SCHEDULE

8:00  Breakfast

Welcome Remarks

8:30  Introduction
    Joseph C. Wu, MD, PhD
    Director, Stanford Cardiovascular Institute
    Simon H. Stertzer, MD, Professor of Medicine (Cardiology) and Radiology

Pediatrics Research

8:40  Patient-derived iPSC-Cardiomyocytes: State of the Future for Pediatric Personalized Medicine
    Daniel Bernstein, MD
    Alfred Woodley Salter and Mabel Smith Salter Endowed Professor in Pediatrics
    Professor of Pediatrics (Cardiology), Stanford

Dean of the School of Medicine

9:00  Welcome
    Lloyd Minor, MD
    Carl and Elizabeth Naumann Professorship for the Dean of the School of Medicine

Cardio-metabolomics

Moderator: Mark Mercola, PhD
Professor of Medicine, Cardiovascular Medicine, Stanford

9:10  Epigenetics and Novel Heart Failure Causing Molecular Mechanisms
    Ralph Knöll, MD, PhD
    AstraZeneca R&D Mölndal
    Professor, Karolinska Institute, Integrated Cardio Metabolic Centre

9:30  Normal Weight Diabetes: What is the Right Prescription?
    Latha Palaniappan, MD, MS
    Clinical Professor, Stanford Medicine (General Medical Disciplines)
The Vasculature

**Moderator: Nicholas Leeper, MD**
Associate Professor of Surgery (Vascular Surgery) and Medicine (Cardiovascular Medicine)

**9:50**  
**A Translational Journey From Man to Molecule in Carotid Atherosclerosis**  
Ulf Hedin, MD  
Professor, Department of Vascular Surgery  
Karolinska Institute Department of Molecular Medicine

**10:10**  
**State of the Art in Aortic Aneurysm Research: When & Where are the Translational Opportunities?**  
Ronald Dalman, MD  
Chief, Division of Vascular Surgery, Stanford Department of Surgery  
Walter Clifford Chidester and Elsa Rooney Chidester Professor of Surgery

**10:30**  
**Networking Session: Coffee Break and Poster Viewing**

Understanding the Genome and Mediators of Disease

**Moderator: Philip S. Tsao, PhD**  
Professor of Medicine (Cardiovascular Medicine)

**11:00**  
**Hundreds of New Cardiovascular Loci: What Now?**  
Erik D. Ingelsson, MD, PhD  
Professor of Medicine (Cardiovascular Medicine), Stanford

**11:20**  
**Non-coding RNA-based Therapies for Vascular Disease**  
Lars Magdefessel, MD, PhD  
Center for Molecular Medicine, Karolinska Institute

**11:40**  
**Epigenetic Biomarkers of Aging and the Risk of Atherosclerotic CVD**  
Themistocles L. Assimes, MD, PhD  
Assistant Professor of Medicine (Cardiovascular Medicine), Stanford
12:00 Understanding Brugada syndrome using iPSC cells
   Karim Sallam MD
   Clinical Instructor, Medicine (Cardiovascular Medicine)

12:10 Telomere Shortening as a Hallmark of Lethal Dilated Cardiomyopathy
   Alex C. Y. Chang, PhD
   Postdoctoral Fellow, Baxter Laboratory for Stem Cell Biology
   Department of Microbiology and Immunology

12:20 Inclusion of Women in Studies of Catheter Ablation for Atrial Fibrillation
   Fahd Yunus, MD
   Stanford Medical Resident

12:30 Buffet Lunch and Poster Viewing

Global Views and Clinical Trials

Moderator: Robert Harrington, MD
   Arthur L. Bloomfield Professor of Medicine
   Chair, Stanford Department of Medicine

1:30 Toxicogenomic Strategy for Personalized Medicine: Monogenetic Cardiomyopathy
   Stefan Jovinge MD, PhD
   Medical Director of Cardiovascular Research, Spectrum Health Hospitals Institute

1:50 Time to Reboot: Clinical Trials 2.0
   Kenneth Mahaffey, MD
   Professor of Medicine (Cardiovascular Medicine)
   Vice Chair of Stanford Clinical Research

2:10 Incorporating Data From Mobile Health Devices into Clinical Trials:
   Modern Technologies, Classical Ideas
   Manisha Desai, PhD
   Associate Professor of Medicine, of Biomedical Data Science
   Director, Quantitative Science Unit
2:30  Overcoming Challenges of Clinical Trials for Rare and Orphan Diseases: Lessons from Pulmonary Arterial Hypertension
Roham T. Zamanian, MD, FCCP
Associate Professor of Medicine (Pulmonary and Critical Care Medicine), Stanford
Director, Adult Pulmonary Hypertension Program

2:50  Networking Session: Coffee Break and Poster Viewing

Imaging, Modeling and Repairing the Heart

Moderator: Y. Joseph Woo, MD
Norman E. Shumway Professor and Professor and, by courtesy, of Bioengineering and of Surgery

3:10  Functional Assessment of CAD Using Cardiac CT
Koen Nieman, MD, PhD
Associate Professor, Stanford Cardiovascular Medicine, Stanford

3:30  Multi-scale Modeling for Clinical Decision Support in Single Ventricle Physiology
Alison Marsden, PhD
Associate Professor of Pediatrics (Cardiology) and Bioengineering, Stanford

3:50  Angiogenic Cytokine Therapy
William Hiesinger, MD
Assistant Professor, Cardiothoracic Surgery, Stanford

Keynote Speaker: 2013 Nobel Laureate in Chemistry

4:10  Birth & Future Of Multiscale Modeling Of Macromolecules
Michael Levitt, PhD
Robert W. and Vivian K. Cahill Professor in Cancer Research in the School of Medicine
Department of Structural Biology

Introduction by: Michael Snyder, PhD
Stanford W. Ascherman, MD, FACS, Professor in Genetics
Chair, Dept. of Genetics, Stanford University
Director, Center for Genomics and Personalized Medicine

4:40  Poster Reception, Wine & Cheese
**Lloyd B. Minor, MD**  
Dr. Minor is a scientist, surgeon, and academic leader. He is the Carl and Elizabeth Naumann Dean of the Stanford University School of Medicine, a position he has held since December 2012. As dean, Dr. Minor plays an integral role in setting strategy for the clinical enterprise of Stanford Medicine, an academic medical center that includes the Stanford University School of Medicine, Stanford Health Care, and Stanford Children’s Health and Lucile Packard Children's Hospital Stanford. He also oversees the quality of Stanford Medicine's physician practices and growing clinical networks.

**Joseph C. Wu, MD, PhD**  
Dr. Wu is the Director of the Stanford Cardiovascular Institute and the Simon H. Stertzer, MD, Professor of Medicine (Cardiovascular) and Radiology. His group studies the biological mechanisms of adult stem cells, embryonic stem cells, and induced pluripotent stem cells. Using a combination of approaches, including next generation sequencing, tissue engineering, and molecular imaging technologies, his research aims to uncover novel treatments for cardiovascular diseases.

**Michael Levitt, PhD**  
Dr. Levitt is the Robert W. and Vivian K. Cahill Professor in Cancer Research in the School of Medicine. He pioneered computational biology setting up the conceptual and theoretical framework for the field. His research focuses on predicting the folding of a polypeptide chain into a protein with a unique native-structure with particular emphasis on how the hydrophobic forces affect the pathway. His group is also interested in predicting protein structure from sequence without regard for the process of folding. Such prediction relies on the well-established paradigms that similar protein sequences imply similar three-dimensional structures. Dr. Levitt also focuses on mesoscale modeling of large macromolecular complexes such as RNA polymerase and the mammalian chaperonin.
Robert A. Harrington, MD
Dr. Robert A. Harrington is an interventional cardiologist and the Arthur L. Bloomfield Professor of Medicine and Chairman of the Department of Medicine at Stanford University. His research interests include evaluating antithrombotic therapies to treat acute ischemic heart disease and to minimize the acute complications of percutaneous coronary procedures, studying the mechanism of disease of the acute coronary syndromes, understanding the issue of risk stratification in the care of patients with acute ischemic coronary syndromes, 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 research.

Y. Joseph Woo, MD
Dr. Woo is the Norman E. Shumway Professor and Professor, by courtesy, of Bioengineering and of Surgery, and the Chair of the Department of Cardiothoracic Surgery. His research focuses on the development of novel genetic, molecular and cellular strategies for treating myocardial ischemia and heart failure. He is investigating new paths to myocardial repair through angiogenesis, stem cells and tissue engineering. Moreover, Dr. Woo is 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.

Michael Snyder, PhD
Dr. Snyder is the Stanford W. Ascherman, MD, FACS, Professor in Genetics and Chair of the Stanford Department of Genetics. His laboratory has both used and developed a variety of approaches to analyze genomes, proteomes and regulatory networks. His work has combined different state-of-the-art omics technologies to perform the first longitudinal detailed integrative personal omics profile (iPOP) of a person and used this to assess disease risk and monitor disease states for personalized medicine.

Philip S. Tsao, PhD
Dr. Tsao’s laboratory focuses on understanding the molecular underpinnings of vascular disease as well as assessing disease risk. His group uses a range of biochemical, molecular and physiological techniques to make primary observations in cell systems as well as preclinical models.

Mark Mercola, MD
Dr. Mercola’s research is focused on developing and using quantitative assays of patient-specific cardiomyocyte function to discover druggable targets for preserving contractile function in heart failure and promoting regeneration following ischemic injury. His group collaborates with medicinal chemists, optical engineers and software developers to pioneer the use of patient iPSC-cardiomyocytes for disease modeling, safety pharmacology and drug development. He was on the faculty in the Department of Cell Biology at Harvard Medical School for 12 years, and later at the Sanford-Burnham-Prebys Institute and Department of Bioengineering at the University of California, San Diego before joining Stanford in 2015.
Ralph Knöll, MD, PhD
Dr. Knöll's research aims to combine the strengths of the regenerative cardiology program to foster innovative science-based strategies, technologies, and therapeutic platforms towards unraveling the epigenetic mechanisms underlying the biology of human cardiac disease. His group focuses on analysis of epigenetics, including genomic DNA methylation patterns in health and disease. He is based in AstraZeneca in Mölndal as well as at the recently established Integrated Cardio Metabolic Center at the Karolinska Institue (ICMC/KI) and has a strong interest in genetics, physiology and pharmacology of the cardiovascular system.

Daniel Bernstein, MD
Dr. Bernstein is the Alfred Woodley Salter and Mabel Smith Salter Endowed Professor in Pediatrics. His research focuses on the role of the G protein coupled receptors in regulating cardiac function, and specifically mitochondrial structure and function. His group studies the differences between right and left ventricular responses to stress and in their modes of failure, including gene expression and miR regulation. In addition, his laboratory develops tools for evaluation of cardiovascular physiology in transgenic mice and iPSC-derived myocytes.

Nicholas Leeper, MD
Dr. Leeper's laboratory is focused on understanding the heritable factors which account for cardiovascular diseases. Specifically, his group employs agnostic, genome-wide approaches such as the genome-wide association study (GWAS) platform to prioritize candidates for molecular investigation. He aims to fully translate lab findings from bench to bedside through the translational vascular medicine research group, with the ultimate goal of developing novel cardiovascular therapeutics designed specifically for carriers of genetic risk variants.

Latha Palaniappan, MD, MS
Dr. Palaniappan is an internist and clinical researcher. Her work focuses on the study of different ethnic populations in the areas of obesity, insulin resistance, and cardiovascular risk. Dr. Palaniappan’s most recent work examines the clinical effectiveness of structured physical activity programs for diabetes management (Initiate and Maintain Physical Activity in Clinics - IMPACT), as well as best exercise regimens for normal-weight diabetics (Strength Training Regimen for Normal Weight Diabetics - STRONG-D).
Ulf Hedin, MD
Dr. Hedin established a prospective biobank of carotid endarterectomies (BiKE), an effort which has been recognized world-wide and today enrolls centers in the US (Stanford), Canada (Ottawa) and Europe (Germany, Holland, UK) with recent collaborative publications in Nature, Nature Medicine and Nature Communications. His group is dedicated to translational research on cellular and molecular processes in peripheral vascular disease, with focus on mechanisms related to thromboembolic carotid disease. Dr. Hedin holds the academic chair of vascular surgery since 2005 and is senior consultant in vascular surgery at the Karolinska University Hospital. He has been on the ESVS council, served on the Swedish Research Council, European Vascular Biology Association, the Research council of Swedish Heart-Lung Foundation, and he is a member of the International Surgical Group and the Research Council of the Lundbeck Foundation.

Ronald L. Dalman, MD
Dr. Dalman is the Walter Clifford Chidester and Elsa Rooney Chidester Professor of Surgery. He has served as a faculty member of Stanford Surgery since 1992, and has directed the Vascular Surgery program since 2005. His clinical interests include management of aortic diseases and lower extremity circulatory disorders, including limb salvage. Dr. Dalman's research laboratory studies the pathophysiology of abdominal aortic aneurysm (AAA) disease, a leading cause of death in developed and developing countries worldwide, and is actively engaged in identifying and validating new treatment measures for AAA.

Erik D. Ingelsson, MD, PhD
Dr. Ingelsson obtained his MD and PhD at Uppsala University, Sweden. His laboratory focuses on cardiovascular medicine with a special focus on metabolic disturbances, such as obesity and insulin resistance and their contribution to the development of heart disease. Dr. Ingelsson's research aims to bridge molecular biology and clinical medicine to uncover insights into the pathophysiology of cardiovascular diseases, identification of new biomarkers for improved risk prediction, and discovery of novel targets for drug development.

Lars Magdefessel, MD, PhD
Dr. Magdefessel's laboratory is focused on the therapeutic and biomarker potential of non-coding RNAs in vascular disease and its underlying patho-mechanisms, such as atherosclerosis, aneurysm formation, inflammation, and thrombosis. His research team utilizes unique human biobank material and various pre-clinical experimental models to unravel novel treatment and detection methods on a molecular basis to combat the burden of cardiovascular diseases.
**Manisha Desai, PhD**
Dr. Desai is the Director of the Quantitative Sciences Unit at Stanford. She focuses on the application of biostatistical methods to all areas of medicine including oncology, nephrology, and endocrinology. Dr. Desai works on methods for the analysis of epidemiologic studies, clinical trials, and studies with missing observations.

**Roham T. Zamanian, MD, FCCP**
Dr. Zamanian's clinical research focuses on pulmonary hypertension, pulmonary vascular diseases, pulmonary embolism, right heart failure, and pulmonary critical care. He is the Director of the Adult Pulmonary Hypertension Service, at the Vera Moulton Wall Center (VMWC) for Pulmonary Vascular Disease, and Clinical Director for the VMWC Pulmonary Hypertension Database.

**Themistocles L. Assimes, MD, PhD**
Dr. Assimes is interested in genetic epidemiology, genetic determinants of complex traits related to cardiovascular medicine. His group also focuses on coronary artery disease related pathway analyses and integrative genomics, Mendelian randomization studies, risk prediction for major adverse cardiovascular events, pharmacogenomics, ethnic differences in the determinants of insulin mediated glucose uptake, and pharmacoepidemiology of cardiovascular drugs and outcomes.

**Stefan Jovinge, MD, PhD**
Stefan Jovinge is the Medical Director of Research at Fredrik Meijer Heart and Vascular Institute Spectrum Health in Grand Rapids Michigan, where he also works as a Critical Care Cardiologist. In addition he is the Director of the DeVos Cardiovascular Research Program which is a translational program with a clinical as well as a basic science unit focusing on cardiac regeneration, development and advanced heart failure treatment.

**Kenneth Mahaffey, MD**
Dr. Mahaffey is the Vice Chair of Clinical Research in the Department of Medicine and Member of the Stanford IRB. His research interest is the design and conduct of multi-center clinical trials and analyses of important clinical cardiac issues using large patient databases. His research focuses on novel anticoagulation agents for the treatment of acute coronary syndromes and atrial fibrillation, the study of agents targeted to protect the myocardium during reperfusion therapy for acute myocardial infarction, and the evaluation of cardiovascular safety of diabetic therapies.

**Themistocles L. Assimes, MD, PhD**
Dr. Assimes is interested in genetic epidemiology, genetic determinants of complex traits related to cardiovascular medicine. His group also focuses on coronary artery disease related pathway analyses and integrative genomics, Mendelian randomization studies, risk prediction for major adverse cardiovascular events, pharmacogenomics, ethnic differences in the determinants of insulin mediated glucose uptake, and pharmacoepidemiology of cardiovascular drugs and outcomes.
Koen Nieman, MD, PhD
Dr. Koen Nieman's research focuses on cardiac MR, electron-beam CT, and multi-detector CT. He pioneered noninvasive cardiac imaging as early as 2001, introducing the concept of non-invasive CT coronary angiography into the clinical arena in a seminal paper published in Lancet. Dr. Nieman has initiated several single-center and multi-center research trials.

Alison Marsden, MD
Dr. Alison Marsden is an Associate Professor in the Departments of Pediatrics and Bioengineering at Stanford. She leads the SimVascular open source software project, which provides a complete pipeline from medical image data to 3D model construction, meshing, and blood flow simulation. Her work focuses on the development of numerical methods for simulation of cardiovascular blood flow problems, medical device design, application of optimization to large-scale fluid mechanics simulations, and use of engineering tools to impact patient care in cardiovascular surgery and congenital heart disease.

William Hiesinger, MD
Dr. Hiesinger is an Assistant Professor in Cardiothoracic Surgery. His laboratory at Stanford focuses on myocardial bioengineering, angiogenesis, and regeneration. He joined the Department of Cardiothoracic Surgery in 2016.
Early Onset HCM Mutations H251N and D239N Significantly Increase the Fundamental Bio-
mechanical Parameters of Human β-cardiac Myosin

Arjun S. Adhikari, Kristina B. Kooiker, Saswata S. Sarkar, Chao Liu, Daniel Bernstein, James A. Spudich, and Kathleen M. Ruppel

Temporal Discordance of Atrial Fibrillation Burden with Major Bleeding and Intracranial Hemorrhage: Implications for Oral Anticoagulation Therapy

Mariam Askari BS1, Paul D. Ziegler MS1, Jun Fan MS1, Susan K. Schmitt PhD1, Mintu P. Turakhia MD MAS FAHA1,3

Pharmacological BMPR2 Activation with Low-dose FK506 Improves Right Ventricular Structural Adaptation to Sustained Pressure Overload

M. Boehm1, X. Tian1, M. Zhao1, Dannewitz S1, K. Kuramoto1, D. Bernstein2, E. Ashley3, S. Reddy2 and E. Spiekerkoetter1
1. Department of Medicine, Pulmonary and Critical Care Medicine, Stanford; 2. Department of Pediatrics, Pediatric Cardiology, Stanford; 3. Department of Medicine, Cardiovascular Medicine, Stanford

Telomere Shortening as a Hallmark of Lethal Dilated Cardiomyopathy

Alex C.Y. Chang1,3, Andrew C.H. Chang4, Koki Sasagawa1, Anna Kirillova1, Ioannis Karakikes2,3, Vittavat Ter-
mglinchana1,3, Haodi Wu2,3, Alexandre Ribeiro3,4, Willis Su1, Edward LaGory5, Amato Giaccia3, Beth Pruitt3,4, John W. Day6, Joseph C. Wu2,3, and Helen M. Blau1,3
1. Baxter Laboratory for Stem Cell Biology, Department of Microbiology and Immunology, Institute for Stem Cell Biology and Regenerative Medicine; 2. Department of Cardiovascular Medicine; 3. Stanford Cardiovascular Institute; 4. Department of Mechanical Engineering, Stanford; 5. Division of Radiation and Cancer Biology, Department of Radiation Oncology; and 6. Department of Neurology, Stanford

Reported Success Rates by Ablation Lesion Set of Catheter Ablation for Paroxysmal Atrial Fibrillation: Findings from the SMASH-AF Meta-Analysis Study Cohort

Andrew Cluckey1, Alexander C. Perino MD1, George Leef2, Fahd Yunus1, Mintu Turakhia1,2,3
1. Department of Medicine, Stanford; 2. Veterans Affairs Palo Alto Health Care System, Palo Alto, CA; 3. Center for Digital Health, Stanford
6  NAT2 Deficiency Alters Mitochondrial Substrate Availability
Mohsen Fathzadeh¹, Indumathi Chennamsetty¹, Kevin Contrepois², Michael Coronado³, Ivan Carcamo-Orive¹, Alan D. Attie⁴, Daniel Bernstein³, Chris Adams⁵, Ryan Leib⁵, Michael Snyder², Gerald Reaven¹, Thomas Quertermous¹, Joshua W. Knowles¹

1. Division of Cardiovascular Medicine, Stanford and Cardiovascular Institute, Stanford; 2. Department of Genetics, Stanford; 3. Division of Cardiology, Department of Pediatrics, Stanford; 4. Department of Biochemistry, University of Wisconsin, Madison, WI; 5. Stanford University Mass Spectrometry

7  Injectable Hydrogels as a Regenerative Medicine Therapy for Peripheral Arterial Disease
Abbygail Foster¹, Lei Cai¹, Ruby Dewi¹, Zachary Strassberg², Ngan Huang², and Sarah Heilshorn¹

1. Department of Materials Science and Engineering, Stanford; 2. Division of Cardiovascular Medicine, Stanford

8  KCNH2 Variant of Unknown Significance Classified as Long QT Syndrome-2 Using Patient-specific iPS-derived Cardiac Myocytes
Priyanka Garg, PhD, Haodong Chen, PhD, Ning Ma, PhD, Angelos Oikonomopoulos, PhD, Joseph C. Wu, MD, PhD

Stanford Cardiovascular Institute

9  Understanding the Role of Regulated Degradation of CEBPB During Adipogenesis
Pratyush Gupta, Kyle Kovary, Mary Teruel

Department of Chemical and Systems Biology, Stanford University

10 Mitochondrial Transient Potential Vanilloid-1 Mediates Endothelial Dysfunction in Diabetes Mellitus
Helen Heymann, Nana-Maria Wagner, Carl M. Hurt, PhD, Creed Stary, Stacy McAllister, Eric R. Gross

Department of Anesthesiology, Perioperative and Pain Medicine, School of Medicine, Stanford

11 Combinatorial Extracellular Matrix Microenvironments Promote Survival and Phenotype of Human Induced Pluripotent Stem Cell-Derived Endothelial Cells in Hypoxia
Luqia Hou¹², John Coller³, Vanita Natu³, Trevor J. Hastie⁴⁵, Ngan F. Huang¹²⁶

ABSTRACTS

12 3D Bioprinting of Vascular Functional Cardiac Tissue
Daniel Hu1, James Hu1, Vahid Serpooshan1, Sean Wu1,2,3
1. Stanford Cardiovascular Institute; 2. Institute for Stem Cell Biology and Regenerative Medicine, Stanford; 3. Department of Medicine, Division of Cardiovascular Medicine, Stanford

13 Opposing Roles for C/EBPβ in Regulating Adipogenesis and TNF alpha-Induced Inflammation
Devon Hunerdosse1, Mary Teruel1*
1. Department of Chemical and Systems Biology, Stanford; *Corresponding author

14 The Independence of Coronary Microvascular Dysfunction from Epicardial Disease Severity: Three-Vessel Invasive Coronary Physiologic Study
Stanford University Medical Center, Stanford Cardiovascular Institute, Seoul National University, Inje University, Keimyung University, and Ulsan University

15 Evaluating New Imaging Software for Focal Impulse and Rotor Mapping in Atrial Fibrillation Ablation Procedures
Christopher A. B. Kowalewski, Junaid A. B. Zaman, Tina Baykaner, Mahmood Alhousseini, Fatemah Shenasa, Mohan Viswanathan, Paul J. Wang, Sanjiv M. Narayan
Stanford University

16 Geographic Representation and Reported Success Rates of Studies of Catheter Ablation for Paroxysmal Atrial Fibrillation: Findings from the SMASH-AF Meta-Analysis Study Cohort
George Leef1, Alexander C. Perino1, Fahd Yunus1, Andrew Cluckey1, Mintu Turakhia1,2,3
1. Department of Medicine, Stanford University School of Medicine; 2. Veterans Affairs Palo Alto Health Care System, Palo Alto; 3. Center for Digital Health, Stanford

17 PAR-MRN Complex Maintains Genome Integrity and is Perturbed in Vascular Disease
ABSTRACTS

18  Transcriptome Profiling of Patient-Specific Human iPSC-Cardiomyocytes Predicts Individual Drug Safety and Efficacy Responses *In Vitro*

Elena Matsa¹,²,³, Paul W. Burridge¹,⁵, Kun-Hsing Yu⁶,⁷, John H. Ahrens¹, Vittavat Termglinchan¹,³, Haodi Wu¹,²,³, Chun Liu¹,²,³, Praveen Shukla¹,²,³, Nazish Sayed¹,³, Jared M. Churko¹,²,³, Ningyi Shao¹,²,³, Nicole A. Woo¹, Alexander S. Chao¹, Joseph D. Gold¹, Ioannis Karakikes¹,²,³, Michael P. Snyder⁶, Joseph C. Wu¹,²,³

1. Stanford Cardiovascular Institute, Stanford; 2. Departments of Medicine and Radiology, Stanford; 3. Institute of Stem Cell Biology and Regenerative Medicine, Stanford; 4. Department of Pharmacology, Stanford; 5. Center for Pharmacogenomics, Northwestern University Feinberg School of Medicine, Chicago, IL; 6. Department of Genetics, Stanford; 7. Biomedical Informatics Training Program, Stanford.

19  Use of Patient-Derived Long QT Syndrome Type 3 iPSC Cardiomyocytes to Develop New Anti-Arrhythmic Therapeutics

Wesley L. McKeithan¹,², Daniel A. Ryan³, Karl J. Okolotowicz³, Alex Savtchenko¹, Jorge Gomez-Galeno³, Mark Johnson³, Robert S. Kass¹, John R. Cashman³, and Mark Mercola¹,⁵

1. Stanford Cardiovascular Institute; 2. Graduate School of Biomedical Sciences, Sanford Burnham Prebys Medical Discovery Institute, La Jolla, CA; 3. The Human BioMolecular Research Institute, San Diego, CA; 4. Department of Pharmacology, Columbia University, New York City, NY; 5. Department of Cardiovascular Medicine, Stanford

20  Termination of Atrial Fibrillation during Pulmonary Vein Ablation before Isolation: Evidence for Localized Sources

Rachita Navara, George Leef, Fatemah Shenasa, Christopher Kowalewski, Tina Baykaner, Junaid Zaman, Paul J. Wang, Sanjiv Narayan

Department of Cardiovascular Medicine, Stanford

21  The Diagnostic Value of Abnormal Heart Rate Recovery during Exercise Stress Testing in Predicting the Presence of Endothelial and Microvascular Dysfunction in Patients with Angina in the Absence of Obstructive Coronary Artery Disease

Vedant S. Pargaonkar, Yuhei Kobayashi, Takumi Kimura, David P. Lee, Marcia L. Stefanick, William F. Fearon, Alan C. Yeung, Jennifer A. Tremmel

Stanford Cardiovascular Institute; Department of Cardiovascular Medicine, Stanford
22 Secular Trends in Reported Success Rates of Catheter Ablation for Paroxysmal Atrial Fibrillation: Findings from the SMASH-AF Meta-Analysis Study Cohort

Alexander C. Perino¹, George Leef¹, Andrew Cluckey¹, Fahd Yunus¹, Mariam Askari², Paul A. Heidenreich¹,², Mintu Turakhia¹,²,³
1. Department of Cardiovascular Medicine, Stanford; 2. Veterans Affairs Palo Alto Health Care System, Palo Alto; 3. Center for Digital Health, Stanford

23 GWAS Candidate Gene for Coronary Artery Disease TCF21 Interacts With Aryl-hydrocarbon Receptor

M. Pjanić¹, J.B. Kim¹, O. Sazonova¹, T. Nguyen¹, T. Wang¹, C.L. Miller¹, L. Maegdefessel², U. Hedin², T. Quertermous¹
1. Department of Cardiovascular Medicine, Stanford; 2. Karolinska Institute, Stockholm, Sweden.

24 Myocardial Injury in Diabetic Patients with Multivessel Coronary Artery Disease after Myocardial Interventions: A Post-hoc Analysis from MASS V Study

Paulo Cury Rezende¹, Whady Hueb¹, Mark Hlatky², Rosa Rahmi¹, Thiago Luis Scudeler¹, Diogo Freitas Cardoso de Azevedo¹, Jose Antonio Franchini Ramires¹, Roberto Kalil Filho¹
1. Heart Institute, University of Sao Paulo Medical School, Sao Paulo, Brazil; 2. Health Research and Policy, Stanford

25 microRNA Regulation of Contractility in Dilated Cardiomyopathy

Agustin Rojas-Muñoz¹, Christine Wahlquist¹, Fabio Cerignoli², Ricardo Serrano², Wienand Omta³, David Egan³, Juan Carlos del Alamo²; Mark Mercola¹
1. Stanford Cardiovascular Institute; 2. UCSD, Department of Bioengineering, La Jolla, CA; 3. University Medical Center Utrecht, Department of Cell Biology

26 Associations Between a Genetic Risk Score for Clinical CAD and Early Stage Lesions in the Coronary Artery and the Aorta

Elias L. Salfati¹,², David M. Herrington², Themistocles L. Assimes¹,²
1. Division of Cardiovascular Medicine, Stanford; 2. Stanford Cardiovascular Institute; 3. Wake Forest University Baptist Medical Center, Medical Center Boulevard, Winston-Salem, NC
ABSTRACTS

27 Modeling Endothelial Dysfunction in LMNA-related Dilated Cardiomyopathy

Nazish Sayed¹, Chun Liu¹, Farhan Himmati², Joe Zhang¹, Vittavat Termglinchan¹, Jan-Ranier Moonen³, Jon Stack¹, Haodong Chen¹, Elena Matsa¹, Karim Sallam¹, Marlene Rabinovitch¹, Joseph C. Wu¹,²

1. Stanford Cardiovascular Institute; 2. Department of Radiology, Stanford; 3. Department of Pediatrics, Stanford

28 Wavefront Dynamics Influence Whether Targeted Ablation at Drivers Terminates Persistent Atrial Fibrillation

Fatemah Shenasa, Albert J. Rogers, Junaid Zaman, Tina Baykaner, Christopher Kowalewski, Mahmood Alhusseini, Shirley Park, Mohan Viswanathan, Paul J Wang, Sanjiv M. Narayan

Stanford University

29 The Role of MicroRNA-126 in Lymphangiogenesis

Amber R. Smith, Terry Reyes, Cindy Kosinski, Tofe Alimi, Stanley Rockson and Calvin Kuo

Department of Medicine, Stanford University School of Medicine

30 A Novel Engineered Hepatocyte Growth Factor Analog Released Via a Shear-Thinning Hydrogel Enhances Post-Infarction Ventricular Function

Amanda N. Steele¹,²; Lei Cai³; Andrew B. Goldstone¹; Bryan B. Edwards¹; Aaron C. Mitchell²; Anahita Eskandari¹; Lyndsay M. Stapleton¹,²; Masashi Kawamura¹; Jennifer R. Cochran²; Sarah C. Heilshorn²,³; and Y. Joseph Woo¹

1. Department of Cardiothoracic Surgery, Stanford; 2. Department of Bioengineering, Stanford; 3. Department of Materials Science and Engineering, Stanford

31 Leukotriene B4 Interferences with Lymphatic Notch and VEGFR3 Signaling and Contributes to the Pathogenesis of Lymphedema

Amy Tian¹,²,†, Stanley G. Rockson²,†*, Xinguo Jiang¹,²,†, Jeanna Kim²,†, Adrian Begaye², Eric M. Shuffle¹,², Allen B. Tu¹,², Abdullah H. Feroze², Roham T. Zamanian³, Gundeep S. Dhillon², Norbert F. Voelkel³, Marc Peters-Golden⁴, Jan Kitajewski⁵, Mark R. Nicolls¹,²,†*

1. VA Palo Alto Health Care System, Palo Alto; 2. Stanford University School of Medicine, Stanford; 3. Virginia Commonwealth University, Richmond, VA; 4. University of Michigan Health Systems, Ann Arbor, MI; 5. University of Illinois at Chicago, Chicago, IL

†Contributed equally to manuscript; *Corresponding and Senior Authors
**ABSTRACTS**

32 **Beyond the Myosin Mesa: A Potential Unifying Hypothesis on the Molecular Basis of Hyper-contractility Caused by a Majority of HCM Mutations**

**Darshan V. Trivedi**, Suman Nag, Saswata S. Sarkar, Arjun S. Adhikari, Shirley Sutton, Kathleen M. Ruppel, James A. Spudich

1. Dept. of Biochemistry, Stanford University, Stanford; 2. Dept. of Pediatrics, Pediatric Cardiology, Stanford

*Equal contribution

33 **Anisotropy Promotes the Function of Cocultured Cardiomyocytes Derived from Human Pluripotent Stem Cells**

**Maureen Wanjare**, Joseph Jung-Woong Kim, Ngan F. Huang

34 **Imaging Cardiovascular Infections With 6''-[18F]-Fluoromaltotriose PET/CT**

**Mirwais Wardak**, Gayatri Gowrishankar, Evgenios Neofytou, Mohammad Namavari, Edwin Chang, Mike Wang, Tony Chour, Joseph C. Wu, and Sanjiv Sam Gambhir

1. Department of Radiology, Stanford; 2. Stanford Cardiovascular Institute; 3. Department of Medicine, Cardiology, Stanford

35 **Single-Cell Transcriptomics Reveals Putative Mechanisms Downstream of the CAD-Associated Gene TCF21**

**Robert C. Wirka**, MD; Ramendra Kundu, PhD; Eric Wei, BS; Hassan Chaib, PhD; Thomas Quertermous, MD

Department of Cardiovascular Medicine, Stanford

36 **Inclusion of Women in Studies of Catheter Ablation for Atrial Fibrillation: Findings from the SMASH-AF Meta-Analysis Study Cohort**

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37 Molecular and Functional Resemblance of Terminally Differentiated Cells Derived from Isogenic Human iPSCs and Somatic Cell Nuclear Transfer Derived ESCs

Ming-Tao Zhao\textsuperscript{1,2,3}, Haodong Chen\textsuperscript{1,2,3}, Qing Liu\textsuperscript{4}, Ning-Yi Shao\textsuperscript{1,2,3}, Nazish Sayed\textsuperscript{1,2,3}, Youngkyun Kim\textsuperscript{1,2,3}, Huaxiao Yang\textsuperscript{1,2,3}, Tony Chour\textsuperscript{1,2,3}, Hong Ma\textsuperscript{5}, Rebecca Tippner-Hedges\textsuperscript{5}, Shoukhrat Mitalipov\textsuperscript{5}, Ioannis Karakikes\textsuperscript{1,2,3}, Michael P. Snyder\textsuperscript{4}, Joseph C. Wu\textsuperscript{1,2,3}

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38 Restore Impaired Diastolic Function in Induced Pluripotent Stem Cell Derived Cardiomyocytes From Hypertrophic Cardiomyopathy Patients by Re-balancing the Calcium Homeostasis

Haodi Wu, Huaxiao Yang, Timon Seeger, Chi Keung Lam, Joe Zhang, Joseph C. Wu

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39 Cardiac Strain from Magnetic Resonance Imaging Offers Sensitive Detection of Therapeutic Efficacy Following Transplantation of Tissue Engineered Heart Muscles

Xulei Qin, Johannes Riegler, Malte Tiburcy, Thomas S. Denney Jr., Wolfram H. Zimmermann, Joseph C. Wu

Stanford Cardiovascular Institute and Department of Medicine, Cardiovascular Medicine, Stanford; CA (X.Q., J.R., J.C.W.); Auburn University MRI Research Center, Department of Electrical and Computer Engineering, Auburn University, Auburn, AL (T.S.D.Jr.); Institute of Pharmacology, Heart Research Center, University Medical Center, Georg-August-University and German Center for Cardiovascular Research, Göttingen, Germany (M.T., W.H.Z.)
Poster Reception with Wine & Cheese at 4:30 p.m.

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