grave) and developing novel translational therapies which can stimulate phagocytic removal of apoptotic debris from the necrotic core of the atherosclerotic plaque.

A man is as old as his arteries.

— Thomas Sydenham (17th Century)

SELECTED PUBLICATIONS

Pro-efferocytic Nanoparticles are Specifically Taken up by Lesional Macrophages and Prevent Atherosclerosis. Flores, A.M., Hosseini-Nassab, N., Jarr, K.U., Ye, J... Smith, B.R., Leeper, N.J. *Nature Nanotechnology*. In Press, 2020.

CD47-blocking Antibodies Restore Phagocytosis and Prevent Atherosclerosis. Kojima, Y., Volkmer, J., McKenna, K., Civelek, M., Lusis, A. J., Miller, C. L., DiRenzo, D., Nanda, V., Ye, J., Connolly, A. J., Schadt, E. E., Quertermous, T., Betancur, P., Maegdefessel, L., Matic, L. P., Hedin, U., Weissman, I. L., Leeper, N. J. *Nature*. 2016; 536 (7614): 86-90.

Clinical and Genetic Determinants of Varicose Veins. Fukaya E, Flores AM, Lindholm D, Gustafsson S, Zanetti D, Ingelsson E, Leeper NJ. *Circulation*. 2018 Dec 18;138(25):2869-2880.

Pro-efferocytic Therapy Promotes Transformin Growth Factor-B Signaling and Prevents Aneurysm Formation. Kojima Y, Werner N, Ye J, Nanda V, Tsao N, Wang Y, Flores AM, Miller CL, Weissman I, Deng H, Xu B, Dalman RL, Eken SM, Pelisek J, Li Y, Maegdefessel L, Leeper NJ. *Circulation*. 2018 Feb 13;137(7):750-753.

The Role of Efferocytosis in Atherosclerosis. Kojima, Y., Weissman, I. L., Leeper, N. J. *Circulation*. 2017; 135 (5): 476-489.

Canagliflozin and Cardiovascular and Renal Events in Type 2 diabetes. Neal, B., Perkovic, V., Mahaffey, K. W., de Zeeuw, D., Fulcher, G., Erondou, N., Shaw, W., Law, G., Desai, M., Matthews, D. R. *The New England Journal of Medicine*. 2017; 377 (7): 644-57.



Lawrence Leung, MD

Maureen Lyles D'Ambrogio Professor of Medicine, Hematology
Senior Associate Dean for Veterans Affairs
Chief of Staff, VA Palo Alto Health Care System

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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. I am Chief of Staff, VA Palo Alto Health Care System.

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.

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

Carboxypeptidase B2 Deficiency Reveals Opposite Effects of Complement C3a and C5a in a Murine Polymicrobial Sepsis Model. Shao Z, Nishimura T, Leung LLK, Morser J. J. *Thromb. Haemost.* 2015, 13:1090-1102.

Chemerin Activation in Human Obesity. Chang SS, Eisenberg D, Zhao L, Adams C, Leib R, Morser J, Leung L.; *Obesity*; 2016; Jul; 24 (7): 1522-9.

Prochemerin Cleavage by Factor XIa Links Coagulation and Inflammation. Ge X, Yamaguchi Y, Zhao L, Bury L, Greasele P, Berube C, Leung LL, Morser J. *Blood* 2018, 131:353-364. (Commentary: Meijers JCM. *Blood* 131:275-276).

Carboxypeptidase B2 and N Play Different Roles in Regulation of Activated Complements C3a and C5a in Mice. Morser J, Shao Z, Nishimura T, Zhou Q, Zhao L, Higgins J, Leung LLK. *CJ. Thromb. Haemost.* 2018, 16:991-1002. (Commentary: Foley JH, Conway EM. *JTH* 16:987-990).

Decoding the Genomics of Abdominal Aortic Aneurysm. Li J, Pan C, Zhang S, Spin J, Deng A, Leung LLK, Dalman RL, Tsao PS, Snyder M. *Cell* 2018, 174:1361-1372.



Craig Levin, PhD

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EDUCATION/TRAINING

PHD Yale University

HONORS & AWARDS

Japanese Society for the Promotion of Science (JSPS) Invitation Fellowship (2015)

Academy of Radiology Research (ARR) Distinguished Investigator Recognition Award (2012)

Elected to the American Institute for Medical and Biological Engineering's (AIMBE) College of Fellows (2012)

CURRENT RESEARCH

Our research interests are to explore and create new instrumentation and signal processing algorithm concepts for *in vivo* imaging of molecular signatures of disease in living subjects. These novel cameras efficiently image emissions from molecular contrast agents to probe disease biology in tissues residing deep within the body using measurements made from outside the body. The technology goals are to advance the sensitivity and spatial, spectral, and/or temporal resolutions, to create new camera geometries for special biomedical applications, to understand the entire imaging process comprising the subject tissues, radiation transport, and imaging system, and to provide the best available image quality and quantitative accuracy. The ultimate goal is to introduce these new imaging tools into studies of molecular mechanisms and treatments of disease in living subjects.

It is better to light a candle than to curse the darkness — attributed to William L. Watkinson

SELECTED PUBLICATIONS

Performance Evaluation of RF Coils Integrated With an RF-penetrable PET Insert for Simultaneous PET/MRI. Lee BJ, Watkins RD, Lee KS, et al. *Magnetic Resonance in Medicine*, Volume: 81, Issue: 2, Pages: 1434-1446, Feb. 2019.

MR Performance in the Presence of a Radio Frequency-penetrable Positron Emission Tomography (PET) Insert for Simultaneous PET/MRI. Lee BJ, Grant AM, Chang C, et al. *IEEE Transactions on Medical Imaging*, Volume: 37, Issue: 9, Pages: 2060-2069, Sept. 2018.

Evaluation of a Clinical TOF-PET Detector Design That Achieves ≤ 100 ps Coincidence Time Resolution. Cates JW, Levin CS. *Physics in Medicine and Biology*, Volume: 63, Issue: 11, (115011), June 2018.

Design and Performance of a 1 mm³ Resolution Clinical PET System Comprising 3-D Position Sensitive Scintillation Detectors. Hsu DFC, Freese DL, Reynolds PD, et al. *IEEE Transactions on Medical Imaging*, Volume: 37, Issue: 4, Pages: 1058-1066, April 2018.

Study of Material Properties Important for an Optical Property Modulation-based Radiation Detection Method for Positron Emission Tomography. Tao L, Daghighian HM, Levin CS. *Journal of Medical Imaging*. Volume: 4, Issue: 1, (011010), Jan. 2017.



Eldrin F. Lewis, MD, MPH

Incoming Professor of Medicine and Division Chief, Cardiovascular Medicine, Department of Medicine (*March 1, 2020*)

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WEB <https://medicine.stanford.edu/news/current-news/standard-news/Eldrin-Lewis-Cardiology-Chief.html>

EDUCATION/TRAINING

MD University of Pennsylvania

MPH Harvard School of Public Health

RESIDENCIES / FELLOWSHIPS

Internal Medicine Residency - Brigham and Women's Hospital

Cardiovascular Medicine Fellowship - Brigham and Women's Hospital

Advanced Heart Failure and Transplant Cardiology - Brigham and Women's Hospital

CLINICAL FOCUS

Heart Failure

Managing Advanced Stages of Heart Disease

Improvement of Patients' Quality of Life

MEMBERSHIPS

Massachusetts Medical Society (1995 - present)

Association of Black Cardiologists (2018 - present)

American College of Cardiology (2000 - present)

American Heart Association (2004 - present)

Heart Failure Society of American (2004 - present)

CURRENT RESEARCH

Dr. Lewis is an internationally recognized clinical expert in the field of advanced heart failure and transplant management. He has been involved in several clinical trials across the spectrum of cardiovascular diseases that aim to improve patient quality of life. These include several innovative approaches to prevent the progression of disease, reduce the rate of readmission following heart failure hospitalization, improve patient understanding prior to surgical interventions, and improve the clinical usefulness of Quality of Life assessments. Dr. Lewis is also working to leverage novel stem cell interventions for advanced heart failure patients. Over a decade ago, Dr. Lewis initiated a patient questionnaire on symptoms and concerns that became a routine part of care. Later, Dr. Lewis performed a clinical trial with Drs. Eric Velazquez and Robert Califf that examined the effect of nonfatal cardiovascular events on changes in health-related quality of life (*JACC: Heart Failure*, 2014). This study showed that subsequent nonfatal cardiovascular events resulted in significant worsening of patients' health-related quality of life. These findings have had profound implications for the design of clinical trials to assess patient-reported outcomes. Dr. Lewis's subsequent work built on these findings, seeking to improve quality of life assessments and their utility in routine care.

SELECTED PUBLICATIONS

Identification of Racial Inequities in Access to Specialized Inpatient Heart Failure Care at an Academic Medical Center. Eberly LA, Richterman A, Beckett AG, Wispelwey B, Marsh RH, Cleveland Manchanda EC, Chang CY, Glynn RJ, Brooks KC, Boxer R, Kakoza R, Goldsmith J, Loscalzo J, Morse M, Lewis EF. *Circ Heart Fail*. 2019 Nov;12(11).

Lung Ultrasound in Acute Heart Failure: Prevalence of Pulmonary Congestion and Short- and Long-Term Outcomes. Platz E, Campbell RT, Claggett B, Lewis EF, Groarke JD, Docherty KF, Lee MMY, Merz AA, Silverman M, Swamy V, Lindner M, Rivero J, Solomon SD, McMurray JJV. *JACC Heart Fail*. 2019 Oct;7(10):849-858.

Health-Related Quality of Life in Heart Failure With Preserved Ejection Fraction: The PARAGON-HF Trial. Chandra A, Vaduganathan M, Lewis EF, Claggett BL, Rizkala AR, Wang W, Lefkowitz MP, Shi VC, Anand IS, Ge J, Lam CSP, Maggioni AP, Martinez F, Packer M, Pfeffer MA, Pieske B, Redfield MM, Rouleau JL, Van Veldhuisen DJ, Zannad F, Zile MR, McMurray JJV, Solomon SD; PARAGON-HF Investigators. *JACC Heart Fail*. 2019 Oct;7(10):862-874.

Efficacy and Safety of Spironolactone in Patients With HFpEF and Chronic Kidney Disease. Beldhuis IE, Myhre PL, Claggett B, Damman K, Fang JC, Lewis EF, O'Meara E, Pitt B, Shah SJ, Voors AA, Pfeffer MA, Solomon SD, Desai AS. *JACC Heart Fail*. 2019 Jan;7(1):25-32.



Ronglih Liao, PhD

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EDUCATION/TRAINING

PHD University of Alabama at Birmingham

POSTDOCTORAL TRAINING

Harvard Medical School/Beth Israel Hospital

HONORS & AWARDS

Fellow of American Heart Association

Fellow of American Physiological Society

2016 Stanley J. Sarnoff Sprit Award, Sarnoff Cardiovascular Research Foundation

2019 AHA GPM Mentoring Award, Council on Genomic and Precision Medicine (GPM), American Heart Association

CURRENT RESEARCH

Our laboratory has played an international leading role in the study of amyloid light chain (AL) cardiomyopathy, a rare and fatal form of cardiovascular disease. We have described the underlying pathophysiologic basis for amyloid cardiomyopathy and found that the circulating amyloidogenic light chain proteins that characterize this disease directly result in a specific cardiotoxic response. Consequently, our research work has redefined AL cardiomyopathy and has raised new treatment approaches. In line with our goal of revealing novel therapeutic strategies for patients with cardiovascular disease, our efforts have also focused on characterizing and harnessing endogenous cardiac regenerative mechanisms. Our group initially demonstrated the therapeutic potential of exogenous primitive muscle cells delivered to the injured heart. This work was among the earliest milestones in the field and served as the basis for an international trial of cell-based therapy. We aim to reveal the molecular mechanisms regulating the endogenous regenerative capacity of the heart and to harness such repair mechanisms for the treatment of cardiovascular disease.

If we knew what it was we were doing, it would not be called research, would it?
—Albert Einstein

SELECTED PUBLICATIONS

MicroRNA-34a Plays a Key Role in Cardiac Repair and Regeneration Following Myocardial Infarction. Yang Y, Cheng HW, Qiu Y, Dupee D, Noonan M, Lin YD, Fisch S, Unno K, Sereti KI, Liao R. *Circ Res.* 2015;117 (5):450-9.

Lysosomal Dysfunction and Impaired Autophagy Underlie the Pathogenesis of Amyloidogenic Light Chain-mediated Cardiotoxicity. Guan J, Mishra S, Qiu Y, Shi J, Trudeau K, Las G, Liesa M, Shiriha OS, Connors LH, Seldin DC, Falk RH, MacRae CA, Liao R. *EMBO Mol Med.* 2014 (11):1493-507.

Assessment of Right Ventricular Structure and Function in Mouse Model of Pulmonary Artery Constriction by Transthoracic Echocardiography. Cheng HW, Fisch S, Cheng S, Bauer M, Ngoy S, Qiu Y, Guan J, Mishra S, Mbah C, Liao R. *J Vis Exp.* 2014 Feb 3;(84):e51041.

Geographic Disparities in Reported US Amyloidosis Mortality From 1979 to 2015: Potential Underdetection of Cardiac Amyloidosis. Alexander KM, Orav J, Singh A, Jacob SA, Menon A, Padera RF, Kijewski MF, Liao R, Di Carli MF, Laubach JP, Falk RH, Dorbala S. *JAMA Cardiol.* 2018 Sep 1;3(9):865-870.

Mortality from Heart Failure and Dementia in the United States: CDC WONDER 1999-2016. Vuong JT, Jacob SA, Alexander KM, Singh A, Liao R, Desai AS, Dorbala S. *J. Cardiac Failure* 2019 Nov;25(2) 125-129.



Michael Longaker, MD

Deane P. and Louise Mitchell Professor in the School of Medicine and Professor (by courtesy) of Bioengineering and Materials Science and Engineering

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EDUCATION/TRAINING

MD Harvard Medical School

GENERAL SURGERY INTERNSHIP UCSF Medical Center

GENERAL SURGERY RESIDENCY UCSF Medical Center

PLASTIC & RECONSTRUCTIVE SURGERY RESIDENCY NYU Medical Center

CRANIOFACIAL SURGERY FELLOWSHIP UCLA Medical Center

BOARD CERTIFICATION

General Surgery (ABS), Plastic Surgery (ABPS)

CLINICAL FOCUS

Plastic Surgery

HONORS & AWARDS

American Society for Clinical Investigation (2004)

National Academy Of Medicine (2007)

Association Of American Physicians (2008)

I.s Ravdin Lecture In Basic Medical Sciences, American College Of Surgeons (2009)

Flance-Karl Award, American Surgical Association (2011)

Sheen Award, Bank Of America/ American College Of Surgeons (2012)

66Th. Volume Of The Surgical Forum Is Dedicated To Michael T. Longaker, Md, Mba, Facs (2015)

PSF Career Research Award, Plastic Surgery Foundation (2016)

CURRENT RESEARCH

Michael Longaker's extensive research experience includes the cellular and molecular biology of extracellular matrix with specific applications to the differences between fetal and post-natal wound healing, the biology of keloids and hypertrophic scars, the cellular and molecular events in craniofacial development and stem cell biology. In addition, his research investigates craniofacial development and skeletal stem cell biology. He has a unique understanding of wound healing, fetal wound healing research, developmental biology, tissue engineering, and stem cell biology.

The harder I work, the luckier I get.
— Thomas Jefferson

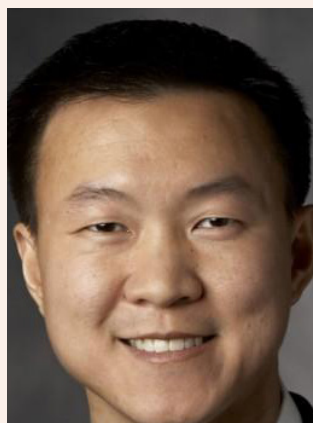
SELECTED PUBLICATIONS

Identification and Specification of the Mouse Skeletal Stem Cell. Chan CK, Seo EY, Chen JY, Lo D, McArdle A, Sinha R, Tevlin R, Seita J, Vincent-Thompkins J, Wearda T, Lu WJ, Senartha-Yapa K, Chung MT, Marecic O, Tran M, Yan KS, Upton R, Walmsley GG, Lee AS, Sahoo D, Kuo C. Weissman L, Longaker MT. *Cell* 2015; 160: 285-298.

Identification and Targeted Inhibition of a Fibroblast Lineage Responsible for Skin Scarring and Cancer Stroma. Yuval Rinkevich, Graham G. Walmsley, Michael S. Hu, Zeshaan N. Maan, Aaron M. Newman, Micha Drukker, Michael Januszyk, Geoffrey C. Gurtner, Peter H. Lorenz, Irving L. Weissman, Michael T. Longaker. *Science*. 2015;348(6232):aaa2151.

Chemical Rescue of Cleft Palate and Midline Defects in Conditional GSK-3beta Mice. Liu KJ, Arron JR, Stankunas K, Crabtree GR, Longaker MT. *Nature*. 2007;446(7131):79-82.

Pharmacological Rescue of Diabetic Skeletal Stem Cell Niches. Tevlin R, Seo EY, Marecic O, McArdle A, T Xinming, Zimdahl B, Malkovskly A, Sinha R, Gulati G, Li X, Wearda T, Morganti R, Lopez M, Ransom RC, Duldulao CR, Rodrigues M, Nguyen A, Januszyk M, Maan Z, Paik K, Yapa KS, Rajadas J, Wan DC, Gurtner GC, Snyder M, Beachy PA, Yang F, Goodman SB, Weissman IL, Chan CK, Longaker MT. *Science Translational Medicine*. 2017; 9(372).



George Lui, MD

Clinical Associate Professor, Medicine (Cardiovascular Medicine)
and Pediatrics (Cardiology)
Medical Director, Adult Congenital Heart Program

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EDUCATION/TRAINING

MD Yale University School of Medicine

RESIDENCY Harvard Combined Internal Medicine and Pediatrics Residency

FELLOWSHIP Columbia University Medical Center

BOARD CERTIFICATION

Internal Medicine (ABIM); Cardiovascular Disease (ABIM); Adult Congenital Heart Disease (ABIM); Adult Comprehensive Echocardiography (NBE)

CLINICAL FOCUS

Adult Congenital Heart Disease
Cardiovascular Disease
Echocardiography

HONORS & AWARDS

E. William Hancock Teaching Award in Division of Cardiovascular Medicine, Stanford University (2015)

Outstanding Research Award in Pediatric Cardiology, American Heart Association (2009)

Norma Bailey Berniker Prize, Yale University (2002)

CURRENT RESEARCH

My research interests include the longterm outcome and prevalence of adolescents and adults with congenital heart disease. I am currently working with the Centers for Disease Control and Prevention on the Surveillance of Congenital Heart Defects Across the Lifespan. The goal of this project is to build on existing infrastructure for population-based CHDs surveillance to (i) link additional years of surveillance data for both adolescents and adults identified having a CHD, (ii) identify factors associated with optimal healthcare and improved outcomes, (iii) evaluate factors that impede appropriate transition from pediatric to adult care, (iv) expand surveillance activities to include the lifespan, and (v) develop pilot projects to translate public health best practices into action.

There are more than a million U.S. adults living with congenital heart disease. I hope that we can enhance the quality of care and longevity for these individuals through our clinical expertise, education, and research.

SELECTED PUBLICATIONS

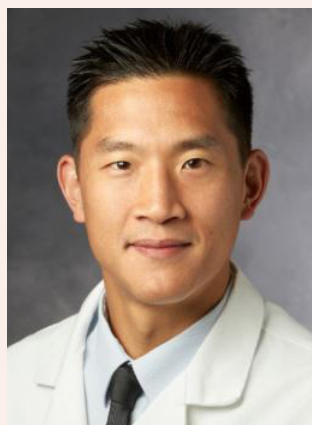
Population-Based Surveillance of Congenital Heart Defects Among Adolescents at Three Sites in the United States. Lui GK, McGarry C, Bhatt A, Book W, Riehle-Colarusso TJ, Dunn JE, Glidewell J, Gurvitz M, Hoffman T, Hogue CJ, Hsu D, Obenhaus S, Raskind-Hood C, Rodriguez III FH, Zaidi A, Van Zutphen AR. *Am J Card*, 2019; 124: 137-143.

Outcome of En bloc Combined Heart and Liver Transplantation in the Adolescent and Adult Failing Fontan. Vaikunth S, Concepcion W, Daugherty D, Fowler M, Lutchman G, Maeda K, Rosenthal D, Teuteberg, JY, Woo J, Lui GK. *Clinical Transplantation*, 2019; 33: e13540.

Maternal Comorbidities and Adverse Delivery Events in Pregnant Women with Congenital Heart Disease. Schlichting LE, Insaf T, Zaidi A, Lui G, Van Zutphen AR. *J Am Coll Cardiol*. 2019; 73: 2181-2191.

Guidelines for Performing a Comprehensive Transesophageal Echocardiographic Examination in Children and All Patients with Congenital Heart Disease: Recommendations from the American Society of Echocardiography. Puchalski MD, Lui GK, Miller-Hance WC, Brook MM, Young, LT, Bhat A, Roberson DA, Mercer-Rosa L, Miller OI, Prira DA, Burch T, Carron HD, Wong PC. *J Am Soc Echocardiography*, 2019; 32: 173-215.

2019 ACC/AHA/ASE Advanced Training Statement on Echocardiography (Revision of the 2003 ACC/AHA Clinical Competence Statement on Echocardiography): A Report of the ACC Competency Management Committee. Wiegers SE, Ryan T, Arrighi JA, Brown SM, Canaday B, Damp JB, Diaz-Gomez JL, Figueredo VM, Garcia MJ, Gillam LD, Griffin BP, Kirkpatrick JN, Klarich KW, Lui GK, Maffett S, Naqvi TZ, Patel AR, Poulin MF, Rose GA, Swaminathan M. *J Am Coll Cardiol* 2019; 74: 377-402.



Michael Ma, MD

Assistant Professor
Department of Cardiothoracic Surgery
Department of Pediatric Cardiac Surgery

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EDUCATION/TRAINING

MD Columbia University

BS Stanford University, Chemical Engineering

RESIDENCY

Stanford University

FELLOWSHIP

Lucile Packard Children's Hospital

BOARD CERTIFICATION

Thoracic and Cardiovascular Surgery (ABTS)

CLINICAL FOCUS

Congenital Cardiothoracic Surgery
Pediatric Cardiac Surgery
Neonatal Cardiac Surgery

HONORS & AWARDS

Alpha Omega Alpha

NIH KL2 Mentored Career Development Grant

Pat O. Daily Award for Clinical Excellence in Cardiac Surgery

Section Editor 'Congenital Heart International Professionals Journal Watch'

CURRENT RESEARCH

My lab is dedicated to improving outcomes for children born with complex heart disease, by melding clinical surgical expertise with novel techniques in bio and mechanical engineering. Just as virtual computer-based simulation, prototyping, and failure analysis have delivered innovation in other disciplines, our team studies congenital heart defects and their surgical treatments using computational fluid dynamics and ex-vivo biomechanical simulations to inform large animal experiments that can lead to clinically meaningful discoveries for these patients.

My academic and clinical endeavors are motivated by the palpable hope (and fear) that parents impart when they entrust their child with complex heart disease to our care.

SELECTED PUBLICATIONS

Complex Pulmonary Artery Reconstruction. Ma M, Reinhartz O, Mainwaring RD, Hanley FL. *Operative Techniques in Thoracic and Cardiovascular Surgery*. 2019; 24: 163-175.

Corrected Transposition: Anatomic Repair Using the Hemi-mustard Atrial Baffle and Bidirectional Superior Cavopulmonary Connection. Ma M, Mainwaring RD, Hanley FL. *Seminars in Thoracic and Cardiovascular Surgery, Pediatric Cardiac Surgery Annual*. 2019; 22: 51-56.

Use of a Supramolecular Polymeric Hydrogel as an Effective Post-operative Pericardial Adhesion Barrier. Stapleton LM, Steele AN, Wang H, Hernandez HL, Yu AC, Paulsen MJ, Smith AA, Roth GA, Thakore AD, Lucian HJ, Totherow KP, Baker SW, Tada Y, Farry JM, Eskandari A, Hironaka CE, Jaatinen KJ, Williams KM, Bergamasco H, Marschel C, Chadwick B, Grady F, Ma M, Appel EA, Woo YJ. *Nature Biomedical Engineering*. 2019; 3 (8): 611-620.

Modeling Conduit Choice for Valve-sparing Aortic Root Replacement on Biomechanics With a 3-dimensional-printed Heart Simulator. Paulsen MJ, Kasinpila K, Imbrie-Moore A, Wang H, Hironaka CE, Koyano TK, Fong R, Chiu P, Goldstone AB, Steele AN, Stapleton LM, Ma M, Woo YJ. *Journal of Thoracic and Cardiovascular Surgery*. 2019; 158 (2): 392-403.

Comprehensive Management of Major Aortopulmonary Collaterals in the Repair of Tetralogy of Fallot. Ma M, Mainwaring RD, Hanley FL. *Seminars in Thoracic and Cardiovascular Surgery, Pediatric Cardiac Surgery Annual*. 2018; 21: 75-82.

A Novel Inflow Cannulation Strategy for Pediatric Mechanical Circulatory Support in Small Left Ventricles. Ma M, Yarlagadda VV, Rosenthal DN, Maeda K. *Journal of Thoracic and Cardiovascular Surgery*. 2017: e1-2.



John W. MacArthur, MD

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Department of Cardiothoracic Surgery
Surgical Director, Lung Transplantation

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EDUCATION/TRAINING

MD Vagelos College of Physicians and Surgeons, Columbia University

BS Fordham University

SURGERY RESIDENCY & INTERNSHIP
University of Pennsylvania

RESEARCH FELLOWSHIP
University of Pennsylvania

CARDIOTHORACIC SURGERY FELLOWSHIP
Stanford University

CARDIOTHORACIC TRANSPLANT FELLOWSHIP
Stanford University

BOARD CERTIFICATION
Surgery (ABS)
Thoracic Surgery (ABTS)

CLINICAL FOCUS

Cardiothoracic Surgery

MEMBERSHIPS

Diplomat of the American Board of Surgery (2016)

Diplomat of the American Board of Thoracic Surgery (2019)

HONORS & AWARDS

Jonathan E. Rhoads Research Award, University of Pennsylvania (2014)

Vivien Thomas Young Investigator Award, American Heart Association (2013)

CURRENT RESEARCH

My research focus is on the application of novel cell based and bioengineering methods towards understanding and treating ischemic heart disease and heart failure.

SELECTED PUBLICATIONS

Bioengineered Analog of Stromal Cell-derived Factor 1 α Preserves the Biaxial Mechanical Properties of Native Myocardium After Infarction. Wang, H., Wisneski, A., Paulsen, M. J., Imbrie-Moore, A., Wang, Z., Xuan, Y., Hernandez, H. L., Lucian, H. J., Eskandari, A., Thakore, A. D., Farry, J. M., Hironaka, C. E., von Bornstaedt, D., Steele, A. N., Stapleton, L. M., Williams, K. M., Wu, M. A., MacArthur, J. W., Woo, Y. *Journal of the Mechanical Behavior of Biomedical Materials*. 2019; 96: 165–71.

SDF 1-alpha Attenuates Myocardial Injury Without Altering the Direct Contribution of Circulating Cells. Goldstone AB, Burnett CE, Cohen JE, Paulson MJ, Eskandari A, Edwards BB, Ingason AB, Steele AN, Patel JB, MacArthur JW, Shizuru JA, Woo YJ. *J Cardiovasc Transl Res*. 2018;11(4):274-284.

3D-printed Vascular Networks Direct Therapeutic Angiogenesis in Ischemia. Mirabella T, MacArthur JW, Cheng D, Ozaki CK, Woo YJ, Ynag M, Chen CS. *Nat Biomed Eng*. 2017;1:0083.

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 J, Shudo Y, Patel JB, Trubelja A, Fairman A, Edwards BB, Hung G, Goldstone AB, Hiesinger W, Atluri P, Wilensky RL, Pilla J, Gorman JH, Gorman RC, Woo YJ. *Circ Res*. 2014;114:650-9.

Sustained Release of Engineered Stromal Cell-derived Factor 1-alpha From Injectable Hydrogels Effectively Recruits Endothelial Progenitor Cells and Preserves Ventricular Function Following Myocardial Infarction. MacArthur JW, Purcell BP, Shudo Y, Cohen JE, Fairman A, Trubelja A, Patel J, Hsiao P, Yang E, Lloyd K, Hiesinger W, Atluri P, Burdick JA, Woo YJ. *Circulation*. 2013;128:S79-86.



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EDUCATION/TRAINING

PHD University of California, San Diego

HONORS & AWARDS

Faculty Scholar, Esther Ehrman Lazard (2003-2005)

Scientist Development Award, American Heart Association (2004-2007)

Cranefield Award, Society of General Physiologists (2008)

Spark Scholar, Stanford University (2010)

Stanford Leadership Development Program (2016-2017)

President, Society of General Physiologists (2018-2019)

CURRENT RESEARCH

Ion transport across the hydrophobic barrier of the cell membrane is a primary challenge faced by all cells. Such transport sets up and exploits ion gradients, thus providing the basic energy and signaling events that are the foundation of life. My laboratory studies the molecular mechanisms of ion channels and transporters, the proteins that catalyze this transport. We use a combination of biophysical methods to investigate membrane-protein structure and dynamics together with electrophysiological analyses to directly measure function. We also collaborate with the Du Bois laboratory (Chemistry) to develop small-molecule tools for studying physiological functions of channels and transporters. Finally, we apply expertise in ion channels towards understanding the mechanism by which ultrasound modulates neural activity. These projects have many potential therapeutic applications in cardiovascular health and disease.

Nothing will work if you don't.

— Maya Angelou.

SELECTED PUBLICATIONS

Structural Characterization of an Intermediate Reveals a Unified Mechanism for the CLC Cl⁻/H⁺ Transport Cycle. Chavan, T.S., Cheng, R.C., Jiang, T., Mathews, I.I., Stein, R.A., Koehl, A., Mchaourab, H.S., Tajkhorshid, E., and Maduke, M. *BioRxiv*, (pre-print), Nov. 27, 2019. <https://www.biorxiv.org/content/10.1101/857136v1>.

A Selective Class of Inhibitors for the CLC-Ka Chloride Channel. Koster, A.K., Wood, C.A.P., Thomas Tran, R., Chavan, T.S., Almqvist, J., Choi, K.H., Du Bois, J., Maduke, M. *PNAS*, May 22;115(21):E4900-E4909, 2018.

M. Activation of Piezo1 but not Nav1.2 Channels by Ultrasound at 43 MHz. Prieto, M.L., Firouzi, K., Khuri-Yakub, B.T., Maduke, *Ultrasound in Medicine and Biology*, Jun;44(6):1217-1232, 2018.

Revealing an Outward-facing Open Conformational State in a CLC Cl⁻/H⁺ Exchange Transporter. Khantwal, C.M., Abraham, S.J., Han, W., Jiang, T., Chavan, T.S., Cheng, R.C., Elvington, S.M., Liu, C.W., Mathews, I.I., Stein, R.A., Mchaourab, H.S., Tajkhorshid, E., and Maduke, M. *eLife*, Jan 22;5, 2016.

Water Access Points and Hydration Pathways in CLC H⁺/Cl⁻ Transporters. Han, W., Cheng, R.C., Maduke, M. and Tajkhorshid, E. *PNAS*, 111: 1819–1824, 2014.



Kenneth W. Mahaffey, MD

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

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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

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 has focused on the evaluation of pharmaceutical agents for the treatment of acute coronary syndromes, atrial fibrillation, hyperlipidemia, and diabetes mellitus. I am also interested in evaluation of digital and mobile technologies and the integration of these technologies in clinical evaluation and care. I am the founder and director of the Stanford Center for Clinical Research an academic research organization to support clinical research. I am the Vice Chair of Clinical Research in the Department of Medicine.

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

SELECTED PUBLICATIONS

Large-Scale Assessment of a Smartwatch to Identify Atrial Fibrillation. Perez MV, Mahaffey KW, Hedlin H, Rumsfeld JS, Garcia A, Ferris T, Balasubramanian V, Russo AM, Rajmane A, Cheung L, Hung G, Lee J, Kowey P, Talati N, Nag D, Gummidipundi SE, Beatty A, Hills MT, Desai S, Granger CB, Desai M, Turakhia MP; Apple Heart Study Investigators. *N Engl J Med*, 2019 Nov 14;381(20):1909-1917.

Canagliflozin and Renal Outcomes in Type 2 Diabetes and Nephropathy. Perkovic V, Jardine MJ, Neal B, Bompoint S, Heerspink HJL, Charytan DM, Edwards R, Agarwal R, Bakris G, Bull S, Cannon CP, Capuano G, Chu PL, de Zeeuw D, Greene T, Levin A, Pollock C, Wheeler DC, Yavin Y, Zhang H, Zinman B, Meininger G, Brenner BM, Mahaffey KW; CREDENCE Trial Investigators. *N Engl J Med*, 2019 Jun 13;380(24):2295-2306.



David J. Maron, MD

Clinical Professor, Medicine - Cardiovascular Medicine
Director, Preventive Cardiology
Chief, Stanford Prevention Research Center

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WEB stanfordhealthcare.org/medical-clinics/preventive-cardiology.html

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

Primary and Secondary Prevention of
Coronary Artery Disease
Lipid Disorders

HONORS & AWARDS

Alpha Omega Alpha
Vanderbilt Emergency Department
Patient Advocate Award
Vanderbilt Five Star Award for patient
satisfaction (2010, 2013)

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 Co-Chair of the ISCHEMIA trial, a large international NIH/NHLBI-funded trial that compares the effectiveness of conservative versus invasive management of patients with stable coronary disease and at least moderate ischemia on stress testing. I am working on Project Baseline to find new signals that indicate the onset or progression of coronary artery disease.

SELECTED PUBLICATIONS

Healthy Behavior, Risk Factor Control, and Survival in the COURAGE Trial. Maron DJ, Mancini GBJ, Hartigan PM, Spertus JA, Sedlis SP, Kostuk WJ, Berman DS, Teo KK, Weintraub WS, Boden WE. *J Am Coll Cardiol* 2018;72:2297-2305.

Baseline Characteristics of Participants in the International Study of Comparative Health Effectiveness with Medical and Invasive Approaches (ISCHEMIA). Hochman JS, Reynolds HR, Bangalore S, O'Brien S, Alexander K, Senior R, Boden W, Stone G, Goodman S, Lopes R, Lopez-Sendon J, White H, Maggioni A, Shaw L, Min J, Picard M, Berman D, Chaitman B, Mark D, Spertus J, Cyr D, Bhargava B, Ruzyllo W, Wander G, Chernyavskiy A, Rosenberg Y, Maron DJ. *JAMA Cardiol* 2019;4:273-286.

Healthy Behavior, Risk Factor Control, and Survival in the COURAGE Trial. Maron DJ, Mancini GBJ, Hartigan PM, Spertus JA, Sedlis SP, Kostuk WJ, Berman DS, Teo KK, Weintraub WS, Boden WE. *J Am Coll Cardiol* 2018;72:2297-2305.

Planning and Conducting the ISCHEMIA Trial: Setting the Record Straight. Maron DJ, Harrington RA, Hochman JS. *Circulation* 2018;138:1384-1386.

International Study of Comparative Health Effectiveness with Medical and Invasive Approaches (ISCHEMIA) Trial: Rationale and Design. ISCHEMIA Trial Research Group. Maron DJ, Hochman JS, O'Brien SM, Reynolds HR, Boden WE, Stone GW, Bangalore S, Spertus JA, MD, Mark DB, Alexander KP, Shaw L, Berger JS, Ferguson Jr. TB, Williams DO, Harrington RA, Rosenberg Y. *Am Heart J* 2018;201:124-135.

ISCHEMIA-CKD Research Group. International Study of Comparative Health Effectiveness with Medical and Invasive Approaches-Chronic Kidney Disease (ISCHEMIA-CKD): Rationale and Design. Bangalore S, Maron DJ, Fleg JL, O'Brien SM, Herzog CA, Stone GW, Mark DB, Spertus JA, Alexander KP, Sidhu MS, Chertow GM, Boden WE, Hochman JS; *Am Heart J* 2018;205:42-52.



Alison Marsden, PhD

Associate Professor of Pediatrics (Cardiology) and of Bioengineering and (by courtesy) of Mechanical Engineering

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CURRENT RESEARCH

Alison Marsden is an associate professor and Wall Center scholar in the departments of Pediatrics, Bioengineering, and, by courtesy, Mechanical Engineering at Stanford University. From 2007-2015 she was a faculty member in the Mechanical and Aerospace Engineering Department at the University of California San Diego. She graduated with a bachelor's degree in Mechanical Engineering from Princeton University in 1998, and a PhD in Mechanical Engineering from Stanford in 2005. She was a postdoctoral fellow at Stanford University in Bioengineering and Pediatric Cardiology from 2005-07. She was the recipient of a Burroughs Wellcome Fund Career Award at the Scientific Interface (2007), an NSF CAREER award (2011), received the UCSD graduate student association faculty mentor award (2014) and MAE department teaching award (2015). She is a fellow of two major scientific societies, the American Institute for Medical and Biological Engineering and the Society for Industrial and Applied Mathematics. She has published over 100 peer reviewed journal papers, and has received funding from the NSF, NIH, and several private foundations. She serves on the editorial boards of *PLOS Computational Biology*, *Current Opinion in Biomedical Engineering*, and *Cardiovascular Engineering and Technology*, and on the advisory board for the Burroughs Wellcome Fund. Her work focuses on the development of numerical methods for cardiovascular blood flow simulation, medical device design, optimization to large-scale fluid mechanics simulations, and application of engineering tools to impact patient care in cardiovascular surgery and congenital heart disease.

Failure is closer to success than inaction.

— Earl Bakken

SELECTED PUBLICATIONS

Evolution of Hemodynamic Forces in the Pulmonary Tree with Progressively Worsening Pulmonary Arterial Hypertension in Pediatric Patients. Yang W, Dong M, Rabinovitch M, Chan FP, Marsden AL, Feinstein JA, *Biomechanics and Modeling in Mechanobiology*, Vol. 18(3), pp. 1-8 (2019).

Uncertainty Quantification of Simulated Biomechanical Stimuli in Coronary Artery Bypass Grafts. Tran JS, Schiavazzi DE, Kahn AM, Marsden AL, *Computer Methods in Applied Mechanics and Engineering*, Vol. 345 (1), pp. 402-428, (2019).

Patient-specific Multiscale Modeling of the Assisted Bidirectional Glenn. Shang J, Esmaily M, Verma A, Reinhartz O, Figliola RS, Hsia TY, Feinstein JA, Marsden AL, *Annals of Thoracic Surgery*, Vol. 107(4), pp. 1239-1240 (2019).

Hemodynamic Variables in Aneurysms are Associated with Thrombotic Risk in Children with Kawasaki Disease. Grande Gutierrez N, Mathew M, McCrindle BW, Tran JS, Kahn AM, Burns JC, Marsden AL, *International Journal of Cardiology*, Vol. 281, pp. 15-21, (2019).

A Robust and Efficient Iterative Method for Hyper-elastodynamics With Nested Block Preconditioning. Liu J, Marsden AL, *Journal of Computational Physics*, Vol. 383, pp. 72-93, (2019).

EDUCATION/TRAINING

PHD Stanford University

HONORS & AWARDS

Career Award at the Scientific Interface, Burroughs Wellcome Fund

Career Award, National Science Foundation

Teacher of the Year Award, MAE Department, UCSD

Vera Moulton Wall Center Faculty Scholar

FELLOW

Fellow, American Institute of Medical and Biological Engineering

Fellow, Society for Industrial and Applied Mathematics

ADVISORY BOARDS

Burroughs Wellcome Fund Career Awards at the Scientific Interface



Nicholas Melosh, PhD

Associate Professor of Material Science and Engineering and of Photon Science

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EDUCATION/TRAINING

PHD University of California, Santa Barbara

CURRENT RESEARCH

The focus of my research is engineering cell access and dynamic bio-electronic interfaces. I am very interested in how to design new structures that will seamlessly integrate with biological systems to address problems in molecular delivery, iPSC development, cell sampling, and electrical recording. This involves both fundamental work such as to deeply understand how lipid membranes interact with inorganic surfaces, electrokinetic phenomena in biologically relevant solutions, and applying this knowledge into new device designs. Examples of this include “nanostraw” drug delivery platforms for direct delivery or extraction of material through the cell wall using a biomimetic gap-junction made using nanoscale semiconductor processing techniques. We also engineer materials and structures for electrical interfaces and highly parallel stimulation and recording. For instance, we have created inorganic electrodes that mimic the hydrophobic banding of natural transmembrane proteins, allowing them to ‘fuse’ into the cell wall, providing a tight electrical junction for solid-state patch clamping. In addition to significant efforts at engineering surfaces at the molecular level, we also work on ‘bridge’ projects that span between engineering and biological/clinical needs.

One of the most exciting developments over the past ten years is the merging of engineered devices and biological problems to make clinical impacts.

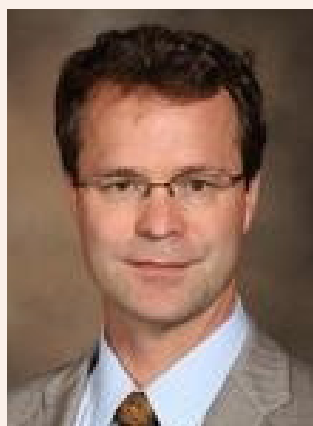
SELECTED PUBLICATIONS

Non-Destructive Nanostraw Intracellular Sampling for Longitudinal Cell Monitoring. Cao Y, Hjort M, Chen H, Birey F, Leal-Ortiz S, Han C, Santiago J, Paşca S, Wu J, & Melosh NA. 2017 *Proc Natl Acad Sci USA*, Vol. 114, pp. 1866-1874.

Nanotechnology and Neurophysiology. Angle MR, Cui B, & Melosh NA (2015). *Current Opinion in Neurobiology*. 2015 Jun;32:132-40.

Quantification of Nanowire Penetration Into Living Cells. M. Xu, A. Aalipour, S. Leal-Ortiz, A. H. Mekhdjian, X. Xie, A. R. Dunn, C. C. Garner, N. A. Melosh. 2014 *Nature Communications*:1-8.

Fusion of Biomimetic ‘Stealth’ Probes Into Lipid Bilayer Cores. B. D. Almquist, N. A. Melosh. 2010 *Proc Natl Acad Sci USA*, Vol. 107, pp. 5815-5820.



Doff McElhinney, MD

Professor of Cardiothoracic Surgery (Pediatric Cardiac Surgery) and of Pediatrics (Cardiology)

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PROFILE med.stanford.edu/profiles/doff-mcelhinney

EDUCATION/TRAINING

MD University of California, San Francisco, School of Medicine

RESIDENCY Children's Hospital of Philadelphia

FELLOWSHIP Boston Children's Hospital

BOARD CERTIFICATION

American Board of Pediatrics

American Board of Pediatrics, Pediatric Cardiology
Adult Congenital Heart Disease,
American Board of Internal Medicine

HONORS & AWARDS

EDITORIAL BOARD

Associate Editor, Catheterization and Cardiovascular Interventions

GUEST EDITOR

Circulation

EXECUTIVE COMMITTEE

Lucile Packard Children's Heart Center

CURRENT RESEARCH

My interests are in outcomes research, transcatheter device therapy for congenital heart disease, and collaborative translational investigation related to the pathophysiology, evaluation, and management of pediatric and adult congenital heart disease. I am Director of the Lucile Packard Children's Hospital Stanford Heart Center, Program for Clinical and Translational Research.

SELECTED PUBLICATIONS

Relative Risk Factors for Cardiac Erosion Following Transcatheter Closure of Atrial Septal Defects: A Case-control Study. McElhinney DB, Quartermain MD, Kenny D, Alboliras E, Amin Z. *Circulation* 2016;133:1738-46.

Transcatheter Pulmonary Valve Replacement Reduces Tricuspid Regurgitation in Patients With Right Ventricular Volume/Pressure Overload. Jones TK, Rome JJ, Armstrong AK, Berger F, Hellenbrand WE, Cabalka AK, Benson LN, Balzer DT, Cheatham JP, Eicken A, McElhinney DB. *J Am Coll Cardiol* 2016;68:1525-35.

Programmatic Approach to Management of Tetralogy of Fallot With Major Aortopulmonary Collateral Arteries: A 15-year Experience With 458 Patients. Bauser-Heaton H, Borquez A, Han B, Ladd M, Asija R, Downey L, Koth A, Algaze CA, Wise-Faberowski L, Perry SB, Shin A, Peng LF, Hanley FL, McElhinney DB. *Circ Cardiovasc Interv.* 2017 Apr;10(4). PMID: 28356265.

Relationships Among Conduit Type, Pre-stenting, and Outcomes in Patients Undergoing Transcatheter Pulmonary Valve Replacement in the Prospective North American and European Melody Valve Trials. Cabalka AK, Hellenbrand WE, Eicken A, Kreutzer J, Gray RG, Bergersen L, Berger F, Armstrong AK, Cheatham JP, Zahn EM, McElhinney DB. *JACC Cardiovasc Interv* 2017;10:1746-59.

Transcatheter Pulmonary Valve Replacement Using the Melody Valve for Treatment of Dysfunctional Surgical Bioprostheses: A Multicenter Study. Cabalka AK, Asnes JD, Balzer DT, Cheatham JP, Gillespie MJ, Jones TK, Justino H, Kim DW, Lung TH, Turner DR, McElhinney DB. *J Thorac Cardiovasc Surg* 2018;155:1712-24.

Intentional Fracture of Bioprosthetic Valve Frames in Patients Undergoing Valve-in-valve Transcatheter Pulmonary Valve Replacement. Shahanavaz S, Asnes JD, Grohmann J, Qureshi AM, Rome JJ, Tanase D, Crystal MA, Latson LA, Morray BH, Hellenbrand W, Balzer DT, Gewillig M, Love JC, Berdjis F, Gillespie MJ, McElhinney DB. *Circ Cardiovasc Interv.* 2018;11:e006453. doi: 10.1161/CIRCINTERVENTIONS.118.006453.

Endocarditis After Transcatheter Pulmonary Valve Replacement. McElhinney DB, Sondergaard L, Armstrong AK, Bergersen L, Padera RF, Balzer DT, Lung TH, Berger F, Zahn EM, Gray RG, Hellenbrand WE, Kreutzer J, Eicken A, Jones TK, Ewert P. *J Am Coll Cardiol* 2018;72:2717-28.



Mark Mercola, PhD

Professor of Medicine, Cardiovascular Medicine

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EDUCATION/TRAINING

PHD UCLA

BA UCLA

HONORS & AWARDS

American Cancer Society Postdoctoral Fellowship (1986)

Richard A. Smith Prize for Scientific Excellence, Dana-Farber Cancer Institute (1989)

Basil O'Connor Award, March of Dimes Birth Defects Foundation (1991)

Established Investigator Award, American Heart Association (1997)

National Institutes of Health MERIT Award (2007)

CURRENT RESEARCH

Our goal is to discover new therapeutic targets and therapeutics for heart failure, and to remove the adverse cardiac effects of oncology drugs. Over the past two decades, our studies laid the groundwork for the efficient production of heart cells from pluripotent stem cells, and for automated, high throughput screening of genes, proteins and small molecules for the ability to ameliorate disease symptoms. Our current pipeline starts with cardiomyopathy and arrhythmia models generated using patient and genome edited iPSCs and uses them in screens to find new therapeutic targets and develop novel therapeutic strategies. The most advanced projects are now in preclinical, large animal testing.

There is so much we can do now to understand the human condition that would have been unimaginable only a few years ago—in many ways we live in the best of times.

SELECTED PUBLICATIONS

Disruption of NOTCH Signaling by a Small Molecule Inhibitor of the Transcription Factor RBPJ. Hurtado C, Safarova A, Smith M, Chung R, Bruyneel AAN, Gomez-Galeno J, Oswald F, Larson CJ, Cashman JR, Ruiz-Lozano P, Janiak P, Suzuki T, Mercola M. *Sci Rep.* 2019 Jul 25;9(1):10811.

High-throughput Screening of Tyrosine Kinase Inhibitor Cardiotoxicity With Human Induced Pluripotent Stem Cells. Sharma A, Burr ridge PW, McKeithan WL, Serrano R, Shukla P, Sayed N, Churko JM, Kitani T, Wu H, Holmström A, Matsa E, Zhang Y, Kumar A, Fan AC, Del Álamo JC, Wu SM, Moslehi JJ, Mercola M, Wu JC. *Sci Transl Med.* 2017 Feb 15;9(377).

Will iPSC-cardiomyocytes Revolutionize the Discovery of Drugs for Heart Disease?. Bruyneel AA, McKeithan WL, Feyen DA, Mercola M. *Curr Opin Pharmacol.* 2018 Oct;42:55-61.

miRNAs That Induce Human Cardiomyocyte Proliferation Converge on the Hippo Pathway. Diez-Cuñado M, Wei K, Bushway PJ, Maurya MR, Perera R, Subramaniam S, Ruiz-Lozano P, Mercola M. *Cell Rep.* 2018 May 15;23(7):2168-2174.

miR-25 Tough Decoy Enhances Cardiac Function in Heart Failure. Jeong D, Yoo J, Lee P, Kepreotis SV, Lee A, Wahlquist C, Brown BD, Kho C, Mercola M, Hajjar RJ. *Mol Ther.* 2018 Mar 7;26(3):718-729.

An Automated Platform for Assessment of Congenital and Drug-Induced Arrhythmia with hiPSC-Derived Cardiomyocytes. McKeithan WL, Savchenko A, Yu MS, Cerignoli F, Bruyneel AAN, Price JH, Colas AR, Miller EW, Cashman JR, Mercola M. *Front Physiol.* 2017;8:766.

Id Genes are Essential for Early Heart Formation. Cunningham TJ, Yu MS, McKeithan WL, Spiering S, Carrette F, Huang CT, Bushway PJ, Tierney M, Albin S, Giacca M, Mano M, Puri PL, Sacco A, Ruiz-Lozano P, Riou JF, Umbhauer M, Duester G, Mercola M, Colas AR. *Genes Dev.* 2017 Jul 1;31(13):1325-1338.



D. Craig Miller, MD

Thelma and Henry Doelger Professor in Cardiovascular Surgery
Department of Cardiothoracic Surgery

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EDUCATION/TRAINING

MD Stanford University School of Medicine CA

BA Stanford University, Basic Medical Sciences (1969)
Dartmouth College, Chemistry/Mathematics (1968)

RESIDENCY Stanford University School of Medicine CA (1975, 1977)

BOARD CERTIFICATION

Thoracic Surgery, American Board of Thoracic Surgery (1979) Recertified, 1988, 1998, 2008, 2017.

HONORS & AWARDS

President, American Association for Thoracic Surgery, 2007-2008

President, Western Thoracic Surgical Association, 1994-1995

Eugene Braunwald Mentorship Award, American Heart Association, 2009

Distinguished Scientist of the American Heart Association, 2003

Antoine Marfan Award, National Marfan's Foundation, 2001

Wilfred Bigelow Award, Canadian Cardiovascular Society, 2000

Distinguished Achievement Award, American Heart Assoc. Cardiovascular Surgery & Anesthesia Council, 2008

William W. L. Glenn lecturer, American Heart Association, 2002

David J. Dugan Distinguished Service Award (Western Thoracic Surgical Association) 2016

CURRENT RESEARCH

Cardiac and heart valve disease with experimental laboratory large animal projects focused on the investigation of left ventricular and cardiac mechanics, bioenergetics, and LV and mitral valve physiology and pathophysiology. Current thrust is aimed at understanding the mitral valve and subvalvular mitral apparatus and transmural LV wall strains, thickening, and myolaminar fiber-sheet mechanics.

Clinical research interests include thoracic aortic diseases (aortic dissection, aneurysm) and cardiac valvular disease, including surgical treatment, endovascular thoracic aortic stent-graft repair, mitral valve repair, and valve-sparing aortic root replacement.

Those who cannot remember the past are condemned to repeat it.

— George Santayana (1863-1952)

SELECTED PUBLICATIONS

Rationale and Results of the Stanford Modification of the David V Reimplantation Technique for Valve-sparing Aortic Root Replacement. Miller, D. C. *Journal of Thoracic and Cardiovascular Surgery* 2015; 149 (1): 112-114.

Stroke After Surgical Versus Transfemoral Transcatheter Aortic Valve Replacement in the PARTNER Trial. Kapadia, S. R., Huded, C. P., Kodali, S. K., Svensson, L. G., Tuzcu, E. M., Baron, S. J., Cohen, D. J., Miller, D. C., Thourani, V. H., Herrmann, H. C., Mack, M. J., Szerlip, M., Makkar, R. R., Webb, J. G., Smith, C. R., Rajeswaran, J., Blackstone, E. H., Leon, M. B., PARTNER Trial Investigators *Journal of the American College of Cardiology* 2018; 72 (20): 2415-26.

Transcatheter or Surgical Aortic-Valve Replacement in Intermediate-Risk Patients. Leon, M. B., Smith, C. R., Mack, M. J., [5 authors], Miller, D. C., Herrmann, H. C., Doshi, D., Cohen, D. J., Pichard, A. D., [15 authors] P., Hahn, R. T., Jaber, W. A., Anderson, W. N., Alu, M. C., Webb, J. G. *New England Journal of Medicine* 2016; 374 (17): 1609-1620.

5-year Outcomes of Transcatheter Aortic Valve Replacement or Surgical Aortic Valve Replacement for High Surgical Risk Patients With Aortic Stenosis (PARTNER 1): A Randomised Controlled Trial. Mack, M. J., Leon, M. B., Smith, C. R., Miller, D. C., Moses, J. W., Tuzcu, E. M., Webb, J. G., Douglas, P. S., Anderson, W. N., Blackstone, E. H., Kodali, S. K., Makkar, R. R., Fontana, G. P., Kapadia, S., Bavaria, J., Hahn, R. T., Thourani, V. H., Babaliaros, V., Pichard, A., Herrmann, H. C., Brown, D. L., Williams, M., Akin, J., Davidson, M. J., Svensson, L. G. *Lancet* 2015; 385 (9986): 2477-2484.



Daria Mochly-Rosen, PhD

George D. Smith Professor of Translational Medicine
Professor, Chemical and Systems Biology
Co-director, SPARK - Stanford's Translational Research Program
President and Founder, SPARK GLOBAL

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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

Takeda/Stanford Alliance for Innovative Medicines (AIM); Vlaams Instituut voor Biotechnologie (VIB) Advisory Board, Belgium; California Life Sciences Association Board

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 Biochem and Molec Biology; Council on Stroke, AHA; Heart Failure Society of America; ISHR; Society for Neuroscience; UCSF-Stanford CERSI External Advisory Board

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 am the Founder and Co-director of SPARK - Stanford's Translational Research Program Program and the Founder and President of SPARK GLOBAL, a network of translational scientists without borders, now in ~70 institutes on six continents.

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

ALDH2 and Cardiovascular Disease. Chen CH, Ferreira JCB, Mochly-Rosen D. *Adv Exp Med Biol*, 1193:53-67, 2019.

SAM β A, a Selective Antagonist of Mitofusin 1- β IIIPKC Association, Improves Heart Failure Outcome in Rats. Ferreira JC, Campos CS, Qvit N, Qi X, Bozi BHM, Bechara LRG, Lima VM, Queliconi QB, Disatnik MH, Dourado PMM, Kowaltowski AJ, Mochly-Rosen D. *Nature Commun*, 10(1):329, 2019.

Drp1/Fis1-mediated Mitochondrial Fragmentation Leads to Lysosomal Dysfunction in Cardiac Models of Huntington's Disease. Joshi AU, Ebert AE, Haileselassie B, Mochly-Rosen D. *J Mol Cell Cardiol*, 130:160-169, 2019.

Engineered Substrate-specific Delta PKC Antagonists to Enhance Cardiac Therapeutics. Qvit N, Kornfeld OS, Mochly-Rosen D. *Angew Chem Int*. 2016; 55: 15672-15679.

Mitochondrial Reactive Oxygen Species at the Heart of the Matter: New Therapeutic Approaches for Cardiovascular Diseases. Kornfeld OS, Hwang S, Disatnik MH, Chen CH, Qvit N, Mochly-Rosen D. *Circ Res*. 2015; 116:1783-99.

Selective Phosphorylation Inhibitor of Delta Protein Kinase C-pyruvate Dehydrogenase Kinase Protein-protein Interactions: Application for Myocardial Injury, In Vivo. Qvit N, Disatnik MH, Sho E, Mochly-Rosen D. *J Am Chem Soc*. 2016; 138:7626-35.



Jonathan Myers, PhD

Clinical Professor, Medicine - Cardiovascular Medicine

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

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CURRENT RESEARCH

Our research group focuses on clinical applications of exercise testing and training in patients with cardiovascular disease. We coordinate several national and international data bases designed to address cardiopulmonary exercise test, clinical, and lifestyle factors and their association with health outcomes. 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, gene expression, coronary disease, and mild cognitive impairment.

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

Association between cardiorespiratory fitness and health care costs: The Veterans Exercise Testing Study. Myers J, Doom R, King R, Fonda H, Abella J, Froelicher V, Chan K, Kokkinos P. *Mayo Clinic Proceedings*. 2017 Nov 28.

A reference equation for normal standards for VO2 max: Analysis from the Fitness Registry and the Importance of Exercise Database (FRIEND Registry). Progress in Cardiovascular Diseases. Myers J, Kaminsky L, Lima R, Christle J, Ashley E, Arena R. *Prog Cardiovasc Dis*. 2017 Jun-Jul;60(1):21-29.

Cardiorespiratory fitness and reclassification of risk for incidence of heart failure: The Veterans Exercise Testing Study. Myers J, Kokkinos P, Chan K, Dandekar E, Yilmaz B, Nagare A, Faselis C, Soofi M. *Circ Heart Fail*. 2017 Jun;10(6).

Cardiorespiratory fitness and incidence of major adverse cardiovascular events in US veterans: A cohort study. Kokkinos PF, Faselis C, Myers J, Narayan P, Sui X, Zhang J, Lavie CJ, Moore H, Karasik P, Fletcher R. *Mayo Clin Proc*. 2017; 92 (1): 39-48.

Prognosis: Does exercise training reduce adverse events in heart failure? Myers J, Brawner CA, Haykowsky MJF, Taylor RS. *Heart Failure Clinics*. 2015; 11:59-72.

Physical activity and cardiorespiratory fitness as major markers of cardiovascular risk: Their independent and interwoven importance to health status. Myers J, McAuley P, Lavie C, Despres JP, Arena R, Kokkinos P. *Progress in Cardiovascular Diseases*. 2015; 57:306-314.

Improved reclassification of mortality risk by assessment of physical activity in patients referred for exercise testing. Myers J, Nead KT, Chang P, Abella J, Kokkinos P, Leeper NJ. *Am J Med*. 2015; 128:396-402.

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)

Steven N. Blair Award for Excellence in Physical Activity Research, American Heart Association, 2017

Research Career Scientist Award, Veterans Administration Rehabilitation Research and Development Service (2004, 2009, 2016)

ADVISORY BOARD

American Heart Association Council on Epidemiology & Prevention; Fitness registry and the importance of exercise national database (FRIEND Registry); European Society of Preventive Medicine

FELLOW

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

MEMBER

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



Sanjiv Narayan, MD, MSc

Professor of Medicine (Cardiovascular Medicine)

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LAB <https://narayanlab.stanford.edu>

EDUCATION/TRAINING

MBCHB U. of Birmingham, England (1987)

MRCP Royal College of Physicians of London, England (1990)

MSc U. of Birmingham, England (1990)

MD U. of Birmingham, England (1994)

FRCP Royal College of Physicians of London, England (2005)

CURRENT RESEARCH

I direct a translational clinical laboratory, focused on applying bioengineering and computational approaches to better understand symptomatic and life threatening heart rhythm disorders. In recent years we have developed personalized computational models and novel mapping catheters to reveal repetitive drivers for atrial fibrillation and ventricular fibrillation, whose ablation may improve clinical outcomes. These sites may exhibit rotational or focal patterns on traditional activation maps. Our current focus is on defining how disorganized waves in fibrillation organize, and how organized sites disorganize (fibrillatory conduction), by applying machine learning to signal types at various spatial scales. Our lab focuses on developing open-access tools and mobile technology for improved patient care.

Our laboratory principle is bedside-to-bench-to-bedside research integrating bioengineering and computational methods with sound physiological understanding.

SELECTED PUBLICATIONS

Integrating Blockchain Technology With Artificial Intelligence for Cardiovascular Medicine. Krittanawong C, Rogers AJ, Aydar M, Choi E, Johnson KW, Wang Z, Narayan SM. *Nat Rev Cardiol.* 2019 Oct 11.

Wavefront Field Mapping Reveals a Physiologic Network Between Drivers Where Ablation Terminates Atrial Fibrillation. Leef G, Shenasa F, Bhatia NK, Rogers AJ, Sauer W, Miller JM, Swerdlow M, Tamboli M, Alhusseini MI, Armenia E, Baykaner T, Brachmann J, Turakhia MP, Atienza F, Rappel WJ, Wang PJ, Narayan SM. *Circ Arrhythm Electrophysiol.* 2019 Aug;12(8):e006835.

Deep Learning for Cardiovascular Medicine: A Practical Primer. Krittanawong C, Johnson KW, Rosenson RS, Wang Z, Aydar M, Baber U, Min JK, Tang WHW, Halperin JL, Narayan SM. *Eur Heart J.* 2019 Jul 1;40(25):2058-2073.

Interaction of Localized Drivers and Disorganized Activation in Persistent Atrial Fibrillation: Reconciling Putative Mechanisms Using Multiple Mapping Techniques. Kowalewski CAB, Shenasa F, Rodrigo M, Clopton P, Meckler G, Alhusseini MI, Swerdlow MA, Joshi V, Hossainy S, Zaman JAB, Baykaner T, Rogers AJ, Brachmann J, Miller JM, Krummen DE, Sauer WH, Peters NS, Wang PJ, Narayan SM. *Circ Arrhythm Electrophysiol.* 2018 Jun;11(6):e005846.

Treatment of Atrial Fibrillation by the Ablation of Localized Sources: The CONventional Ablation For Atrial Fibrillation With and Without Focal Impulse and Rotor Modulation (CONFIRM) Trial. Narayan SM, Krummen DE, Shivkumar K, Clopton PS, Rappel WJ, Miller JM. *J Am Coll Cardiol.* 2012; 60(7):628-36.

Atrial Fibrillation. Narayan SM, Cain ME, Smith, JM. *Lancet.* 1997; 350: 943-950.



Mark R. Nicolls, MD

Professor, Medicine - Division of Pulmonary, Allergy and Critical Care Medicine
 Chief, Division of Pulmonary, Allergy and Critical Care Medicine
 Director, Lung Immunology
 Endowed Chair: The Stanford Professor of Pulmonary and Critical Care Medicine

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DIVISION pulmonary.stanford.edu

EDUCATION/TRAINING

MD Stanford University

MEDICINE RESIDENCY & INTERNSHIP

Stanford University

PULMONARY AND CRITICAL CARE MEDICINE FELLOWSHIP

University of Colorado

BOARD CERTIFICATION

Pulmonary Disease, ABIM

CLINICAL FOCUS

Heart/Lung Transplantation

Lung Transplantation

Pulmonary Hypertension

Lymphedema

HONORS & AWARDS

ELECTED MEMBER

American Society for Clinical
Investigation (ASCI)

DIRECTOR

Stanford Lung Immunology Program
 Stanford University Remodeled Airways
 Tissue Bank
 Stanford Center for Advanced Lung
 Disease (CALD)

CO-FOUNDER

Northern California Scleroderma
 Research Consortium

EXECUTIVE STEERING COMMITTEE

Vera Moulton Wall Center for Pulmonary
 Vascular Disease

CHAIRMAN OF THE BOARD

Palo Alto Veterans Institute for Research

EDITORIAL BOARD

European Respiratory Journal

CURRENT RESEARCH

I specialize in the treatment of lung transplant patients. I have practiced pulmonary and critical care medicine for 20 years. We focus on how the immune system contributes to vascular injury leading to a variety of diseases and pathology with a special focus on lung transplantation, pulmonary hypertension, COPD, and lymphedema.

SELECTED PUBLICATIONS

Leukotriene B-4 Antagonism Ameliorates Experimental Lymphedema. Tian, W., Rockson, S. G., Jiang, X., Kim, J., Begaye, A., Shuffle, E. M., Tu, A. B., Cribb, M., Nepiyushchikh, Z., Feroze, A. H., Zamanian, R. T., Dhillon, G. S., Voelkel, N. F., Peters-Golden, M., Kitajewski, J., Dixon, J. B., Nicolls, M. R. *Science Translational Medicine*, 2017; 9 (389).

Microhemorrhage-associated Tissue Iron Enhances the Risk for *Aspergillus fumigatus* Invasion in Murine Tracheal Transplantation. Hsu JL, Manouvakova OV, Clemons KV, Inayathullah M, Tu AB, Sobel RA, Tian W, Nazik H, Pothineni VR, Pasupneti S, Jiang X, Dhillon GS, Bedi H, Rajadas J, Haas H, Aurelian L, Stevens DA, Nicolls MR. *Science Translational Medicine*, 2018.

A Dominant Role for Regulatory T Cells in Protecting Females Against Pulmonary Hypertension. Tamosiuniene R, Manouvakova O, Mesange P, Saito T, Qian J, Sanayal M, Lin YC, Nguyen L, Luria A, Tu A, Sante J, Rabinovitch M, Fitzgerald DJ, Graham BB, Habtezion A, Voelkel NF, Aurelian L, Nicolls MR. *Circ. Res.*, 2018 Mar 15;117.312058.

Endothelial HIF-2 α is Required for the Maintenance of Airway Microvasculature. Jiang X, Tian W, Tu AB, Pasupneti S, Shuffle E, Dahms P, Zhang P, Cai H, Dinh TT, Liu B, Cain C, Giaccia AJ, Butcher EC, Simon MC, Semenza GL, Nicolls MR. *Circulation*, 2019; Jan 22;139(4):502-517.

Phenotypically Silent Bone Morphogenetic Protein Receptor 2 Mutations Predispose Rats to Inflammation-Induced Pulmonary Arterial Hypertension by Enhancing the Risk for Neointimal Transformation. Tian W, Jiang X, Sung YK, Shuffle E, Wu TH, Kao PN, Tu AB, Dorfmueller P, Cao A, Wang L, Peng G, Kim Y, Zhang P, Chappell J, Pasupneti S, Dahms P, Maguire P, Chaib H, Zamanian R, Peters-Golden M, Snyder MP, Voelkel NF, Humbert M, Rabinovitch M, Nicolls MR. *Circulation*, 2019 Oct 22;140(17):1409-1425.



Koen Nieman, MD, PhD

Associate Professor of Medicine (Cardiovascular Medicine)
and Radiology (CV Imaging)

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EDUCATION/TRAINING

MD Radboud University, Nijmegen NL

PHD Erasmus University, Rotterdam NL

INTERNSHIP Radboud University

RESIDENCY

Erasmus University Medical Center

FELLOWSHIP Massachusetts General
Hospital Department of Radiology

HONORS & AWARDS

BOARDS

President-Elect, Society of
Cardiovascular Computed Tomography
Associate editor JACC cardiovascular
imaging

CURRENT RESEARCH

Dr. Nieman is a cardiologist and associate professor in the departments of cardiovascular medicine and radiology. He investigates advanced cardiac imaging techniques, and current research interest include stress myocardial perfusion CT, CT-based fractional flow reserve, machine-learning approaches to disease differentiation, imaging-guided decision making and the clinical value of cardiac CT in ischemic heart disease. Dr. Nieman was born in the Netherlands, obtained his medical degree at the Radboud University in Nijmegen (1998), and completed his cardiology training at the Erasmus University Medical Center in Rotterdam (2008). His research in cardiac CT at the Erasmus University resulted in a PhD degree in 2003. In 2004 he performed an imaging fellowship at the Massachusetts General Hospital (Harvard Medical School) in Boston, MA. Dr Nieman became faculty at Erasmus (cardiology/radiology) in 2008 and was scientific director of cardiac CT and MRI and clinical director of the intensive cardiac care unit until he joined Stanford in 2016.

SELECTED PUBLICATIONS

Impact of Iodine Concentration and Iodine Delivery Rate on Contrast Enhancement in Coronary CT Angiography: A Randomized Multicenter Trial (CT-CON). Rengo M, Dharampal A, Lubbers M, Kock M, Wildberger JE, Das M, Niezen A, van Tilborg F, Kofflard M, Laghi A, Krestin G, Nieman K. *Eur Radiol.* 2019 Nov;29(11):6109-6118.

1-Year Impact on Medical Practice and Clinical Outcomes of FFR(CT): The ADVANCE Registry. Patel MR, Nørgaard BL, Fairbairn TA, Nieman K, Akasaka T, Berman DS, Raff GL, Hurwitz Kowek LM, Pontone G, Kawasaki T, Sand NPR, Jensen JM, Amano T, Poon M, Øvrehus KA, Sonck J, Rabbat MG, Mullen S, De Bruyne B, Rogers C, Matsuo H, Bax JJ, Leipsic J. *JACC Cardiovasc Imaging.* 2019 Mar 17.

Comparison of the Diagnostic Performance of Coronary Computed Tomography Angiography-Derived Fractional Flow Reserve in Patients With Versus Without Diabetes Mellitus (from the MACHINE Consortium). Nuss FMA, Coenen A, Boersma E, Kim YH, Kruk MBP, Tesche C, de Geer J, Yang DH, Kepka C, Schoepf UJ, Persson A, Kurata A, Budde RPJ, Nieman K. *Am J Cardiol.* 2019 Feb 15;123(4):537-543.

Influence of Coronary Calcium on Diagnostic Performance of Machine Learning CT-FFR: Results From MACHINE Registry. Tesche C, Otani K, De Cecco CN, Coenen A, De Geer J, Kruk M, Kim YH, Albrecht MH, Baumann S, Renker M, Bayer RR, Duguay TM, Litwin SE, Varga-Szemes A, Steinberg DH, Yang DH, Kepka C, Persson A, Nieman K, Schoepf UJ. *JACC Cardiovasc Imaging.* 2019 Aug 14.

Determinants of Rejection Rate for Coronary CT Angiography Fractional Flow Reserve Analysis. Pontone G, Weir-McCall JR, Baggiano A, Del Torto A, Fusini L, Guglielmo M, Muscogiuri G, Guaricci AI, Andreini D, Patel M, Nieman K, Akasaka T, Rogers C, Nørgaard BL, Bax J, Raff GL, Chinnaiyan K, Berman D, Fairbairn T, Kowek LH, Leipsic J. *Radiology.* 2019 Sep;292(3):597-605.



Patricia K. Nguyen, MD

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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

Dr. Nguyen is a cardiologist and assistant professor in the Division of Cardiovascular Medicine at Stanford University. She is also Director of Advanced Imaging and Co-Director of the Cardiac Rehabilitation Program at the VA Palo Alto Medical center. She graduated from Johns Hopkins Medical School and finished her internal medicine residency at New York Presbyterian Hospital. She then completed her fellowship in cardiovascular medicine and advanced imaging at Stanford University. Her laboratory focuses on developing better diagnostic and therapeutic strategies for the management of coronary artery disease. Her research projects include studies evaluating how stem cells can be applied for treatment of coronary heart disease, how the adaptive immune system contributes to atherosclerosis, and how exercise improves cardiovascular health.

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

SELECTED PUBLICATIONS

The Gift of Light: Using Multiplexed Optical Imaging to Probe Cardiac Metabolism in Health and Disease. Wardak M, Nguyen PK. *Circ Cardiovasc Imaging*. 2018, Mar;11(3):e007597.

Prolonged Survival of Transplanted Stem Cells After Ischemic Injury via the Slow Release of Pro-survival Peptide Analogs Crosslinked to an Injectable Collagen mMatrix. Lee AS, Inayathullah M, Lijkwan M, Zhao X, Sun W, Park S, Hong W, Parekh MB, Malkovskiy A, Lau E, Qin X, Pothineni VR, Sanchez-Freire V, Zhang WY, Kooreman N, Ebert AD, Chan C, Nguyen PK, Rajadas J, Wu JC. *Nature Biomedical Engineering*. 2018 Jan;2(2):104-113.

Brief Report: External Beam Radiation Therapy for the Treatment of Human Pluripotent Stem Cell-derived Teratomas. Lee AS, Tang C, Hong WX, Park S, Bazalova M, Nelson G, Sanchez-Freire, Bakerman I, Zhang W, Neofytou E, Connolly A, Chan CK, Graves EE, Weissman IL, Nguyen PK, and Wu JC. *Stem Cells*. 2017, August; 35(8): 1994-2000.

Sex-based Differences in Myocardial Gene Expression in Recently Deceased Organ Donors With No Prior Cardiovascular Disease. InanlooRahatlou K, Liang G, Vo Davis, Ebert A, Nguyen I, Nguyen PK. *Plos One*. 2017, 12(8): e0183874.



Latha Palaniappan, MD, MS

Professor of Medicine - General Medical Disciplines

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EDUCATION/TRAINING

INTERNSHIP & RESIDENCY Kaiser Foundation Hospital, CA

MD University of Michigan School of Medicine MI

BOARD CERTIFICATION Internal Medicine, American Board of Internal Medicine

MS Stanford University, Epidemiology

BA University of Michigan

CLINICAL FOCUS

Internal Medicine

HONORS & AWARDS

"Top Physician", Consumers Research Council of America

Fellow, American College of Physicians

Fellow, American College of Cardiology

Healthcare Hero Award, Silicon Valley Business Journal

CURRENT RESEARCH

My work focuses on the study of diverse populations, chronic disease, and prevention. My group specifically seeks to address the gap in knowledge of health in Asian subgroups and other understudied racial/ethnic minorities (PACS 5R01DK081371, CASPER R01HL126172, and CAUSES R01MD007012). I co-founded (with Dr. Bryant Lin) the Center for Asian Health Research and Education (CARE) at Stanford in 2018. My current work examines the clinical effectiveness of structured physical activity programs for diabetes management (Initiate and Maintain Physical Activity in Clinics - IMPACT, 5R18DK096394), as well as best exercise regimens for normal-weight diabetics (Strength Training Regimen for Normal Weight Diabetics - STRONG-D, 2R01DK081371). I implement evidence based genetic and pharmacogenetic testing in Primary Care Clinics as the Scientific Director of Precision Genomics and Pharmacogenomics in Primary Care. I am the faculty lead of the Precision Health Biobank at Stanford, a population based biobank designed to accelerate genetic and other -omics discovery.

SELECTED PUBLICATIONS

Socioeconomic Differences in the Epidemiologic Transition From Heart Disease to Cancer as the Leading Cause of Death in the United States, 2003 to 2015: An Observational Study. Hastings KG, Boothroyd DB, Kappahn K, Hu J, Rehkopf DH, Cullen MR, Palaniappan L. *Ann Intern Med.* 2018 Nov 13.

Evaluating the Clinical Implementation of Structured Exercise: A Randomized Controlled Trial Among Non-insulin Dependent Type II Diabetics. Faruqi L, Wong, M., Bonde, S., Wong, C. W., Walai, K., West, W., Goni, D. T., Araya, S., Azamey, S., Nacif-Coelho, C., Raghuram, S. S., Vera, K., Mittal, A., Cde, L. G., Christensen, M., Johannsen, N., Haddad, F., Moharir, M., Palaniappan, L. *Contemp Clin Trials.* 2018 Nov;74:25-31.

Public Health and Health Systems: Implications for the Prevention and Management of Type 2 Diabetes in South Asia. Hills AP, Misra A, Gill JMR, Byrne NM, Soares MJ, Ramachandran A, Palaniappan L, Street SJ, Jayawardena R, Khunti K, Arena R. *Lancet Diabetes Endocrinol.* 2018 Dec;6(12):992-1002.

Clinical and Personal Utility of Genetic Risk Testing. David SP, Palaniappan L. *Am Fam Physician.* 2018 May 1;97(9):600-602.

Leading Causes of Death among Asian American Subgroups (2003-2011). Hastings, K. G., Jose, P. O., Kappahn, K. I., Frank, A. T., Goldstein, B. A., Thompson, C. A., Eggleston, K., Cullen, M. R., Palaniappan, LP; *PLOS One*; 2015; 10 (4).



Marco V. Perez, MD

Associate Professor, Medicine - Cardiovascular Medicine

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EDUCATION/TRAINING

MD Harvard University

RESIDENCY & INTERNSHIP

Massachusetts General Hospital

FELLOWSHIP Stanford University

BOARD CERTIFICATION

American Board of Internal Medicine (ABIM), Cardiovascular Disease,

HONORS & AWARDS

NIH/NHLBI 1R01HL136390-01 (PI)

Apple Heart Study, Apple Inc. (Co-PI)

NIH/NHLBI HHSN268201100003C (Co-I)

Weston Havens Foundation Grant (PI)

CURRENT RESEARCH

Dr. Marco Perez's research goal is to better understand the fundamental causes of cardiovascular disease through the study of genetics and epidemiology. His group studies the genetic variations and environmental exposures that are associated with conditions such as atrial fibrillation and heart failure. He has led the studies of atrial fibrillation in Women's Health Initiative, one of the largest nation-wide population-based cohorts. He is currently conducting a large study monitoring for silent or asymptomatic atrial fibrillation in women from the WHI randomized to exercise intervention, and is co-PI in the Apple Heart Study, a clinical trial using the Apple Watch to screen for atrial fibrillation. He is interested in understanding the paradox that atrial fibrillation is less common in African Americans and Hispanics, despite a greater burden of risk factors such as hypertension. As director of the Stanford Inherited Arrhythmia Clinic, he evaluates families with rare inherited arrhythmias associated with sudden death such as Long QT and Brugada Syndromes and explores their links with novel genes. He is particularly interested in studying the genetic causes of very early onset atrial fibrillation. He also studies how best to use the electrocardiogram to identify patients at risk for atrial fibrillation and athletes at risk for life-threatening arrhythmias due to conditions such as hypertrophic cardiomyopathy. His genetic studies have led to the discovery of promising novel therapeutic targets that his group is now studying at a functional level.

SELECTED PUBLICATIONS

Apple Heart Study Investigators. Large-Scale Assessment of a Smartwatch to Identify Atrial Fibrillation. Perez MV, Mahaffey KW, Hedlin H, Rumsfeld JS, Garcia A, Ferris T, Balasubramanian V, Russo AM, Rajmane A, Cheung L, Hung G, Lee J, Kowey P, Talati N, Nag D, Gummidipundi SE, Beatty A, Hills MT, Desai S, Granger CB, Desai M, Turakhia MP; *N Engl J Med*. 2019 Nov 14;381(20):1909-1917.

Broad Genetic Testing in a Clinical Setting Uncovers a High Prevalence of Titin Loss-of-Function Variants in Very Early-Onset Atrial Fibrillation. Goodyer WR, Dunn K, Caleshu C, Jackson M, Wylie J, Moscarello T, Platt J, Reuter C, Smith A, Trela A, Ceresnak SR, Motonaga KS, Ashley E, Yang P, Dubin AM, Perez M. *Circ Genom Precis Med*. 2019 Oct 22.

Comparison of QT Interval Measurement Methods and Correction Formulas in Atrial Fibrillation. Tooley J, Ouyang D, Hadley D, Turakhia M, Wang P, Ashley E, Froelicher V, Perez M.; *Am J Cardiol*. 2019 Jun 1;123(11):1822-1827.

Vitamin D With Calcium Supplementation and Risk of Atrial Fibrillation in Postmenopausal Women. Boursiquot BC, Larson JC, Shalash OA, Vitolins MZ, Soliman EZ, Perez MV. *Am Heart J*. 2019 Mar 13;209:68-78.



Ada Poon, PhD

Associate Professor, Electrical Engineering

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EDUCATION/TRAINING

PHD UC Berkeley

HONORS & AWARDS

CZ Biohub Investigator, Chan Zuckerberg Biohub (2017)

CAREER Award, NSF (2013)

Research Grant recipient, Okawa Foundation (2010)

Terman Fellow, Stanford (2008)

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.



Stephen Quake, PhD

Lee Otterson Professor in the School of Engineering
and Professor of Bioengineering, Applied Physics, and (by courtesy), of Physics

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EDUCATION/TRAINING

PHD University of Oxford

HONORS & AWARDS

Max Delbruck Prize in Biological Physics,
American Physical Society (2016)

Raymond and Beverly Sackler Prize
for Convergence Research, National
Academy of Sciences (2016)

Gabbay Prize for Biotechnology and
Medicine (2015)

Elected Member, American Academy of
Arts and Sciences (2014)

Elected Member, National Academy of
Inventors (2013)

Elected Member, National Academy of
Sciences (2013)

Elected Member, National Academy of
Engineering (2013)

Inventor of the Year, Silicon Valley
Intellectual Property Law Association
(2013)

Nakasone Prize of the Human Frontiers
of Science Program, . (2013)

Elected Member, Institute of Medicine
(now National Academy of Medicine)
(2012)

Lemelson-MIT Prize for outstanding mid-
career inventors, . (2012)

Promega Biotechnology Research Award,
American Society of Microbiology (2011)

Raymond and Beverly Sackler
International Prize in Biophysics (2011)

Elected Fellow, The American Physical
Society (2010)

CURRENT RESEARCH

Professor Quake's interests lie at the nexus of physics, biology and biotechnology. His group pioneered the development of Microfluidic Large Scale Integration (mLSI), demonstrating the first integrated microfluidic devices with thousands of mechanical valves. This technology is helping to pave the way for large scale automation of biology at the nanoliter scale, and he and his students have been exploring applications of lab-on-a-chip technology in functional genomics, genetic analysis, and structural biology. Professor Quake is also active in the field of single molecule biophysics.

SELECTED PUBLICATIONS

Role of Epithelial to Mesenchymal Transition Associated Genes in Mammary Gland Regeneration and Breast Tumorigenesis. Sikandar SS, Kuo AH, Kalisky T, Cai S, Zabala M, Hsieh RW, Lobo NA, Scheeren FA, Sim S, Qian D, Dirbas FM, Somlo G, Quake SR, Clarke MF. *Nat Commun.* 2017 Nov 21;8(1):1669.

Classifying Drosophila Olfactory Projection Neuron Subtypes by Single-cell RNA Sequencing. Li H, Horns F, Wu B, Xie Q, Li J, Li T, Luginbuhl DJ, Quake SR, Luo L. *Cell.* 2017 Nov 16;171(5):1206-1220.e22

T Cell Receptor Sequencing of Early-stage Breast Cancer Tumors Identifies Altered Clonal Structure of the T Cell Repertoire. Beausang JF, Wheeler AJ, Chan NH, Hanft VR, Dirbas FM, Jeffrey SS, Quake SR. *Proc Natl Acad Sci USA.* 2017 Nov 14.

Noninvasive Prenatal Diagnosis of Single-gene Disorders by use of Droplet Digital PCR. Camunas-Soler J, Lee H, Hudgins L, Hintz SR, Blumenfeld YJ, El-Sayed YY, Quake SR. *Clin Chem.* 2017 Nov 2.

Single-cell RNA-Seq Analysis of Infiltrating Neoplastic Cells at the Migrating Front of Human Glioblastoma. Darmanis S, Sloan SA, Croote D, Mignardi M, Chernikova S, Samghabadi P, Zhang Y, Neff N, Kowarsky M, Caneda C, Li G, Chang SD, Connolly ID, Li Y, Barres BA, Gephart MH, Quake SR. *Cell Rep.* 2017 Oct 31;21(5):1399-1410.

Single-cell Transcriptional Dynamics of Flavivirus Infection. Zanini F, Pu Szu-Yuan, Bekerman E, Einav S, Quake SR. *Posted to Biorxiv* on Oct. 14, 2017.



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William G. Irwin Professor in Cardiovascular Medicine

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EDUCATION/TRAINING

MD 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

MEMBER

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

WILLIAM G. IRWIN CHAIR IN MEDICINE

Stanford University

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

Integrative Functional Genomics Identifies Regulatory Mechanisms at Coronary Artery Disease Loci. Miller CL, Milos Pjanic M, Wang T, Nguyen T, Cohain A, Lee JD, Perisic L, Hedin U, Kundu RK, Majmudar D, Kim JB, Wang O, Betsholtz C, Ruusalepp A, Franzén O, Assimes TL, Montgomery SB, Schadt EE, Björkegren JLM, Quertermous T. *Nat Commun*, 2016;7:12092.

Coronary Artery Disease Genes SMAD3 and TCF21 Promote Opposing Interactive Genetic Programs That Regulate Smooth Muscle Cell Differentiation and Disease Risk. Iyer D, Zhao Q, Wirka R, Naravane A, Nguyen T, Liu B, Nagao M, Cheng P, Miller CL, Kim JB, Pjanic M, Quertermous T. *PLOS Genetics*, 2018; 201;14:e1007681.

Genetic Regulatory Mechanisms of Smooth Muscle Cells Map to Coronary Artery Disease Risk Loci. Liu B, Pjanic M, Wang T, Nguyen T, Gloudemans M, Rao A, Castano VG, Nurnberg S, Rader DJ, Elwyn S, Ingelsson E, Montgomery SB, Miller CL, Quertermous T. *Am J Hum Genet*. 2018 Sep 6;103(3):377-388



Marlene Rabinovitch, MD

Endowed Chair, Dwight and Vera Dunlevie Professorship in Pediatric Cardiology
Director, Basic Science and Engineering Initiative, Stanford Children's Health
Betty Irene Moore Children's Heart Center

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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, Vascular Biology
Congenital Heart Disease

HONORS & AWARDS

The American Heart Association
Distinguished Scientist Lecturer

Robert F. Grover Prize, Assembly on
Pulmonary Circulation, American
Thoracic Society

J. Burns Amberson Lecturer

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 Univ; NHLBI Lung Repair
and Regeneration Cons; 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 γ mediated gene regulation. We relate mutant BMPR2 to heightened GM-CSF mediated macrophage recruitment, and PPAR γ 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

BMPR2 Preserves Mitochondrial Function and DNA Integrity During Reoxygenation to Promote Endothelial Survival and Reverse Pulmonary Hypertension. Diebold I, Hennigs JK, Miyagawa K, Li CG, Nickel NP, Kaschwich M, Cao A, Wang L, Reddy S, Chen P-I, Nakahira K, Alejandre Alcazar MA, Hopper RK, Ji L, Feldman BJ, Rabinovitch M. *Cell Metab* 2015 Apr 7;21(4):596-608.

Patient-Specific iPSC Derived Endothelial Cells Uncover Pathways that Protect Against Pulmonary Hypertension in BMPR2 Mutation Carriers. Gu M, Shao N-Y, Silin Sa S, Li D, Termglinchan V, Ameen M, Karakikes I, Sosa G, Grubert F, Lee J, Cao A, Taylor S, Ma Y, Zhao Z, Chappell J, Hamid R, Austin ED, Gold JD, Wu JC, Snyder MP, Rabinovitch M. *Cell Stem Cell*. 2017 Apr 6;20(4):490-504.

Smooth Muscle Contact Drives Endothelial Regeneration by BMPR2-Notch1 Mediated Metabolic and Epigenetic Changes. Miyagawa K, Shi, Chen P-I, Hennigs JK, Zhao Z, Wang M, Li CG, Saito T, Taylor S, Sa S, Cao A, Wang L, Snyder MP, Rabinovitch M. *Circulation Research* 2019.



Jayakumar Rajadas, PhD

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Assistant Professor, Division of Pulmonary, Allergy, and Critical Care
Assistant Director, Cardiovascular Pharmacology, Stanford CVI
Adjunct Full Professor, UCSF

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EDUCATION/TRAINING

PHD Indian Institute of Technology

HONORS & AWARDS

YOUNG INVESTIGATOR 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

ADJUNCT FULL PROFESSOR (UCSF)

Department of Bioengineering and
Therapeutic Sciences
School of Pharmacy, University of
California San Francisco

CURRENT RESEARCH

My research oversees the application of various technologies in a research domain aimed at the development of novel formulations and therapeutics and inventing targeted drug delivery systems. For the past 20 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 phospho-Tau in the brain could affect the heart function with compromised brain perfusion. We have shown apelin therapy could recover the heart function significantly using the mutant human tau -expressing PS19 mouse model. In addition, I have used biophysical and pharmacological approaches to identify optimal microenvironments in which implanted cardiomyocytes to repair injured hearts.

Somewhere, something incredible is waiting to be known. — Blaise Pascal

SELECTED PUBLICATIONS

Transdermal Deferoxamine Prevents Pressure-induced Diabetic Ulcers. Duscher D, Neofytou E, Wong VW, Maan ZN, Rennert RC, Inayathullah M, Januszyk M, Rodrigues M, Malkovskiy AV, Whitmore AJ, Walmsley GG, Galvez MG, Whittam AJ, Brownlee M, Rajadas J, Gurtner GC. *Proc Natl Acad Sci USA*. 2015, 112(1):94-99.

[Pyr1]-Apelin-13 Delivery via Nano-liposomal Encapsulation Attenuates Pressure Overload-induced Cardiac Dysfunction. Serpooshan V, Sivanesan S, Huang X, Mahmoudi M, Malkovskiy AV, Zhao M, Inayathullah M, Wagh D, Zhang XJ, Metzler S, Bernstein D, Wu JC, Ruiz-Lozano P, Rajadas J. *Biomaterials*, 2015, 37:289-98.

A Thermo-sensitive Delivery Platform for Topical Administration of Inflammatory Bowel Disease Therapies. Sidhartha R. Sinha, Linh P. Nguyen, Mohammed Inayathullah, Andrey Malkovskiy, Frezghi Habte, Jayakumar Rajadas, Aida Habtezion. *Gastroenterology*. 2015, 149: 52-55.

Prolonged Survival of Transplanted Stem Cells After Ischemic Injury via the Slow Release of Pro-survival Peptide Analogs Crosslinked to an Injectable Collagen Matrix. Lee AS, Inayathullah M, Lijkwan MA, Zhao X, Park WSS, Hong WX, Parekh MB, Malkovskiy AV, Lau E, Qin X, Pothineni VR, Sanchez-Freire V, Zhang WY, Kooreman N, Ebert AD, Chan CK, Nguyen PK, JRajadas J, Wu JC. *Nature Biomedical Engineering*, 2018 Feb;2(2):104-113.

Endothelial APLNR Regulates Tissue Fatty Acid Uptake and is Essential for Apelin's Glucose-lowering Effects. Hwangbo C, Wu J, Papangeli I, Adachi T, Sharma B, Park S, Zhao L, Ju H, Go GW, Cui G, Inayathullah M, Job JK, Rajadas J, Kwei SL, Li MO, Morrison AR, Quertermous T, Mani A, Red-Horse K, Chun HJ. *Sci Transl Med*. 2017 Sep 13;9(407).



Kristy Red-Horse, PhD

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EDUCATION/TRAINING

PHD University of California, San Francisco

POSTDOCTORAL TRAINING
Genentech, Inc.

POSTDOCTORAL TRAINING
Stanford University

HONORS & AWARDS

Searle Scholar 2013–2016

New York Stem Cell Foundation
Robertson Investigator 2015–2020

CURRENT RESEARCH

My laboratory studies how coronary vessels of the heart develop during embryogenesis and how they regenerate following cardiac injury. The unifying theme among all of our projects is to study coronary development and regeneration at cellular resolution within the context of the intact organ. Our long-term goal is to contribute knowledge towards the advancement of clinical treatments for cardiovascular disease.

SELECTED PUBLICATIONS

Veins and Arteries Build Hierarchical Branching Patterns Differently: Bottom-Up versus Top-Down. Red-Horse K, Siekmann AF. *BioEssays: News and Reviews in Molecular, Cellular and Developmental Biology*. 2019;41(3):e1800198.

A Unique Collateral Artery Development Program Promotes Neonatal Heart Regeneration. Das S, Goldstone AB, Wang H, Farry J, D'Amato G, Paulsen MJ, et al. *Cell*. 2019;176(5):1128-42 e18.

Single-cell Analysis of Early Progenitor Cells That Build Coronary Arteries. Su T, Stanley G, Sinha R, D'Amato G, Das S, Rhee S, Chang AH, Poduri A, Raftrey B, Dinh TT, Roper WA, Li G, Quinn KE, Caron KM, Wu S, Miquelot L, Butcher EC, Weissman I, Quake S, Red-Horse K. *Nature*. 2018 Jul 4.

DACH1 Stimulates Shear Stress Guided Endothelial Cell Migration and Coronary Artery Growth Through the CXCL12-CXCR4 Signaling Axis. Andrew H. Chang, Brian C. Raftrey, Gaetano D'Amato, Vinay N. Surya, Aruna Poduri, Heidi I. Chen, Andrew B. Goldstone, Joseph Woo, Gerald G. Fuller, Alexander R. Dunn, and Kristy Red-Horse. (2017) *Genes and Development*, 31:1308-1324.

Alternative Progenitor Cells Compensate to Rebuild the Coronary Vasculature in Apj- and Elabela-deficient Hearts. Bikram Sharma, Lena Ho, Heidi I. Chen, Andrew B. Goldstone, Y. Joseph Woo, Thomas Quertermous, Bruno Reversade, and Kristy Red-Horse. (2017) *Developmental Cell*, Sep 25;42(6):655-666

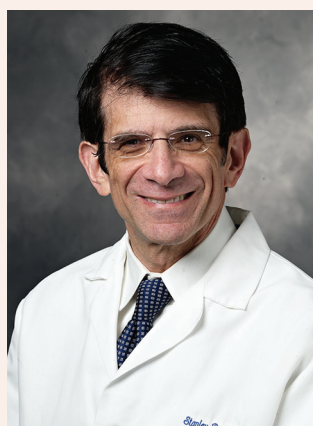
Endothelial Cells Respond to the Direction of Mechanical Stimuli Through SMAD Signaling to Regulate Coronary Artery Size. Aruna Poduri, Andrew H Chang, Brian Raftrey, Mike Van, Kristy Red-Horse. *Development*, Sep 15;144(18):3241-3252.

Cellular Plasticity in Cardiovascular Development and Disease. Das S, Red-Horse K. (2017) *Dev Dyn*. Jan 18.

Coronary Artery Development: Progenitor Cells and Differentiation Pathways. Sharma B, Chang A, Red-Horse K. (2016) *Annu Rev Physiol*. Dec 9.

Pericytes are Epicardial-derived Intermediate Progenitors for Coronary Artery Smooth Muscle. Volz, K, Chen, H, Poduri, A, McKay, A, Jacobs, A, Kofler, N, Kitajewski, J, Weissman, I, and Red-Horse, K. (2015) *eLife*. Oct: 19(4).

The Sinus Venosus Contributes to Coronary Vasculature Through VEGFC-stimulated Angiogenesis. Chen HI, Sharma B, Akerberg BN, Numi HJ, Kivelä R, Saharinen P, Aghajanian H, McKay AS, Bogard PE, Chang AH, Jacobs AH, Epstein JA, Stankunas K, Alitalo K, Red-Horse K. *Development*. 2014 Dec;141(23):4500-12.



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

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CENTER 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

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 Venous 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

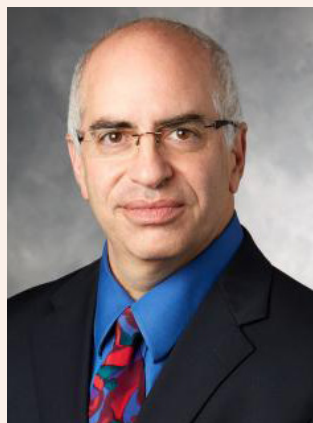
Cancer-associated Secondary Lymphoedema. Rockson SG, Keeley V, Kilbreath S, Szuba A, Towers A. *Nat Rev Dis Primers*. 2019 Mar 28;5(1):22.

Lymphedema after Breast Cancer Treatment. Rockson SG. *N Engl J Med*. 2018; 379(20):1937-1944.

Pilot Studies Demonstrate the Potential Benefits of Anti-inflammatory Therapy in Human Lymphedema. Rockson SG, Tian W, Jiang X, Kuznetsova T, Haddad F, Zampell J, Mehrara B, Sampson JP, Roche L, Kim J, Nicolls MR. *JCI Insight*. 2018; 3(20). pii: 123775. [Epub ahead of print]

Lymphatic Dysfunction, Leukotrienes, and Lymphedema. Jiang X, Nicolls MR, Tian W, Rockson SG. *Annu Rev Physiol*. 2018; 80:49-70.

Regulatory T Cells Mediate Local Immunosuppression in Lymphedema. García Nores GD, Ly CL, Savetsky IL, Kataru RP, Ghanta S, Hespe GE, Rockson SG, Mehrara BJ. *J Invest Dermatol*. 2018; 138(2):325-335.



David Rosenthal, MD

Professor of Pediatrics (Pediatric Cardiology)

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EDUCATION/TRAINING

MD Albert Einstein College of Medicine

INTERNSHIP Columbia Presbyterian Medical Center

RESIDENCY Columbia Presbyterian Medical Center

FELLOWSHIP Yale School of Medicine

BOARD CERTIFICATION
Pediatric Cardiology (ABP)

CLINICAL FOCUS

Pediatric Cardiology
Cardiology (Heart)
Pediatric Heart Failure
Heart Transplantation
Cardiomyopathies
Ventricular Assist Devices

CURRENT RESEARCH

As director of the PACT program for pediatric heart failure and transplantation at Lucile Packard Children's Hospital and Stanford University, I am primarily interested in improving clinical care for children with heart failure and heart transplantation. This includes improving survival and functional outcomes of children treated with mechanical circulatory support; and improved utilization of heart donors. We are actively involved in the creation of a national learning network to share, develop and disseminate best practices in this field as a way of complementing traditional research activities.

SELECTED PUBLICATIONS

Temporary Circulatory Support in U.S. Children Awaiting Heart Transplantation. Yarlagadda VV, Maeda K, Zhang Y, Chen S, Dykes JC, Gowen MA, Shuttleworth P, Murray JM, Shin AY, Reinhartz O, Rosenthal DN, McElhinney DB, Almond CS. *J Am Coll Cardiol*. 2017 Oct 31;70(18):2250-2260.

Impact of a Modified Anti-thrombotic Guideline on Stroke in Children Supported With a Pediatric Ventricular Assist Device. Rosenthal DN, Lancaster CA, McElhinney DB, Chen S, Stein M, Lin A, Doan L, Murray JM, Gowen MA, Maeda K, Reinhartz O, Almond CS. *J Heart Lung Transplant*. 2017 Nov;36(11):1250-1257.

Rehospitalization After Pediatric Heart Transplantation: Incidence, Indications, and Outcomes. Hollander SA, McElhinney DB, Almond CS, McDonald N, Chen S, Kaufman BD, Bernstein D, Rosenthal DN. *Pediatr Transplant*. 2017 Feb;21(1).



Elsie Gyang Ross, MD

Assistant Professor of Surgery, Division of Vascular Surgery and Medicine, Biomedical Informatics Research

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EDUCATION/TRAINING

MD Stanford University School of Medicine

RESIDENCY

0+5 Stanford University Vascular Surgery Integrated

CLINICAL FOCUS

Vascular Surgery
Preventative health
Peripheral vascular disease
Carotid disease
Venous disease
AAA

HONORS & AWARDS

US-UK Fulbright Scholar, US-UK Fulbright Commission (2008-09)
Soros Fellow, Paul & Daisy Soros Fellowship for New Americans (2008-2010)
Association for Academic Surgery Young Investigators Award, Association for Academic Surgery (AAS)
Society of University Surgeons Junior Faculty Award, Society of University Surgeons (SUS) 2018-2019
NIH-NHLBI funded K01 Award

CURRENT RESEARCH

Artificial intelligence and machine learning to identify patients at risk for, or already affected by, PAD through analysis of unstructured electronic health records.

Big data and advanced analytics will help physicians and surgeons deliver higher quality care to the right patients at the right time. My goal is to ensure that we develop the right tools for our vascular patients and remain on the cutting edge of the data science revolution.

SELECTED PUBLICATIONS

Evaluation of Regional Variations in Length of Stay After Elective, Uncomplicated Carotid Endarterectomy. Ross, EG and Mell, MW. *Journal of Vascular Surgery*. 2019 July 4.

Predicting Future Cardiovascular Events in Patients With Peripheral Artery Disease Using Electronic Health Record Data. Ross, EG, Jung, K, Dudley, J, Li, L, Leeper, N, Shah, N. *Circ Cardiovascular Qual Outcomes*. 2019 Mar; 12(3).

Use of Machine Learning to Identify Peripheral Artery Disease and Predict Risk of Mortality. Ross, EG, Shah, N, Nead, K, Cooke, J, and Leeper, N. *J Vasc Surg*. 2016. Nov;64(5):1515-22.

Statin Intensity or Achieved LDL?: Practice-based Evidence for the Evaluation of New Cholesterol Treatment Guidelines. Ross, EG, Shah, N, Leeper, N. *PLoS One*. 2016. 2016 May 26;11(5):e0154952.



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

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DEPARTMENT pedcard.stanford.edu

EDUCATION/TRAINING

MD Yale University

MPH Harvard School of Public Health

MEDICINE RESIDENCY & INTERNSHIP
Boston Children's Hospital

PEDIATRIC CARDIOLOGY FELLOWSHIP
Boston Children's Hospital

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
Western Society of Pediatric Cardiology
(2016-18)

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 neurologic development and functional outcomes.

It is estimated that there are now 2 million people living in the United States with congenital heart disease. More than half of these individuals are now 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 the institutions caring for adult survivors.

SELECTED PUBLICATIONS

A Double-Blinded, Randomized, Placebo-Controlled Clinical Trial of Aminophylline to Prevent Acute Kidney Injury in Children Following Congenital Heart Surgery With Cardiopulmonary Bypass. Axelrod DM, Sutherland SM, Anglemeyer A, Grimm PC, Roth SJ; *Pediatr Crit Care Med*; 2016; Feb; 17 (2): 135-43.

Association of Presence and Timing of Invasive Airway Placement With Outcomes After Pediatric In-hospital Cardiac Arrest. Gupta P, Rettiganti M, Gossett JM, Kuo K, Chow V, Dao DT, Roth SJ; *Resuscitation*; 2015; Jul; 92: 53-8.

Task Force 5: Pediatric Cardiology Fellowship Training in Critical Care Cardiology. Feltes TF, Roth SJ, Almodovar MC, Andropoulos DB, Bohn DJ, Costello JM, Gajarski RJ, Mott AR, Koenig P; Society of Pediatric Cardiology Training Program Directors.; American College of Cardiology.; American Academy of Pediatrics; American Heart Association; *Circulation*; 2015; Aug 11; 132 (6): e81-90.

Utility of Clinical Biomarkers to Predict Central Line-associated Bloodstream Infections After Congenital Heart Surgery. Shin AY, Jin B, Hao S, Hu Z, Sutherland S, McCammond A, Axelrod D, Sharek P, Roth SJ, Ling XB. *Pediatr Infect Dis J*; 2015; Mar; 34 (3): 251-4.



Karim Sallam, MD

Assistant Professor of Medicine - Cardiovascular Medicine

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EDUCATION/TRAINING

MD University of Pittsburgh

RESIDENCY

Stanford University

FELLOWSHIPS

Stanford University

POSTDOCTORAL TRAINING

Stanford University

BOARD CERTIFICATION

Internal Medicine, American Board of Medicine

Cardiovascular Disease, American Board of Medicine

Advanced Heart Failure and Transplant Cardiology, American Board of Medicine

CLINICAL FOCUS

Cardiovascular Medicine

Inherited Cardiomyopathy

Advanced Heart Failure

HONORS & AWARDS

Cardiovascular Medicine Teaching Award 2017, 2018

William W. Parmley Young Author Achievement Award 2017

E. William Hancock Award for Teaching by a Division of Cardiovascular Medicine Faculty, 2016

ACC Rising Star at Annual Scientific Session 2012

MEMBER

American Heart Association

American College of Cardiology

CURRENT RESEARCH

Our research focuses on improving diagnosis, risk stratification and treatment of cardiomyopathy disorders by leveraging clinical data and transnational models of disease. Through improved understanding of genotype-specific mechanisms of disease and better fidelity in defining phenotype, my lab aims to improve care for cardiomyopathy patients. We are currently examining arrhythmic features of cardiomyopathy and cardiomyopathy-arrhythmia overlap syndromes and using patient-specific induced pluripotent stem cell derived cardiomyocytes to augment risk stratification and therapy for those patients.

Talent wins games, but teamwork and intelligence win championships. — Michael Jordan

SELECTED PUBLICATIONS

Electronic Cigarettes: Where There Is Smoke There Is Disease. Wu JC, Rhee JW, Sallam K. *J Am Coll Cardiol.* 2019 Dec 24;74(25):3121-3123.

Activation of PDGF Pathway Links LMNA Mutation to Dilated Cardiomyopathy. Lee J, Termglinchan V, Diecke S, Itzhaki I, Lam CK, Garg P, Lau E, Greenhaw M, Seeger T, Wu H, Zhang JZ, Chen X, Gil IP, Ameen M, Sallam K, Rhee JW, Churko JM, Chaudhary R, Chour T, Wang PJ, Snyder MP, Chang HY, Karakikes I, Wu JC. *Nature.* 2019 Aug;572(7769):335-340.

Modelling Diastolic Dysfunction in Induced Pluripotent Stem Cell-derived Cardiomyocytes From Hypertrophic Cardiomyopathy Patients. Wu H, Yang H, Rhee JW, Zhang JZ, Lam CK, Sallam K, Chang ACY, Ma N, Lee J, Zhang H, Blau HM, Bers DM, Wu JC. *Eur Heart J.* 2019 Dec 1;40(45):3685-3695.

Targeted and Selective Treatment of Pluripotent Stem Cell-derived Teratomas Using External Beam Radiation in a Small-animal Model. Sallam K, Rhee JW, Chour T, D'addabbo J, Lee AS, Graves E, Nguyen PK. *J Vis Exp.* 2019 Feb 17;(144).

The Incremental Value of Right Ventricular Size and Strain in the Risk Assessment of Right Heart Failure Post - Left Ventricular Assist Device Implantation. Aymami M, Amsallem M, Adams J, Sallam K, Moneghetti K, Wheeler M, Hiesinger W, Teuteberg J, Weisshaar D, Verhoye JP, Woo YJ, Ha R, Haddad F, Banerjee D. *J Card Fail.* 2018 Dec;24(12):823-832.

Transcriptomic and Epigenomic Differences in Human Induced Pluripotent Stem Cells Generated from Six Reprogramming Methods. Churko JM, Lee J, Ameen M, Gu M, Venkatasubramanian M, Diecke S, Sallam K, Im H, Wang G, Gold JD, Salomonis N, Snyder MP, Wu JC. *Nat Biomed Eng.* 2017 Oct;1(10):826-837.

Genome Editing of Induced Pluripotent Stem Cells to Decipher Cardiac Channelopathy Variant. Garg P, Oikonomopoulos A, Chen H, Li Y, Lam CK, Sallam K, Perez M, Lux RL, Sanguinetti MC, Wu JC. *J Am Coll Cardiol.* 2018 Jul 3;72(1):62-75.



Ingela Schnittger, MD

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EDUCATION/TRAINING

MD Karolinska Institute, Sweden

INTERNSHIP Seraphimer Hospital, Sweden

FELLOWSHIP Stanford University

RESIDENCY Seraphimer Hospital, Sweden; University of Connecticut Health Center; Stanford University

FELLOWSHIP (2nd) Stanford University

The American Board of Internal Medicine, Internal Medicine, ABIM (1980 - present)

The American Board of Internal Medicine, Cardiovascular Disease, ABIM (1983 - present)

North American Society of Pacing & Electrophysiology, Cardiac Pacing, NASPE (1988 - present)

Special Competence in Echocardiography Exam [ASEeXAM], Echo (1998 - present)

Recertification Examination of Special Competence in Adult Echocardiography, Echo (2018-present)

CLINICAL FOCUS

Cardiovascular disease

Coronary artery myocardial bridge

Echocardiography

CURRENT RESEARCH

My main research continues to be in the field of echocardiography. Several areas of research are currently being pursued: 1) Coronary artery myocardial bridge; anatomic, physiologic and hemodynamic assessment. Clinical manifestations and treatment. 2) Exercise/stress echocardiography. 3) Echocardiographic evaluation of Cardiac structures and function.

Our team wants to spread the word, to educate the medical community that myocardial bridge is a real thing.

SELECTED PUBLICATIONS

Surgical Un-roofing of Hemodynamically Significant Myocardial Bridges in a Pediatric Population. Maeda K, Schnittger I, Murphy DJ, Tremmel JA, Boyd JH, Peng L, Okada K, Pargaonkar VS, Hanley FL, Mitchell RS, Rogers IS. *J Thorac Cardiovasc Surg.* 2018 Oct;156(4):1618-1626.

Myocardial Bridges on Coronary Computed Tomography Angiography—Correlation With Intravascular Ultrasound and Fractional Flow Reserve. Forsdahl, S. H., Rogers, I. S., Schnittger, I., et al. *Circulation Journal.* 2017.

Myocardial Bridging is Associated With Exercise-induced Ventricular Arrhythmia and Increases in QT Dispersion. Nishikii-Tachibana, M., Pargaonkar, V. S., Schnittger, I., Haddad, F., Rogers, I. S., Tremmel, J. A., Wang, P. J. *Annals of Noninvasive Electrocardiology.* 2017.

Myocardial Bridges: Overview of Diagnosis and Management. Rogers, I.S., Tremmel, J.A., Schnittger, I. *Congenital Heart Disease.* 2017.

Surgical Unroofing of Hemodynamically Significant Left Anterior Descending Myocardial Bridges. Boyd, J.H., Pargaonkar, V.S., Scoville, D.H., Rogers, I.S., Kimura, T., Tanaka, S., Yamada, R., Fischbein, M.P., Tremmel, J.A., Mitchell, R.S., Schnittger, I; *Annals of Thoracic Surgery*; 2016; Oct. 1.

Myocardial Bridge and Acute Plaque Rupture. Perl, L., Daniels, D., Schwartz, J., Tanaka, S., Yeung, A., Tremmel, J. A., Schnittger, I. *Journal of Investigative Medicine High Impact Case Report* 2016; 4 (4).



Michael Snyder, PhD

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

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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

Precision health relies on the ability to assess disease risk at an individual level, detect early preclinical conditions and initiate preventive strategies. We have used deep longitudinal omics profiling and wearable monitoring to better manage health and make health-related discoveries, to identify relevant molecular pathways associated with standard clinical measures, and to assess the impact of personalized longitudinal big data on a understanding health and early detection of disease. Altogether, we conclude that deep longitudinal profiling can lead to actionable health discoveries and provide important information relevant for precision health.

I'm a believer in the future—genomics will move medicine from 'diagnose and treat' to 'predict and prevent'.

SELECTED PUBLICATIONS

Personal Aging Markers and Ageotypes Revealed by Deep Longitudinal Profiling. Ahadi S, Zhou W, Schüssler-Fiorenza Rose SM, Sailani MR, Contrepais K, Avina M, Ashland M, Brunet A, Snyder M. *Nat Med.* 2020 Jan;26(1):83-90.

Longitudinal Multi-omics of Host-microbe Dynamics in Prediabetes. Zhou W, Sailani MR, Contrepais K, Zhou Y, Ahadi S, Leopold SR, Zhang MJ, Rao V, Avina M, Mishra T, Johnson J, Lee-McMullen B, Chen S, Metwally AA, Tran TDB, Nguyen H, Zhou X, Albright B, Hong BY, Petersen L, Bautista E, Hanson B, Chen L, Spakowicz D, Bahmani A, Salins D, Leopold B, Ashland M, Dagan-Rosenfeld O, Rego S, Limcaoco P, Colbert E, Allister C, Perelman D, Craig C, Wei E, Chaib H, Hornburg D, Dunn J, Liang L, Rose SMS, Kukurba K, Piening B, Rost H, Tse D, McLaughlin T, Sodergren E, Weinstock GM, Snyder M. *Nature.* 2019 May;569(7758):663-671.

A Longitudinal Big Data Approach for Precision Health. Schüssler-Fiorenza Rose SM, Contrepais K, Moneghetti KJ, Zhou W, Mishra T, Mataraso S, Dagan-Rosenfeld O, Ganz AB, Dunn J, Hornburg D, Rego S, Perelman D, Ahadi S, Sailani MR, Zhou Y, Leopold SR, Chen J, Ashland M, Christle JW, Avina M, Limcaoco P, Ruiz C, Tan M, Butte AJ, Weinstock GM, Slavich GM, Sodergren E, McLaughlin TL, Haddad F, Snyder MP. *Nat Med.* 2019 May;25(5):792-804.

Smooth Muscle Contact Drives Endothelial Regeneration by BMP2-Notch1 Mediated Metabolic and Epigenetic Changes. Miyagawa K, Shi M, Chen PI, Hennigs JK, Zhao Z, Wang M, Li CG, Saito T, Taylor S, Sa S, Cao A, Wang L, Snyder MP, Rabinovitch M. *Circ Res.* 2018 Nov 21.



Edda Spiekerkoetter, MD

Associate Professor of Medicine, Pulmonary and Critical Care Medicine
Director, Stanford Hereditary Hemorrhagic Telangiectasia (HHT) Center of Excellence

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CURRENT RESEARCH

My research focuses on the importance of the Bone Morphogenetic Protein Receptor 2 (BMPR2) signaling pathway in pulmonary vascular disease with a focus on pulmonary arterial hypertension (PAH) and hereditary hemorrhagic telangiectasia (HHT) as well as right ventricular (RV) adaptation to an increased afterload. In 2000, two independent groups discovered mutations in the BMPR2 pathway as the genetic basis for pulmonary arterial hypertension (PAH). Over the past years more mutations, either directly involved in the BMPR2 pathway (ENDOGLIN, ALK1, SMAD9) or indirectly linked to the BMPR2 pathway (CAVEOLIN-1), were discovered, emphasizing the central role of BMPR2 signaling in familial PAH. Furthermore, reduced BMPR2 expression and signaling is a feature of other sporadic or idiopathic forms of PAH. Hypothesizing that increasing BMPR2 signaling might improve PAH, we performed a High-Throughput Screen of FDA approved drugs and identified the immunosuppressive drug FK506 (Tacrolimus) as the main BMPR2 activator. FK506 rescued endothelial dysfunction in PAH, prevented and reversed PH in rodent models of experimental PH (JCI 2013) and reduced the degree of RV cardiac fibrosis. This discovery has led to the compassionate use of the compound in end-stage PAH patients (AJRCCM 2015) as well as a phase II clinical trial to test the safety, tolerability and efficacy of low-dose FK506 in PAH at Stanford (ERJ 2017). A second repurposed drug, Enzastaurin, that reverses experimental PAH by increasing BMPR2 expression through the novel BMPR2 modifier gene FHIT (Fragile Histidine Triad) is ready to be tested clinically. Furthermore, my lab is interested in the molecular and histological events that govern RV failure and recovery using the PA banding and de-banding mouse model that we recently developed as well as the role of the BMPR2 pathway in pulmonary arteriovenous malformations in HHT.

Ever tried. Ever failed. No matter. Try again. Fail again. Fail better. — Samuel Beckett

SELECTED PUBLICATIONS

Fragile Histidine Triad (FHIT), a Novel Modifier Gene in Pulmonary Arterial Hypertension. Dannewitz Prosseda S, Tian X, Kuramoto K, Boehm M, Sudheendra D, Miyagawa K, Zhang F, Solow-Cordero D, Saldivar JC, Austin ED, Loyd JE, Wheeler L, Andruska A, Donato M, Wang L, Huebner K, Metzger RJ, Khatri P, Spiekerkoetter E. Am J Respir Crit Care Med. 2019 Jan 1;199(1):83-98.

Drug Repositioning in Pulmonary Arterial Hypertension: Challenges and Opportunities. Grinnan D, Trankle C, Andruska A, Bloom B, Spiekerkoetter E. Pulm Circ. 2019 Jan-Mar;9(1):2045894019832226.

Delineating the Molecular and Histological Events That Govern Right Ventricular Recovery Using a Novel Mouse Model of PA De-banding. Boehm M, Tian X, Mao Y, Ichimura K, Dufva MJ, Ali K, Prosseda SD, Shi Y, Kuramoto K, Reddy S, Kheifets VO, Metzger RJ, Spiekerkoetter E. Cardiovasc Res. 2019 Nov 18.

EDUCATION/TRAINING

MD University Hospital Freiburg, Germany

RESIDENCY and PCCM FELLOWSHIP Medizinische Hochschule Hannover, Germany

POSTDOCTORAL RESEARCH FELLOWSHIP Pediatric Cardiology, Stanford

PCCM FELLOWSHIP Stanford Hospital and Clinics

HONORS & AWARDS

Cardiovascular Institute Stanford: Seed Grant-BMP signaling in the RV

Wall Center of Pulmonary Vascular Disease and SPARK and Spectrum: Stanford Seed Grant - Phase II Clinical Trial

Pulmonary Hypertension Association K08 Career development grant

American Society of Clinical Investigation's (ASCI) 2015 Young Physician-Scientist Award

Pulmonary Vascular Research Institute (PVRI)

R01 Grant HL128734: Targeting Novel BMPR2 modifiers in Pulmonary Hypertension with Repurposed Drugs

DoD Grant PR161256: Targeting BMPR2 Signaling to Improve Right Ventricular Function in Congenital Heart Disease

DoD Grant PR181774: Understanding and Targeting Pulmonary Arteriovenous Malformations (AVMs) Using Repurposed Drugs



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

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EDUCATION/TRAINING

PHD Stanford University

HONORS & AWARDS

University of Illinois Alumni
Achievement Award

Biophysical Society Founders Award

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

ADJUNCT PROFESSOR

National Center for Biological Sciences,
TFIR, Bangalore, India

CURRENT RESEARCH

Our general research interest is the structure and function of molecular motors in vitro and in vivo, with emphasis on understanding the molecular basis of muscle contraction. Our major areas of specific interest are the molecular basis of energy transduction that leads to ATP-driven myosin movement on actin, the roles of the myosin family of molecular motors in eukaryotic cells, the regulation of actin and myosin interaction and their assembly states, and the biochemistry and regulation of the attachment of molecular motors to their corresponding cargo.

The detailed understanding we have developed of how myosin transduces the chemical energy of ATP hydrolysis into mechanical movement has led us to our current focus on human hypertrophic cardiomyopathy (HCM) caused by missense mutations in human β -cardiac myosin. Our goal is to elucidate the molecular basis of hyper-contractility seen clinically resulting from HCM mutations. We postulated that a majority of HCM mutations shift β -cardiac myosin heads from a sequestered off-state to an active on-state for interaction with actin, resulting in the hyper-contractility seen clinically. This is different from earlier prevailing views, and is the basis of all of our current research. We now have extensive evidence for this hypothesis using a combination of the various high-resolution technologies we have developed over the years as well as new approaches. Our work is now providing possible paths forward for therapeutic intervention for cardiomyopathy patients.

SELECTED PUBLICATIONS

Three Perspectives on the Molecular Basis of Hypercontractility Caused by Hypertrophic Cardiomyopathy Mutations. Spudich, J.A. (2019). *Pflugers Arch.* 2019 May; 471(5):701-717. Review.

Controlling load-dependent kinetics of β -cardiac Myosin at the Single-molecule Level. Liu, C., Kawana, M., Song, D., Ruppel, K.M. and Spudich, J.A. (2018). *Nat Struct Mol Biol.* 25:505-514.

Mavacamten Stabilizes a Folded-back Sequestered Super-relaxed State of β -cardiac Myosin. Anderson, R.L., Trivedi, D.V., Sarkar, S.S., Henze, M., Ma, W., Gong, H., Rogers, C.S., Wong, F.L., Morck, M.M., Seidman, J.G., Ruppel, K.M., Irving, T.C., Cooke, R., Green, E.M and Spudich, J.A. (2018). *Proc Natl Acad Sci USA.* 2018 Aug 28;115(35):E8143-E8152.

The Myosin Mesa and the Basis of Hyper-contractility Caused by Hypertrophic Cardiomyopathy Mutations. Nag, S., Trivedi, D.V., Sarkar, S.S., Adhikari, A.S., Sunitha, M.S., Sutton, S., Ruppel, K.M., Spudich, J.A. (2017). *Nat Struct Mol Biol.* 24:525-533.



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Professor, Obstetrics and Gynecology

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EDUCATION/TRAINING

PHD Stanford University

HONORS & AWARDS

Iris F. Litt Faculty Fellowship, Clayman Institute of Gender Research (2009-2010 and 2019-2020)

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)

DIRECTOR

Stanford Women's Health and Sex Differences in Medicine (WHSDM) Center

MEMBER

Advisory Committee of the NIH Office of Research on Women's Health

Education Committee, Stanford Cardiovascular Institute

Medical School Faculty Senate

FELLOW

American College of Sports Medicine

American Heart Association (AHA)

AHA Council on Arteriosclerosis, Thrombosis and Vascular Biology

FORMER CHAIR

Steering and Executive Committees, Women's Health Initiative (1998-2011)

FORMER CO-CHAIR

University Faculty Senate (2018-2019)

CURRENT RESEARCH

My research focuses on chronic disease prevention—heart disease, cancer, and osteoporosis—and aging, in both women and men. As Stanford's principal investigator (PI) of the multi-ethnic Women's Health Initiative (WHI), I conducted large randomized controlled trials (RCT) of diet, menopausal hormone therapy, and calcium & vitamin D supplementation designed to evaluate population-based strategies to prevent heart disease, stroke, cancer, fractures and dementia, and I mentor Stanford Medicine junior and senior faculty and fellows on WHI analyses. I am currently PI of the large WHI Strong & Healthy (WHISH) RCT testing the hypothesis that physical activity reduces major cardiovascular events in older women; and PI of the Osteoporotic Fractures in Men (Mr OS) Study of bone and muscle loss (sarcopenia) and physical function in older men. I am also founding Director of the Stanford Women's Health and Sex Differences in Medicine (WHSDM, "wisdom") Center which funds research and provides an educational program on sex and gender health issues.

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, Margolis KL, Johnson KC, Kucharska-Newton A, Manson JE, Robinson JG, Safford MM, Allison M, Assimes TL, Bavy AA, Berger J, Cooper-DeHoff RM, Heckbert SR, Li W, Liu S, Martin LW, Perez MV, Tindle HA, Winkelmayer WC, 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, [13 authors], Beresford SA, Cauley JA, Eaton CB, Gass M, Hsia J, Johnson KC, Kooperberg C, Kuller LH, Lewis CE, Liu S, Martin LW, Ockene JK, O'Sullivan MJ, Powell LH, Simon MS, Van Horn L, Vitolins MZ, Wallace RB. *JAMA*, 2013; 310(13): 1353-68.

The Relationship of Cardiovascular Disease to Physical Functioning in Women Surviving to Age 80 and Over in the Women's Health Initiative. Stefanick ML, Brunner RL, Leng XI, PhD3, Limacher MC, Bird CE, Garcia DO, Hogan PE, Mackey RH, Johnson KC, LaMonte MJ, LaCroix A, Robinson JG, Seguin RA, Tindle HA, Wassertheil-Smoller S. *J Gerontology: Medical Sciences*, 2016 Mar, 71 Suppl 1:S42-53.



Elif Seda Selamet Tierney, MD

Associate Professor of Pediatrics (Cardiology)
 Director of Pediatric Vascular Research Laboratory
 Director of Research, Non-Invasive Imaging
 Lucile Packard Children's Hospital at Stanford University

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LAB med.stanford.edu/pediatricvascularlab.html

EDUCATION/TRAINING

MD Istanbul University CMF Medicine, Istanbul, Turkey

INTERNSHIP/RESIDENCY in Pediatrics
 SUNY Stony Brook, NY

FELLOWSHIP in Pediatric Cardiology
 Columbia University, NY

ADVANCED FELLOWSHIP in Pediatric Cardiology/Imaging Columbia University, NY

FACULTY Instructor in Pediatrics, Pediatric Cardiology, Harvard Medical School

Assistant Professor in Pediatrics, Pediatric Cardiology, Harvard Medical School

HONORS & AWARDS

Resident Research Award, Suffolk County Pediatric Society, NY

Fellow, American Society of Echocardiography
 American College of Cardiology

National Scientist Development Award, American Heart Association

Outstanding Research Award, American Heart Association, International Kawasaki Disease

Spectrum Child Health Research Institute Grant Support Award

Cardiovascular Institute Grant Award

Grant in Aid, American Heart Association- Western States Affiliate

National Marfan Fdn Faculty Grant

CHRI Faculty Scholar Award

CURRENT RESEARCH

My research focus is an amalgam of pediatric echocardiography, vascular health in children, and use of the internet to deliver care to children with acquired and congenital heart disease. We have various noninvasive modalities to easily acquire vascular health measures in children. In the past year, we completed a study investigating telehealth interventions in pediatric heart transplant patients to improve their vascular health. We discovered that lifestyle interventions delivered via live-video conferencing is a feasible and maintainable method to manage long-term care in this patient population. We have also completed a pilot home tele-echo study where we taught parents of pediatric heart transplant patients to acquire echo images of their children's hearts. This study showed that parents are able to acquire reliable images for evaluation by an experienced echocardiographer. Using the same idea of a home-echo, and incorporating other home acquisition of key clinical data such as height, weight, digital cardiac auscultation, and medical history, we hope to show that home tele-clinic visits delivered via live-video conferencing is reliable and clinically comparable to regular clinic visits. Emerging new tools makes the landscape for innovative long-term surveillance care exciting. It is a field with which we hope to explore further to be able to incorporate cost-effective, maintainable, accessible, and specialized care.

SELECTED PUBLICATIONS

Echocardiographic Surveillance in Children After Tetralogy of Fallot Repair: Adherence to Guidelines? Annavajhala V, Valente AM, Lopez L, Sachdeva R, Glickstein JS, Natarajan SS, Buddhe S, Altmann K, Soriano BD, Colquitt JL, Altman CA, Sasaki N, Sakarovitch C, Tacy TA, Geva T, Selamet Tierney ES. *Int J Cardiol.*, 2019 Oct 12.

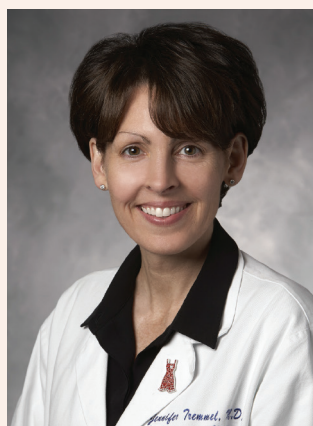
"Echo pause" for Postoperative Transthoracic Echocardiographic Surveillance. Cox K, Arunamata A, Krawczeski CD, Reddy C, Kipps AK, Long J, Roth SJ, Axelrod DM, Hanley F, Shin A, Selamet Tierney ES. *Echocardiography.* 2019 Nov;36(11):2078-2085.

Healthy Hearts in Pediatric Heart Transplant Patients With an Exercise and Diet Intervention via Live Video Conferencing—Design and Rationale. Chen AC, Rosenthal DN, Couch SC, Berry S, Stauffer KJ, Brabender J, McDonald N, Lee D, Barkoff L, Nourse SE, Kazmucha J, Wang CJ, Olson I, Selamet Tierney ES. *Pediatr Transplant.* 2018;e13316.

Influence of Aortic Stiffness on Aortic-Root Growth Rate and Outcome in Patients With the Marfan Syndrome. Selamet Tierney ES, Levine JC, Sleeper LA, Roman MJ, Bradley TJ, Colan SD, Chen S, Campbell MJ, Cohen MS, De Backer J, Heydarian H, Hoskoppal A, Lai WW, Liou A, Marcus E, Nutting A, Olson AK, Parra DA, Pearson GD, Pierpont ME, Printz BF, Pyeritz RE, Ravekes W, Sharkey AM, Srivastava S, Young L, Lacro RV; Pediatric Heart Network Investigators. *Am J Cardiol.* 2018 May 1;121(9):1094-1101.

Peripheral Endothelial Function After Arterial Switch Operation for D-looped Transposition of the Great Arteries. Sun HY, Stauffer KJ, Nourse SE, Vu C, Selamet Tierney ES. *Pediatr Cardiol.* 2017;38:1010-5

Maternal Arterial Stiffness and Fetal Cardiovascular Physiology in Diabetic Pregnancies. Moodley S, Arunamata A, Stauffer KJ, Nourse SE, Chen A, Selamet Tierney ES. *Ultrasound Obstet Gynecol.* 2017. Stanford Cardiovascular Institute



Jennifer A. Tremmel, MD, MS

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Clinical Director, Women's Heart Health at Stanford

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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

As the Clinical Director of the Women's Heart Health at Stanford, I support 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

Myocardial Bridging. Tremmel JA, Schnittger I. *J Am Coll Cardiol.* 2014 Nov 18;64(20):2178-9.

Continuous Glow Left Ventricular Assist Device Placement Complicated by Aortic Valve Thrombus and Myocardial Infarction. Kim JB, Rhee JW, Brenner DA, Ha R, Banerjee D, Yeung AC, Tremmel JA. *Int J Cardiol.* 2014 Oct 20;176(3):e102-3.

Best Practices for Transradial Angiography and Intervention: A Consensus Statement From the Society for Cardiovascular Angiography and Intervention's Transradial Working Group. Rao SV, Tremmel JA, Gilchrist IC, Shah PB, Gulati R, Shroff AR, Crisco V, Woody W, Zoghbi G, Duffy PL, Sanghvi K, Krucoff MW, Pyne CT, Skelding KA, Patel T, Pancholy SB; Society for Cardiovascular Angiography and Intervention's Transradial Working Group. *Catheter Cardiovasc Interv.* 2014 Feb;83(2):228-36.



Sandra Tsai, MD, MPH

Clinical Associate Professor, Medicine
Primary Care, Population Health, and Cardiovascular Institute

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EDUCATION/TRAINING

MD University of Texas Southwestern
Medical Center

MEDICINE RESIDENCY & INTERNSHIP
UT Southwestern, Dallas, TX

RESEARCH FELLOWSHIP
Stanford University

BOARD CERTIFICATION
Internal Medicine, ABIM

HONORS & AWARDS

Fellow, AHA 34th Seminar on the
Epidemiology and Prevention of CVD

CURRENT RESEARCH

My research focuses on the development of behavioral modification strategies to improve cardiovascular health in pregnant women at risk for blood pressure complications, such as preeclampsia. We are interested in understanding how improvements in cardiovascular risk factors during pregnancy may affect rates of pregnancy complications and future cardiovascular risk. We collaborate with the Stanford Department of Obstetrics to care for women who either start pregnancy obese or gain too much weight during pregnancy.

SELECTED PUBLICATIONS

Hypertensive Disorders of Pregnancy. Naderi, S., Tsai, S.A. & Khandelwal, A. *Curr Atheroscler Rep*, (2017) 19:15.

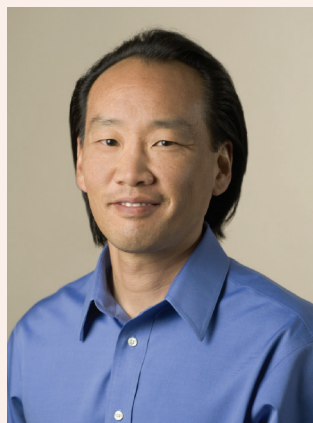
Impact of a Genetic Risk Score for Coronary Artery Disease on Reducing Cardiovascular Risk: A Pilot Randomized Controlled Study. Knowles, J. W., Zarafshar, S., Pavlovic, A., Goldstein, B. A., Tsai, S., et al. *Front Cardiovasc Med* (2017);4: 53.

Trends in Menopausal Hormone Therapy use of US Office-based Physicians, 2000–2009. Tsai, S. A., Stefanick, M. L., Stafford, R. S. 2011. *Menopause*. 2011 Apr;18(4):385-92.

Gender Differences in Weight-related Attitudes and Behaviors Among Overweight and Obese Adults in the United States. Tsai SA, Lv N, Xiao L, Ma J. *Am J Mens Health*. 2015 Jan 15.

Association of the Cardiometabolic Staging System With Individual Engagement and Quality of Life in the US Adult Population. Tsai SA, Xiao L, Lv N, Liu Y, Ma J. *Obesity*. 2017 Sep;25(9):1540-1548.

Association of Triglyceride to HDL Ratio With Cardiometabolic Outcomes. Yang M, Rigdon J, Tsai SA. *J Investig Med*. 2018 Dec 9.



Philip S. Tsao, PhD

Professor, Medicine - Cardiovascular Medicine
Associate Chief of Staff for Precision Medicine, VAPAHCS
Director, VA Epidemiology Research and Information Center for Genomics at VAPAHCS

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EDUCATION/TRAINING

PHD Thomas Jefferson University

HONORS & AWARDS

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

FELLOW
ATVB Council of the American Heart Association

VISITING PROFESSOR
University of Nis, Serbia (2013)
Kobe University School of Medicine,
Kobe, Japan (2014)
University of Erlangen, Germany (2015)

SPECIAL RECOGNITION AWARD
for Vascular Biology
ATVB Council of the AHA

MEMBER
American Heart Association;
American Society of Human Genetics

CONSULTING EDITOR
Arteriosclerosis, Thrombosis, and Vascular Biology

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 (genetic and protein) for risk assessment. I am VA Palo Alto Epidemiology Research and Information Center (ERIC) for Genomics as well as Co-Principal Investigator of the VA's national Million Veteran Program, currently the world's largest biobank for genomic health research.

The Stanford Cardiovascular Institute is a place where clinicians and basic scientists can seamlessly collaborate on important clinical issues.

SELECTED PUBLICATIONS

Genome-wide Association Study of Peripheral Artery Disease in the Million Veteran Program. Klarin D, Lynch J, Aragam K, Chaffin M, Assimes TL, Huang J, Lee KM, Shao Q, Huffman JE, Sun YV, Vujkovic M, Freiberg MS, Wang L, Chen J, Saleheen D, Lee JS, Miller DR, Reaven P, Alba PR, Patterson OV, DuVall SL, Boden WE, Beckman JA, Gaziano JM, Concato J, Rader DJ, Cho K, Chang K-M, Wilson PWF, O'Donnell CJ, Kathiresan S, Tsao PS, Damrauer SM, on behalf of the VA Million Veteran Program. *Nature Med*, 2019.

Decoding the Genomics of Abdominal Aortic Aneurysm. Li J, Pan C, Zhang S, Spin JM, Deng A, Leung LK, Dalman RL, Tsao PS, Snyder M. *Cell*, 2018;174:1361-1372.

Genetics of Blood Lipids Among ~300,000 Multi-ethnic Participants of the Million Veteran Program. Klarin D, Damrauer SM, [35 authors], Global Lipids Genetics Consortium; Myocardial Infarction Genetics (MIGen) Consortium; Geisinger-Regeneron DiscovEHR Collaboration; VA Million Veteran Program, Concato J, Gaziano JM, O'Donnell CJ, Tsao PS, Kathiresan S, Rader DJ, Wilson PWF, Assimes TL. *Nat Genet*, 2018;50:1514-1523.

Cloud-based Interactive Analytics for Terabytes of Genomic Variants Data. Pan C, McInnes G, Deflaux N, Snyder M, Bingham J, Datta S, Tsao PS. *Bioinformatics*, 2017 33: 3709-3715.

Dichloroacetate Prevents Restenosis in Preclinical Animal Models of Vessel Injury. Deuse T, Hua X, Wang D, Maegdefessel L, Heeren J, Scheja L, Bolaños JP, Rakovic A, Spin JM, Stubbendorff M, Ikeno F, Länger F, Zeller T, Schulte-Uentrop L, Stoeckel A, Itagaki R, Haddad F, Eschenhagen T, Blankenberg S, Kieffmann R, Reichenspurner H, Velden J, Klein C, Yeung A, Robbins RC, Tsao PS, Schrepfer S. *Nature*, 2014 May 29;509(7502):641-4.



Mintu P. Turakhia, MD, MAS

Associate Professor, Medicine - Cardiovascular Medicine
Executive Director, Stanford Center for Digital Health
Chief, Cardiac Electrophysiology at the VA Palo Alto Health Care System

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TWITTER [@leftbundle](https://twitter.com/leftbundle)

EDUCATION/TRAINING

MD, MAS UCSF

MEDICINE RESIDENCY & INTERNSHIP

Brigham and Women's Hospital

FELLOWSHIP

Cardiology & Cardiac
Electrophysiology, UCSF

Stanford Biodesign Faculty Fellow

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, Digital Health

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 Faculty
Teaching Award

AHA Top Ten Scientific Advances in
Cardiology

FELLOW: ACC; AHA; Heart Rhythm
Society; American Soc Clinical Inv

Associate Editor *JAMA Cardiology*

Cardiology Today Next Gen Innovator

Awardee, American Thrombosis
Investigator Initiated Research Program

CURRENT RESEARCH

I am a cardiac electrophysiologist, outcomes researcher, and clinical trialist. The goal of my research is to improve the outcomes of the treatment of heart rhythm disorders, with a focus on atrial fibrillation (AF), which affects 5 million Americans and can cause stroke and heart failure. 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. This has led to important contributions in health services and outcomes research that have reshaped professional society guidelines and clinical practice. More recently, we have extended our work to answer questions regarding atrial fibrillation screening, medication adherence, and digitally-enabled treatment strategies. Dr. Marco Perez and I are co-PIs of the Apple Heart Study, a fully digital and virtual end-to-end study to evaluate whether smartwatches can effectively and accurately identify atrial fibrillation. This work has allowed a large team at Stanford to develop the infrastructure for pragmatic studies using smartphone applications and wearable sensors and devices.

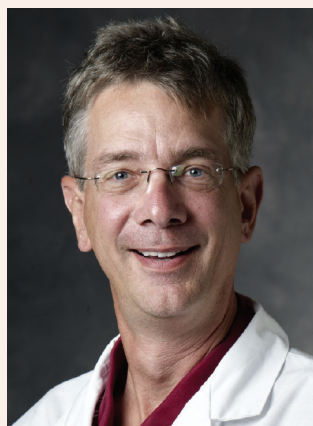
Atrial fibrillation is one of the most commonly treated conditions in all of health care. Yet, it is astonishing how little we understand the disease, how to best treat it, and who is at highest risk for complications.

SELECTED PUBLICATIONS

Large-Scale Assessment of a Smartwatch to Identify Atrial Fibrillation. Perez MV, Mahaffey KW, Hedlin H, Rumsfeld JS, Garcia A, Ferris T, Balasubramanian V, Russo AM, Rajmane A, Cheung L, Hung G, Lee J, Kowey P, Talati N, Nag D, Gummidipundi SE, Beatty A, Hills MT, Desai S, Granger CB, Desai M, Turakhia MP; Apple Heart Study Investigators. *N Engl J Med.* 2019 Nov 14;381(20):1909-1917.

Practice Variation in Anticoagulation Prescription and Outcomes After Device-Detected Atrial Fibrillation. Perino AC, Fan J, Askari M, Heidenreich PA, Keung E, Raitt MH, Piccini JP, Ziegler PD, Turakhia MP. *Circulation.* 2019 May 28;139(22):2502-2512.

Technology-Enabled Clinical Trials: Transforming Medical Evidence Generation. Marquis-Gravel G, Roe MT, Turakhia MP, Boden W, Temple R, Sharma A, Hirshberg B, Slater P, Craft N, Stockbridge N, McDowell B, Waldstreicher J, Bourla A, Bansilal S, Wong JL, Meunier C, Kassahun H, Coran P, Bataille L, Patrick-Lake B, Hirsch B, Reites J, Mehta R, Muse ED, Chandross KJ, Silverstein JC, Silcox C, Overhage JM, Califf RM, Peterson ED. *Circulation.* 2019 Oct 22;140(17):1426-1436.



Paul J. Utz, MD

Professor of Medicine

Associate Dean for Medical Student Research, Stanford School of Medicine

Director Emeritus, Stanford Medical Scientist Training Program

Faculty Director and Founder, Stanford Institutes of Medical Research (SIMR)

Associate Director of Education, Institute for Immunity, Transplantation and Infection (ITI), Division of Immunology & Rheumatology

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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

Medicine, ABIM Eligible

Rheumatology, ABIM Eligible

CLINICAL FOCUS

Immunology

Rheumatology

HONORS & AWARDS

ELECTED

The Kunkel Society; American Society for Clinical Investigation

The Mary Jane Kugel Award, Juvenile Diabetes Research Foundation

Department of Medicine Teaching Award, Stanford Medicine

Mayo Clinic, Distinguished Visiting Professor, Department of Medicine

Immunology and Rheumatology Division Teaching Award, Stanford University School of Medicine

Rheumatology Visiting Professor and Grand Rounds Speaker, UC Denver

Speaker, Immunology Seminar Series and Grand Rounds, University of Pittsburgh

CURRENT RESEARCH

My lab actively collaborates with many investigators on the Stanford campus, and across the world to disseminate and implement newly-invented technologies. We study autoimmune diseases, including systemic lupus erythematosus, rheumatoid arthritis, scleroderma, myositis, primary biliary cirrhosis, Sjögren's disease, type I diabetes, vasculitis, multiple sclerosis, and mixed connective tissue disease. In addition to better understanding the pathogenic mechanisms involved in autoimmunity, we are developing bench-to-bedside technologies for immune diseases. Our group made several breakthrough inventions, such as protein arrays, peptide arrays, HIT, lysate arrays, Intel arrays, and EpiTOF. Additionally, I am Director of the Leadership Center of Francis Collins' \$41M Accelerating Medicines Partnership in RA/SLE initiative.

I am Founder and Program Director for the Stanford Institutes of Medicine Research (SIMR) Program for high school students, which has hosted ~900 students in labs over 20 years. I also developed the Stanford EXPLORE Lecture Series. This program covers the basic science fundamentals represented by various research areas at Stanford Medicine. In 2018, I was appointed Stanford Associate Dean for Medical Student Research to promote physician investigator development across the physician-scientist career continuum. I will continue to provide high-level oversight of SIMR and the MSTP while focusing on new efforts to create programs such as a new Physician Scientist Career Development Program and Berg Scholars Program for MD students to build careers as investigators and leaders.

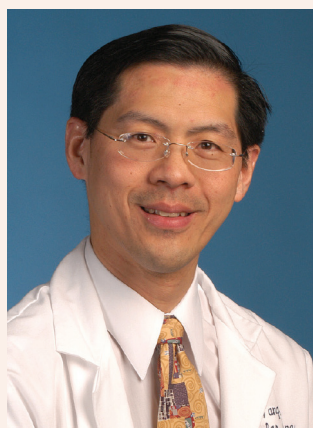
SELECTED PUBLICATIONS

Single-cell Chromatin Modification Profiling Reveals Increased Epigenetic Variations With Aging. Cheung P, Vallania F, Warsinske HC, Donato M, Schaffert S., Chang SE, Dekker CL, Davis MM, Utz PJ, Khatri P, Kuo AJ. 2018. *Cell*, 173:1385-1397.

KLRD1-expressing Natural Killer Cells Predict Influenza Susceptibility. Bongen E, Vallania F, Utz PJ, Khatri P. 2018. *Genome Med.*, 10:45.

Single-cell Epigenetics – Chromatin Modification Atlas Unveiled by Mass Cytometry. Cheung P, Vallania F, Dvorak M, Chang SE, Schaffert S, Donato M, Rao AM, Mao R, Utz PJ, Khatri P, Kuo AJ. 2018 *Clin. Immunol.* S1521-6616(18):30363-2.

Quantification of cDNA on GMR Biosensor Array Towards Point-of-care Gene Expression Analysis. Ravi N, Rizzi G, Chang SE, Cheung P, Utz PJ, Wang SX. 2018. *Biosens Bioelectron.* S0956-5663(18)30736-X.



Paul J. Wang, MD

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

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LAB 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

CO-DIRECTOR

Stanford Center for Arrhythmia Research

MEMBER

American Heart Association Council
on Clinical Cardiology; Committee on
Council Operations; National Science
and Clinical Education Life-Long
Learning Committee

CO-DIRECTOR

2019 Stanford Biodesign New
Arrhythmia Technologies Retreat

RECIPIENT

2017 American Heart Association
Clinical Cardiology Distinguished
Achievement Award

EDITOR-IN-CHIEF

*Circulation: Arrhythmia and
Electrophysiology*

CURRENT RESEARCH

My research centers on the development of innovative approaches to the treatment of arrhythmias, including catheter ablation techniques, implantable devices, and less invasive treatments. My clinical research includes atrial fibrillation, ventricular tachycardia, supraventricular arrhythmias and implantable devices. I have collaborations with Bioengineering, Mechanical Engineering, and Electrical Engineering. I am the Center Director for the AHA Strategically Focused Research Network Joe and Linda Chlapy DECIDE Grant for Shared Decision Making in Atrial Fibrillation Stroke Prevention. Some goals of my research program are to create: 1) a more effective methods of catheter ablation, 2) more reliable implantable pacemakers and leads, 3) a combined surgical-catheter approach to ablation, 4) noninvasive methods of ablation, 5) new solutions to prevent sudden cardiac death.

Advances in engineering, biology, chemistry, computer science, material science, and physics will result in major developments in arrhythmia therapy and device innovation. We are poised to make significant contributions in this area.

SELECTED PUBLICATIONS

Activation of PDGF Pathway Links LMNA Mutation to Dilated Cardiomyopathy. Lee J, Termglinchan V, Diecke S, Itzhaki I, Lam CK, Garg P, Lau E, Greenhaw M, Seeger T, Wu H, Zhang JZ, Chen X, Gil IP, Ameen M, Sallam K, Rhee JW, Churko JM, Chaudhary R, Chour T, Wang PJ, Snyder MP, Chang HY, Karakikes I, Wu JC. *Nature*, 2019 July 17.

New Concepts in Sudden Cardiac Arrest to Address an Intractable Epidemic: JACC State-of-the-art Review. Narayan SM, Wang PJ, Daubert JP. *J Am Coll Cardiol*, 2019, 01 08;73(1):70-88.

Retrospective Review of Arctic Front Advance Cryoballoon Ablation: A Multicenter Examination of Second-generation Cryoballoon (RADICOL Trial). Su W, Orme GJ, Hoyt R, Baker J, Compton S, Fellows C, Harding J, Svinarich JT, Kowalski M, Piedad B, Kenigsberg D, Seger J, Ahmad ZK, Wang P. *J Interv Card Electrophysiol*, 2018 Apr;51(3):199-204.

Cryoballoon Best Practices II: Practical Guide to Procedural Monitoring and Dosing During Atrial Fibrillation Ablation From the Perspective of Experienced Users. Su W, Aryana A, Passman R, Singh G, Hokanson R, Kowalski M, Andrade J, Wang P. *Heart Rhythm*, 2018 Apr 20.

Predictive Value of Device-derived Activity Level for Short-term Outcomes in MADIT-CRT. Jamé S, Kutyifa V, Polonsky B, McNitt S, Al-Ahmad A, Moss AJ, Zareba W, Wang PJ. *Heart Rhythm*, 2017 Jul;14(7):1081-1086.



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

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LAB 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 cell 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 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 its 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

PD-1 Expression by Tumour-associated Macrophages Inhibits Phagocytosis and Tumour Immunity. Gordon SR, Maute RL, Dulken BW, Hutter G, George BM, McCracken MN, Gupta R, Tsai JM, Sinha R, Corey D, Ring AM, Connolly AJ, Weissman IL. *Nature*. (2017) May 25;545(7655):495-499.

Unifying Mechanism for Different Fibrotic Diseases. Wernig G, Chen SY, Cui L, Van Neste C, Tsai JM, Kambham N, Vogel H, Natkunam Y, Gilliland DG, Nolan G, Weissman IL. *Proc Natl Acad Sci USA*. (2017) 114(18):4757-62.

The Role of Efferocytosis in Atherosclerosis. Kojima Y, Weissman IL, Leeper NJ. *Circulation*. (2017) 135(5):476-89.

CD47-blocking Antibodies Restore Phagocytosis and Prevent Atherosclerosis. Kojima, Y, JP Volkmer, K McKenna, M Civelek, AJ Lusis, CL Miller, D Drenzo, V Nanda, J Ye, AJ Connolly, EE Schadt, T Quertermous, P Betancur, L Maegdefessel, LP Matic, U Hedin, IL Weissman, and NJ Leeper (2016). *Nature*. 536(7614): 86-90.

Evolution of Normal and Neoplastic Tissue Stem Cells: Progress After Robert Hooke. Weissman, I. (2015) *Philos Trans R Soc Lond B Biol Sci*. Oct 19;370(1680):20140364.



Cornelia M. Weyand, MD, PhD

Professor, Medicine - Immunology and Rheumatology
Chief, Division of Immunology and Rheumatology
Director, Center for Translational Medicine

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DIVISION 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 laboratory examines autoimmune and autoinflammatory disease, with emphasis on immune defects in vasculitis, coronary artery disease and rheumatoid arthritis. The heart of this work is to develop new strategies to suppress unwanted inflammation and to boost beneficial immune responses. We have approached this goal by defining and characterizing immune defects on a mechanistic level and by bed-to-bench and bench-to-bed translation. In large vessel vasculitis, we have defined mechanisms that protect the vessel wall from inflammatory attack and have characterized how the immune privilege of the vessel wall breaks down to enable vasculitis. Vasculitogenic T cells aberrantly express the oncogene NOTCH1, and vasa vasorum endothelial cells express the NOTCH ligand Jagged1. Also, deficiency of the immuno-inhibitory PD1/PD-L1 checkpoint causes unleashing of auto-aggressive T cells. Rheumatoid arthritis is an autoimmune disease associated with high cardiovascular risk. A molecular hallmark of the disease is the metabolic reprogramming of T cells and macrophages. We have assigned defects in bioenergetic regulation to mistrafficking of intracellular proteins, lysosomal dysfunction and insufficient mitochondrial DNA repair. We have described that loss-of-function of DNA repair molecules leads to telomeric instability, abnormal cell cycle progression and premature aging of the immune system. Immuno-aging results in the co-existence of immune failure with uncontrolled inflammation. Our current studies explore how defined tissue niches instruct tissue-dwelling immune cells to sustain inflammation, how the DNA repair machinery controls the immune aging process and how bioenergetic strategies determine cellular behavior.

The immune system is everywhere. All diseases have their roots in the immune system.

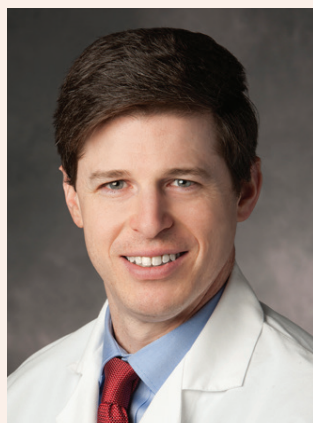
SELECTED PUBLICATIONS

N-myristoyltransferase Deficiency Impairs Activation of Kinase AMPK and Promotes Synovial Tissue Inflammation. Wen Z, Jin K, Shen Y, Yang Z, Li Y, Wu B, Tian L, Shoor S, Roche NE, Goronzy JJ, Weyand CM. *Nat Immunol* 20:313-325, 2019.

The DNA Repair Nuclease MRE11A Functions as a Mitochondrial Protector and Prevents T Cell Pyroptosis and Tissue Inflammation. Li Y, Shen Y, Jin K, Wen Z, Cao W, Wu B, Wen R, Tian L, Berry GJ, Goronzy JJ, Weyand CM. *Cell Metab* 30:477-492, 2019.

Inhibition of JAK-STAT Signaling Suppresses Pathogenic Immune Responses in Medium and Large Vessel Vasculitis. Zhang H, Watanabe R, Berry GJ, Tian L, Goronzy JJ, Weyand C. *Circulation*. 2017 Dec 18.

The Microvascular Niche Instructs T Cells in Large Vessel Vasculitis via the VEGF-Jagged1-Notch Pathway. Wen Z, Shen Y, Berry G, Shahram F, Li Y, Watanabe R, Liao YJ, Goronzy JJ, Weyand CM. *Sci Transl Med*. 2017 Jul 19;9(399).



Ronald Witteles, MD

Professor, Medicine - Cardiovascular Medicine
Co-Director, Stanford Amyloid Center
Program Director, Internal Medicine Residency Training Program
Co-Director, Stanford Multidisciplinary Sarcoidosis Program
Associate Editor, *JACC: CardioOncology*

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AMYLOID CENTER med.stanford.edu/amyloidcenter.html

SARCOIDOSIS PROGRAM med.stanford.edu/sarcoidosis.html

RESIDENCY PROGRAM medicine.stanford.edu/education/residency.html

EDUCATION/TRAINING

MD University of Chicago

MEDICINE RESIDENCY

Stanford University

CHIEF RESIDENT IN INTERNAL MEDICINE

Stanford University

CARDIOLOGY FELLOWSHIP

Stanford University

BOARD CERTIFICATION

Internal Medicine, ABIM

Cardiovascular Disease, ABIM

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 three primary areas: amyloidosis, cardiac complications of cancer therapy, and sarcoidosis. As Co-Director of one of the world'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 Hematology and Medical Oncology to investigate optimal screening and treatment of cancer-therapy associated cardiac disease, and I serve as Associate Editor for the country's leading Cardio-Oncology journal, *JACC: CardioOncology*. In the area of sarcoidosis, I serve as Co-Director for and lead the cardiology program for the Stanford Multidisciplinary Sarcoidosis Program, investigating novel diagnostic and treatment options.

My career goal is to pursue excellence in and integration of the three cornerstones of academic medicine—clinical care, scholarship, and education.

SELECTED PUBLICATIONS

A Changing Landscape of Mortality for Systemic Light Chain Amyloidosis. Barrett CD, Dobos K, Liedtke M, Tuzovic M, Haddad F, Kobayashi Y, Lafayette R, Fowler MB, Arai S, Schrier S, Witteles RM. *JACC Heart Fail.* 2019 Nov;7(11): 958-966.

Screening for Transthyretin Amyloid Cardiomyopathy in Everyday Practice. Witteles RM, Bokhari S, Damy T, Elliott PM, Falk RH, Fine NM, Gospodinova M, Obici L, Rapezzi C, Garcia-Pavia P. *JACC Heart Fail.* 2019 Aug;8(8):709-716.

AL Amyloidosis for the Cardiologist and Oncologist: Epidemiology, Diagnosis, and Management. Witteles RM, Liedtke M. *JACC CardioOncology.* 2019 Sep;1(1):117-130.

Increase in Blood Pressure Associated With Tyrosine Kinase Inhibitors Targeting Vascular Endothelial Growth Factor. Waliy S, Sainani KL, Park LS, Zhang CA, Srinivas S, Witteles RM. *JACC CardioOncology.* 2019 Sep;1(1):24-36.

Serial Cardiac FDG-PET for the Diagnosis and Therapeutic Guidance of Patients With Cardiac Sarcoidosis. Ning N, Guo HH, Iagaru A, Mittra E, Fowler MB, Witteles R. *J Cardiac Fail.* 2019 Apr;25(4):307-311.



Y. Joseph Woo, MD

Norman E. Shumway Professor and Chair, Department of Cardiothoracic Surgery
Professor, by courtesy, Department of Bioengineering

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DEPARTMENT ctsurgery.stanford.edu

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 conducting biomechanical engineering studies of heart valve operations. 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.

Innovative pioneering cardiovascular surgeons Shumway, Reitz, and Robbins built and led the Stanford program to preeminence. It is truly a privilege to become a part of this amazingly prestigious, high-powered academic institution.

SELECTED PUBLICATIONS

A Unique Collateral Artery Development Program Promotes Neonatal Heart Regeneration. Das S, Goldstone AB, Wang HJ, Farry J, D'Amato G, Paulsen MJ, Eskandari A, Hironaka CE, Phansalkar R, Sharma B, Rhee S, Shamskhov EA, Agalliu D, de Jesus Perez V, Woo YJ, Red-Horse K. *Cell*, 2019 Feb 21;176(5):1128-1142.

Use of a Supramolecular Polymeric Hydrogel as an Effective Post-Operative Pericardial Adhesion Barrier. Stapleton LM, Steele AN, Wang H, Hernandez HL, Yu AC, Paulsen MJ, Smith, AA, Agmon G, Thankore AD, Lucian HJ, Tothorow K, Baker SW, Tada Y, Farry JM, Eskandari A, Hironaka CE, Jaatinen KJ, Williams KM, Bergamasco H, Marschel C, Chadwick B, Ma M, Appel EA, Woo YJ. *Nature Biomedical Engineering*, 2019 Aug;3(8):611-620 [Cover Article]

Modeling Conduit Choice for Valve-Sparing Aortic Root Replacement on Biomechanics with a 3D-Printed Heart Simulator. Paulsen MJ, Kasinpila P, Imbrie-Moore AM, Wang H, Hironaka CE, Koyano TK, Fong RM, Farry JM, Chiu PE, Goldstone AB, Stapleton LM, Steele AN, Ma M, Woo YJ. *J Thorac Cardiovasc Surg* 2019 Aug;158(2):392-403.

Rapid Self-Assembly of Bioengineered Cardiovascular Bypass Grafts from Scaffold-Stabilized, Tubular Bilevel Cell Sheets. Von Bornstadt D, Wang H, Paulsen MJ, Goldstone AB, Eskandari A, Thankore A, Stapleton L, Steele AN, Truong VN, Jaatinen, Hironaka C, Woo YJ. *Circulation* 2018 Nov 6;138(19):2130-2144.

Interfacility Transfer of Medicare Beneficiaries with Acute Type A Aortic Dissection and Regionalization of Care in the United States. Goldstone AB, Chiu P, Baiocchi M, Lingala B, Lee J, Rigdon J, Fischbein MP, Woo YJ. *Circulation* 2019 Oct 8;140(15):1239-1250.

Mechanical or Biologic Prostheses for Aortic- and Mitral-Valve Replacement. Goldstone AB, Chiu PE, Baiocchi M, Lingala B, Patrick WL, Fischbein MP, Woo YJ. *New England Journal of Medicine* 2017 Nov 9;377(19):1847-1857.

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

American Heart Association Surgery Mentoring Award

Clinical Research Forum, USA Top Ten Clinical Research Award Recipient (2018)

Top Doctor of Bay Area, San Francisco Magazine (2015, 2016, 2017, 2018, 2019)

Surgical Mentorship Teaching Award, University of Pennsylvania (2013)

Luigi Mastroianni Clinical Innovator Award, University of Pennsylvania (2012)

ASSOCIATE EDITOR

Journal of Thoracic and Cardiovascular Surgery

FELLOW American Heart Association, American College of Cardiology, American College of Surgeons



Joseph C. Wu, MD, PhD

Director, Stanford Cardiovascular Institute

Simon H. Stertzer, MD, Professor of Medicine & Radiology

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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

NIH Director's New Innovator Award

NIH Roadmap Transformative Award

Presidential Early Career Award for Scientists and Engineers, White House Office of Technology

American Heart Association (AHA)

Established Investigator Award

Academy of Radiology Research Distinguished Investigator Award

Burroughs Wellcome Foundation

AHA Merit Award

AHA Distinguished Scientist Award

MEMBER

Am Society Clinical Investigators (ASCI)

Assoc University Cardiologists (AUC)

American Institute for Medical and

Biological Engineering (AIMBE)

Association American Physicians (AAP)

AHA Chair of Research Committee

AHA National Board of Directors

FDA Cellular, Tissue, and Gene Advisory Committee

American Association for Advancement of Science (AAAS)

National Academy of Medicine (NAM)
Stanford Cardiovascular Institute

CURRENT RESEARCH

My lab focuses on biological mechanisms of patient-specific and disease-specific induced pluripotent stem cells (iPSCs). The main goals are to (i) understand basic cardiovascular disease mechanisms, (ii) accelerate drug discovery and screening, (iii) develop the "clinical trial in a dish" concept, and (iv) implement precision cardiovascular medicine for disease prevention and treatment of patients. My lab uses a combination of advanced genomics, stem cells, cellular & molecular biology, physiological testing, and molecular imaging technologies to better understand molecular and pathophysiological processes.

The missions of the Stanford CVI are to deliver excellence in clinical care, world-class education, and cutting-edge research that will improve the medical care and quality of life of our patients.

SELECTED PUBLICATIONS

Dysregulation of PDGFRB Contributes to the Pathogenesis of LMNA-related Dilated Cardiomyopathy. Lee J, Termglinchan V, Diecke S, Itzhaki I, Lam CK, Garg P, Lau E, Greenhaw M, Seeger T, Wu H, Zhang JZ, Chen X, Gil IP, Ameen M, Sallam K, Rhee JW, Churko J, Chaudhary R, Yi SA, Nam KH, Chour T, Wang PJ, Snyder MP, Chang HY, Karakikes I, Wu JC. *Nature* 2019;572(7769):335-340.

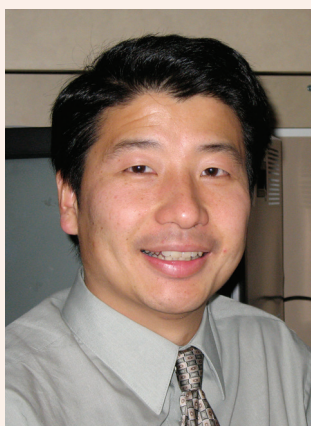
A Human iPSC Double-reporter System Enables Purification of Cardiac Lineage Subpopulations With Distinct Function and Drug Response Profiles. Zhang JZ, Termglinchan V, Shao NY, Itzhaki I, Liu C, Ma N, Tian L, Wang VY, Chang ACY, Guo H, Kitani T, Wu H, Lam CK, Kodo K, Sayed N, Blau HM, Wu JC. *Cell Stem Cell* 2019;24(5):802-811.

Autologous iPSC-based Vaccines Elicit Anti-tumor Responses In Vivo. Kooreman NG, Kim Y, de Almeida PE, Termglinchan V, Diecke S, Shao NY, Wei TT, Yi H, Dey D, Nelakanti R, Brouwer TP, Paik DT, Barfi I, Han A, Quax PHA, Hamming JF, Levy R, Davis MM, Wu JC. *Cell Stem Cell* 2018;22(4):501-537.

High-throughput Screening of Tyrosine Kinase Inhibitor-induced Cardiotoxicity Using Human Induced Pluripotent Stem Cells. Sharma A, Burrridge PW, McKeithan WL, Serrano R, Shukla P, Sayed N, Churko JM, Kitani T, Wu H, Holmstrom A, Matsa E, Zhang Y, Kumar A, Fan AC, del Alamo JC, Wu SM, Moslehi JJ, Mercola M, Wu JC. *Sci Transl Med* 2017;9(377).

Abnormal Activation of TGFbeta Signaling as a Pathogenesis of Left Ventricular Non-compaction Cardiomyopathy. Kodo K, Ong SG, Jahanbani F, Termglinchan V, Hirono K, Inanloo Rahatloo K, Ebert AD, Shukla P, Abilez OJ, Churko JM, Karakikes I, Jung G, Ichida F, Wu SM, Snyder MP, Bernstein D, Wu JC. *Nature Cell Biology* 2016;18(10):1031-42.

Human Induced Pluripotent Stem-derived Cardiomyocytes Recapitulate the Predilection of Breast Cancer Patients to Doxorubicin-induced Cardiotoxicity. Burrridge PW, Li YF, Matsa E, Wu H, Ong SG, Sharma A, Chang AC, Coronado MJ, Ebert AD, Knowles JW, Tell ML, Witteles RM, Blau HM, Bernstein D, Altman RB, Wu JC. *Nature Medicine* 2016;22(5):547-56.



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Associate Professor (by courtesy), Pediatrics

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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

Kenneth D. Bloch Memorial Lecturer,
American Heart Association Scientific
Sessions (2018)

Established Investigator Award,
American Heart Association (2016)

Elected Member, American Society for
Clinical Investigation (2016)

Department of Medicine Teaching Award,
Stanford University School of Medicine
(2015)

NIH Director's Pioneer Award, NIH Office
of the Director (2014)

David Lawrence Stein Award, American
Heart Association-Western Affiliate
(2014)

Fellow, American College of Cardiology
(2009)

NIH Director's New Innovator Award, NIH
Office of the Director (2008)

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 stem cells as a test-tube model to study the process of heart cell formation. In addition, we are using human induced pluripotent stem cells from patients with heart diseases to address the mechanism of their disease formation and to develop new treatments involving engineered 3D tissue for therapy.

SELECTED PUBLICATIONS

Transcriptomic Profiling of the Developing Cardiac Conduction System at Single Cell Resolution. Goodyer WR, Beyersdorf B, Paik DT, Tian L, Li G, Buikema JW, Chirikian O, Choi S, Venkatraman S, Adams E, Lavigne M-T, Wu JC, Wu SM. *Circ Res*, 2019; 125(4):379-397.

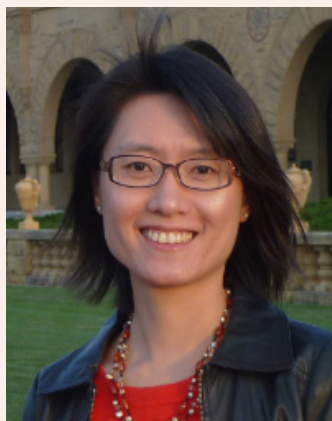
Single Cell Expression Analysis Reveals Anatomical and Cell Cycle-dependent Transcriptional Shifts During Heart Development. Li G, Tian L, Goodyer W, Kort EJ, Buikema JW, Xu A, Wu JC, Jovinge S, Wu SM. *Development*. 2019; 14(12):146-154.

Single-cell Transcriptomics of 20 Mouse Organs Creates a Tabula Muris. Schaum N, Karkanias J, Neff NF, ... (260 authors) ...Wu SM, Quake SR, Wyss-Coray T. (2018) *Nature*. 562(7727):367-372.

Bioacoustic-enabled Assembly of Human iPSC-derived Cardiomyocytes Into 3D Cardiac Tissues. Serpooshan V, Chen P, Wu H, Lee S, Sharma A, Hu DA, Venkatraman S, Ganesan AV, Yarmush M, Yang F, Wu JC, Demirci U, Wu SM. (2017) *Biomaterials*. 131:47-57.

YY1 Expression is Sufficient for the Maintenance of Cardiac Progenitor Cell State. Gregoire S, Li G, Sturzu A, Schwartz RJ, Wu SM. (2017) *Stem Cells*. 35(8):1913-1923.

Transcriptomic Profiling Maps Anatomically Patterned Subpopulations Among Single Embryonic Cardiac Cell. Li G, Xu A, Sim S, Priest JR, Tian X, Khan T, Zhou B, Quertermous T, Tsao PS, Quake SR, Wu SM. (2016) *Dev Cell*. 39(4):491-507.



Fan Yang, PhD

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EDUCATION/TRAINING

PHD Johns Hopkins University,
Biomedical Engineering

HONORS & AWARDS

Society for Biomaterials Young
Investigator Award (2016)

Biomaterials Science Lectureship Award
(2016)

California Institute of Technology Tools
and Technologies Award (2015-2018)

NSF Faculty Early Career Development
(CAREER) award, National Science
Foundation (2014-2019)

2011 Technology Review TR35 Global
List (2011)

3M Nontenured Faculty Grant Award, 3M
(2012-2015)

Stanford Asian American Faculty Award,
Stanford University (2013)

Mission for Learning Faculty Scholar
Award in Pediatric Translational
Medicine, Child Health Research
Institute (2013-2015)

Young Investigator Award, Alliance for
Cancer and Gene Therapy, Alliance for
Cancer and Gene Therapy (2013)

Basil O' Connor Starter Scholar Research
Award, March of Dimes Foundation
(2012-2014)

McCormick Faculty Award (2011)

Faulty Scholar of the Donal E. and Delia
B. Baxter Foundation (2010)

CURRENT RESEARCH

A bioengineer by training, I work at the interface of biomaterials, stem cell biology, engineering, and medicine. Using an interdisciplinary approach, my research seeks: (1) to decipher how interactive microenvironmental cues (cell-matrix or cell-cell interactions) regulate cell fate during normal tissue development and during disease progression (cancer), and (2) to develop novel biomaterials and stem cell-based therapeutics to improve tissue regeneration. Using biomaterials-mediated approaches, my lab employs two strategies to engineer stem cells: from the "outside in" via novel scaffold design and from the "inside out" via non-viral gene delivery. In the first strategy, we engineer injectable hydrogels using a "lego-building" approach in order to independently tune cell-niche properties including biochemical, mechanical, and topographical cues. These biomaterials are useful for elucidating the mechanisms of multifactorial cell-niche interactions, and for enabling desirable cell fates and tissue regeneration with particular functions. In the second strategy, we harness the ability of stem cells to home to diseases sites and their ability to enhance tissue regeneration via paracrine signaling. We further modulate the paracrine signaling of stem cells using biodegradable polymeric nanoparticle-mediated non-viral gene delivery, which is safer than conventional viral vectors. Using relevant animal models, we have demonstrated the potential applications of such stem cell- and biomaterials-based strategies for treating musculoskeletal diseases, cardiovascular diseases, and cancer.

SELECTED PUBLICATIONS

Contractile Force Generation by 3D hiPSC-derived Cardiac Tissue is Enhanced by Rapid Establishment of Cellular Interconnection in Matrix With Muscle-mimicking Stiffness. Lee S, Serpooshan V, Tong X, Venkatraman S, Lee M, Wu SM, Yang F. *Biomaterials*. 2017 Jul;131:111-120.

Polymer-DNA Nanoparticle Induced CXCR4 Overexpression Improves Stem Cell Engraftment and Tissue Regeneration in a Mouse Hindlimb Ischemia Model. Devezza L, Choi J, Lee J, Huang N, Cooke J, Yang F. *Theranostics*, 2016 May 23;6(8):1176-89.

Adipose Derived Stromal Cells Overexpressing Vascular Endothelial Growth Factor Accelerate Wound Closure in a Mouse Excisional Wound Healing Model. Nauta A, Seidel C, Devezza L, Montoro D, Grova M, Ko SH, Hyun J, Gurtner G, Longaker MT, Yang F. *Molecular Therapy*, 2013 Feb;21(2):445-55.

Nanoparticle Engineered TRAIL-overexpressing Adipose-derived Stem Cells Target and Eradicate Glioblastoma via Intracranial Delivery. Jiang X, Fitch S, Wang C, Wilson C, Li JF, Song B, Grant G, Yang F. *Proc Natl Acad Sci USA*, 2016 Nov 29;113(48):13857-13862. Epub 2016 Nov 14.

Sliding Hydrogels With Mobile Molecular Ligands and Crosslinks as 3D Stem Cell Niche. Tong X, Yang F. *Advanced Materials*, 2016 Sep;28(33):7257-63.



Phillip C. Yang, MD

Associate Professor, Medicine - Cardiovascular Medicine
 Director, Cardiovascular Stem Cell Laboratory
 Director, Cardiothoracic MRI Program

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PROFILE med.stanford.edu/profiles/Phillip-Yang

CURRENT RESEARCH

Our research interest focuses on the fundamental molecular and cellular processes of myocardial regeneration and restoration. We employ novel in vivo multi-modality molecular and cellular imaging technology to translate basic discovery in stem cell biology. Autologous iPSCs are considered a potential landmark solution. Translational effort of this revolutionary biology is investigated through the secretomes generated from patient- and disease-specific iPSC-cardiovascular cells and their molecular cargo to implement precision medicine. Through NIH/NHLBI-sponsored Cardiovascular Cell Therapy Research Network, the feasibility of a pilot clinical trial of this innovative therapeutic approach is investigated.

Success consists of going from failure to failure without loss of enthusiasm. — Winston Churchill

SELECTED PUBLICATIONS

Cardiovascular Magnetic Resonance Imaging Elucidates Genotype-Phenotype Relationships in Patients with Hypertrophic Cardiomyopathy. Miller R, Heidary S, Pavlovic A, Schlachter A, Dash R, Fleischmann D, Ashley EA, Wheeler M, Yang PC. *PlosOne* 2019 14(6): e0217612.

Myocardial Viability of the Peri-infarct Tegment Measured by T1 Mapping Post Manganese-enhanced MRI Correlates With LV Dysfunction. Tada Y, Heidary S, Tachibana A, Zaman J, Neofytou E, Dash R, Wu JC, Yang PC. *Int J Cardiol.* 2019 Jan 31.

Induced Pluripotent Stem Cell (iPSC)-Derived Exosomes for Precision Medicine in Heart Failure. Yang PC. *Circ Res.* 2018 Mar 2;122(5):661-663.

Paracrine Effects of the Pluripotent Stem Cell-Derived Cardiac Myocytes Salvage the Injured Myocardium. Tachibana A, Mahmoudi M, Shukla P, Rulifson E, Santoso MR, Bennett M, Goldstone AB, Wang M, Fukushi M, Ebert A, Wu J, Woo YJ, Yang PC. *Circ Res* 2017 Sep 1;121(6):e22-e36.

Myocardial Edema on T2-Weighted MRI: New Marker of Ischemia Reperfusion Injury and Adverse Myocardial Remodeling. Tada Y, Yang PC. *Circ Res.* 2017 Aug 4;121(4):326-328.

Exosomes Generated From iPSC-derivatives: New Direction for Stem Cell Therapy in Human Heart Diseases. Jung J, Fu X, Yang PC. *Circulation Res* 2017 Jan 20;120(2):407-417

Circulating Biomarkers to Identify Responders in Cardiac Cell Therapy. Jokerst J, Cauwenberghs N, Kouznetsova T, Haddad F, Sweeney T, Hou J, Rosenberg-Hasson Y, Zhao E, Schutt R, Bolli R, Traverse J, Henry J, Pepine C, Schulman I, Moye L, Taylor D, Yang, PC. *Nature Sci Rep.* 2017 Jun 30;7(1):4419.

Novel MRI Contrast Agent from Magnetotactic Bacteria Enables In Vivo Tracking of iPSC-derived Cardiomyocytes. Mahmoudi M, Tachibana A, Gladstone AB, Woo YJ, Chakraborty P, Muth K, Foote C, Pieciewicz S, Barrozo J, Wakeel A, Rice B, Bell III C, Yang PC. *Nature Sci Rep.* 2016 Jun 6;6:26960.

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
 Cardiac MRI, Level III, SCMR

CLINICAL FOCUS

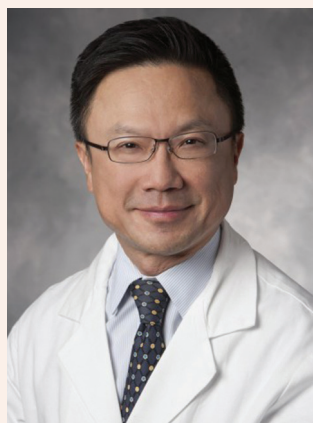
General Cardiology
 Cardiovascular Imaging
 Cardiovascular and Molecular Therapy

HONORS & AWARDS

Young Investigator Award, American College of Cardiology (ACC)
 Burroughs Wellcome Scholar
 NIH Career Development Award
 NIH Career Enhancement Award in Stem Cell Research
 Young Investigator Award, American Melvin Judkins YIA, AHA (Senior author, 2009, 2010, 2012, 2014, 2016, 2018)
 Co-Chair, AHA Cardiovascular Stem Cell Writing Group

PRINCIPAL INVESTIGATOR

NIH Patient-Oriented Research in Cell Therapy; NIH Cardiovascular Cell Therapy Research Network; Novartis, Investigator Initiated Research; AHA Collaborative Sciences Award; Intervall Foundation Grant; CONCERT-HF Trial; SENECA Trial; CardiAMP-HF Trial; CAPACITY-HF Trial; DREAM-HF Trial; LOFT-HF Trial



Alan C. Yeung, MD

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

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DIVISION 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

EDITORIAL BOARD

Journal of the American College of Cardiology (JACC)

REVIEW BOARD

Circulation

FORMER CHAIR

ABIM Interventional Cardiology Examination Board Chair

CURRENT RESEARCH

My current research extends beyond stents and devices, focusing 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. I am the Medical Director of Cardiovascular Health at Stanford Medicine and Chief (Clinical), of Division of Cardiovascular Medicine and Former Director of Interventional Cardiology.

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

Efficacy and Safety of Novel Multi-lumen Catheter for Chronic Total Occlusions: From Preclinical Study to First-in-man Experience. Mitsutake Y, Ebner A, Yeung AC, Taber MD, Davidson CJ, Ikeno F. *Catheter Cardiovasc Interv.* 2014 Oct 20.

Continuous Flow Left Ventricular Assist Device Placement Complicated by Aortic Valve Thrombus and Myocardial Infarction. Kim JB, Rhee JW, Brenner DA, Ha R, Banerjee D, Yeung AC, Tremmel JA. *Int J Cardiol.* 2014 Oct 20;176(3):e102-3.

Dichloroacetate Prevents Restenosis in Preclinical Animal Models of Vessel Injury. Deuse T, Hua X, Wang D, Maegdefessel L, Heeren J, Scheja L, Bolaños JP, Rakovic A, Spin JM, Stubbendorff M, Ikeno F, Länger F, Zeller T, Schulte-Uentrop L, Stoeck A, Itagaki R, Haddad F, Eschenhagen T, Blankenberg S, Kieffmann R, Reichenspurner H, Velden J, Klein C, Yeung A, Robbins RC, Tsao PS, Schrepfer S. *Nature.* 2014 May 29;509(7502):641-4.

Clinical Interpretation and Implications of Whole-genome Sequencing. Dewey FE, Grove ME, Pan C, Goldstein BA, Bernstein JA, Chaib H, Merker JD, Goldfeder RL, Enns GM, David SP, Pakdaman N, Ormond KE, Caleshu C, Kingham K, Klein TE, Whirl-Carrillo M, Sakamoto K, Wheeler MT, Butte AJ, Ford JM, Boxer L, Ioannidis JP, Yeung AC, Altman RB, Assimes TL, Snyder M, Ashley EA, Quertermous T. *JAMA.* 2014 Mar 12;311(10):1035-45.



Paul Yock, MD

Martha Meier Weiland Professor of Medicine
Professor, Bioengineering
Professor, Medicine - Cardiovascular Medicine
Professor (by courtesy), Mechanical Engineering
Director, Stanford Byers Center for Biodesign

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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

Bernard M. Gordon Prize for Innovation, National Academy of Engineering

Fritz and Delores Russ Prize, National Academy of Engineering

DOCTOR OF SCIENCE (HONORIS CAUSA)
Amherst College

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
Association of American Physicians
National Academic of Engineering

CURRENT RESEARCH

I am the founder and director of the Byers Center for Biodesign, a multidisciplinary training and support program for physicians and engineers with the ambition and talent to become health technology innovators. The Center has educational/training programs at multiple levels including a postgraduate fellowship, multiple graduate and undergraduate classes and a faculty training program. In addition, Biodesign administers seed grant programs and a mentoring system for faculty and students who seek to translate health technology innovations into patient care.

A well-characterized need is the DNA of a good invention.

SELECTED PUBLICATIONS

Noninvasive Estimation of Right Ventricular Systolic Pressure by Doppler Ultrasound in Patients With Tricuspid Regurgitation. Yock PG, Popp RL. *Circulation*, 70: 657-662, 1984.

The Safety of Intracoronary Ultrasound: A Multi-center Survey of 2207 Examinations. Hausmann D, Erbel R, Alibelli-Chemarin MJ, Boks W, Yock PG. *Circulation*, 91(3): 623-30, 1995.

Angioplasty Method. Yock P. Issued August 20, 1991; US patent no. 5,040,548.

Biodesign: The Process of Innovating Medical Technologies. Yock, P, Zenios S, Makower J, senior editors: New York: Cambridge University Press, 2015. 839 pp.

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 U, Mairal A, Watkins J, Popp RL, Wang PJ, Makower J, Krummel TM, Yock PG. *Annals of Biomedical Engineering*, 41(9): 1803-1810, 2013.



Roham Zamanian, MD, FCCP

Associate Professor - Med Center Line, Medicine - Pulmonary & Critical Care Medicine
Director, Stanford Adult Pulmonary Hypertension Program
Vera Moulton Wall Center for Pulmonary Vascular Disease

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WEB <http://med.stanford.edu/pulmonary.html>
<http://med.stanford.edu/wallcenter.html>

EDUCATION/TRAINING

MD University of California Irvine

RESIDENCY and INTERNSHIP
University of Irvine Medical Center

FELLOWSHIP
Stanford University

SUPER-FELLOWSHIP (2004-2006)
eBay Pulmonary Vascular Fellow, Vera Moulton Wall Center for Pulmonary Vascular Disease

BOARD CERTIFICATION
Pulmonary Disease, ABIM (2006)

HONORS & AWARDS

Junior Faculty Scholar Award, Vera Moulton Wall Center (2013-2018)

Fellow of the American College of Chest Physicians, American College of Chest Physicians (2008)

Faculty Teaching Award, Dept of Medicine, Stanford (2007)

Young Investigator Career Development Award, Entelligence Actelion Young

Investigators Program (2006-2007)

Fellow of the Year, Univ of California, Irvine Medical Center (2002-2003)

Resident Research Presentation Award, Univ of Calif, Irvine Medical Center -

Dept of Medicine (2001)

Case Presentation Award, ACCP - Chest 2000 (2000)

CURRENT RESEARCH

My research is focused on the development of risk prediction and leading-edge phenotyping strategies for patients with pulmonary arterial hypertension (PAH), as well as the translation of basic laboratory discoveries into clinical therapeutics at bedside. Over the past 5 years, I have been involved in the design, implementation, analysis, and reporting of phase 1 and phase 2 proof of concept PAH clinical trials.

My heroes are the ones who survived doing it wrong,
who made mistakes, but recovered from them.

— Bono, U2.

SELECTED PUBLICATIONS

Discovery of Distinct Immune Phenotypes Using Machine Learning in Pulmonary Arterial Hypertension. Sweatt AJ, Hedlin HK, Balasubramanian V, Hsi A, Blum LK, Robinson WH, Haddad F, Hickey PM, Condliffe R, Lawrie A, Nicolls MR, Rabinovitch M, Khatri P, Zamanian RT. *Circ Res*. 2019 Mar 15;124(6):904-919.

Features and Outcomes of Methamphetamine Associated Pulmonary Arterial Hypertension. Zamanian RT, Hedlin H, Greuenwald P, Wilson DM, Segal JI, Jorden M, Kudelko K, Liu J, Hsi A, Rupp A, Sweatt AJ, Tudor R, Berry GJ, Rabinovitch M, Doyle RL, De Jesus Perez V, Kawut SM. *Am J Respir Crit Care Med*. 2017 Sep 21.

Randomised Placebo-controlled Safety and Tolerability Trial of FK506 (Tacrolimus) for Pulmonary Arterial Hypertension. Spiekerkoetter E, Sung YK, Sudheendra D, Scott V, Del Rosario P, Bill M, Haddad F, Long-Boyle J, Hedlin H, Zamanian RT. *Eur Respir J*. 2017 Sep 11;50(3).

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EDUCATION/TRAINING

PHD Harvard University

HONORS & AWARDS

National Medal of Science, National Science Foundation (1983)

Wolf Prize in Chemistry (2005)

Presidential Award for Excellence in Science, Mathematics, and Engineering Mentoring (PAESMEM), U.S. Office of Science and Technology Policy (2009)

Priestley Medal of the American Chemical Society (2010)

BBVA Foundation Frontiers of Knowledge Award in the Basic Sciences category (2010)

King Faisal International Prize in Science, King Faisal Foundation (2011)

Othmer Gold Medal from the Chemical Heritage Foundation (2017)

National Hero's Medal, 70th Anniversary of the Founding of the People's Republic of China (2019)

Yusuf Hamied Visiting Professorship (2019)

CURRENT RESEARCH

Current research in the Zare lab explores wide-ranging questions in physical and analytical chemistry, from the study of elementary chemical reactions to chemical analysis of extraterrestrial materials. The major focus of these efforts is chemical analysis on the nanoscale. The team has devised tools and techniques to examine molecules in extremely tiny volumes – the volumes characteristic of what is found in heterogeneous structures in mineral samples or in the contents of cells and subcellular compartments. Group members have also made contributions to understanding chemical reactions in microdroplets.

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Combining Desorption Electrospray Ionization Mass Spectrometry Imaging and Machine Learning for Molecular Recognition of Myocardial Infarction. Margulis K, Zhou Z, Fang Q, Sievers RE, Lee RJ, Zare RN. *Anal Chem*. 2018 Oct 16;90(20):12198-12206.

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