SYLLABUS

15th Annual
Biomarkers in Heart Failure and Acute Coronary Syndromes: Diagnosis, Treatment and Devices

Friday, March 1, 2019
Estancia La Jolla Hotel  La Jolla, California

UC San Diego
Program Co-Directors:
Lori Daniels, MD, MAS, FACC, FAHA
Alan Maisel, MD, FACC

Sponsored by:
Sulpizio Cardiovascular Center
Biomarker Research Program

SDBiomarkersSymposium.com
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ACKNOWLEDGEMENTS

We would like to acknowledge the following companies and organizations for their support of this symposium.

**Janssen Pharmaceuticals**

**Roche Diagnostics**

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* Relypsa

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* Daniels Lab
* Gilead Sciences
* Konica Minolta
* Prevencio, Inc.
* UC San Diego Health
* Cardiovascular Institute
* Zoll LifeVest
This annual event is designed to provide the latest clinical data, guidelines and evidence related to the clinical application of novel biomarkers in cardiovascular conditions. Topics cover state-of-the-art application of biomarkers in the following clinical categories:

- Current standards/guidelines in the prediction, diagnosis and management of cardiovascular diseases and related conditions.
- Highly sensitive troponin testing and the evolution of this novel biomarker in diagnosing and managing acute myocardial infarction and other cardiovascular conditions.
- Use of biomarkers as key components of precision medicine in cardiovascular diseases.
- Evidence-based biomarker data in the peer reviewed literature in cardiovascular, endocrine, renal, pulmonary and related diseases.
- The application of biomarkers in therapeutic and device trials as qualification criteria, surrogate endpoints, etc.
- Case studies involving biomarkers as one component in the care of patients with cardiovascular conditions.

The target audience for this activity includes Cardiologists, Internists, Primary Care Physicians, Emergency Medicine Physicians, Clinical Laboratorians, Nursing Professionals and Allied Healthcare Professionals.

At the conclusion of this activity, participants should be able to:

1. Describe the current standards of care associated with the application of biomarkers in the care of patients with acute coronary syndrome (ACS) (hsTroponin) and heart failure (natriuretic peptides and others), as well as diabetes, pulmonary hypertension and related illnesses.
2. Cite recent literature that provides an evidence basis for the use of biomarkers for prediction, diagnosis and management of disease.
3. Discuss the emerging biomarker applications in cardiac disease based on recent breaking clinical studies and clinical trials.
4. Explain how new data in ACS, heart failure, diabetes, and other related diseases are pointing to biomarkers as a key tool in the emerging era of precision medicine.
5. Apply non-traditional biomarkers including breast arterial calcification and pulmonary artery pressure to guide and improve the treatment of patients with cardiovascular disease.
7. Apply biomarkers to help optimize selection of patients for cardiac devices, assess for response to device therapy, and improve prognostication of patients with devices.
8. Identify novel mobile technologies, applications, and devices that are impacting patient care and personalized medicine, and describe various ways they are being used.

Cardiovascular disease (CVD) is the leading cause of death in the United States and is responsible for 17% of national health expenditures. As the population ages, these costs are expected to increase substantially. This program is intended to interpret the current standards of care associated with the application of biomarkers in cardiac clinical care as well as review recent literature that provides an evidence basis for the diagnostic, prognostic and management application of cardiac biomarkers.

The diagnosis and management of cardiovascular conditions, including heart failure, by traditional clinical means alone is often inadequate. Until recently, biomarker testing in heart failure (HF) syndromes has been viewed as an elective supplement to diagnostic evaluation of patients suspected to suffer from this con-
dition. This approach to the use of biomarker testing contrasts with other cardiovascular diagnoses for which biomarkers are integral to disease process definition, risk stratification, and in some cases treatment decision making. It is also noteworthy that advanced guidelines have emerged regarding the application of biomarkers in heart failure that need to be integrated into educational initiatives for clinical caregivers. There is emerging data on the use of biomarkers to assist with patient selection for advanced therapies such as biventricular pacemakers, and to assist with therapy optimization and disease prognostication among patients with cardiac devices. Biomarkers are also increasingly becoming a part of the precision-medicine conversation.

In other related cardiovascular conditions such as acute coronary syndromes, biomarkers have played a definitive diagnostic role yet confusion has evolved as the sensitivity of biomarkers such as cardiac troponin has improved. The definition of myocardial infarction, and the meaning of troponin elevations in clinical scenarios outside of an acute coronary syndrome continue to evolve amid controversy. These new and evolving issues are critical for clinicians to be prepared to interpret at the point of care.

Diabetes treatments now look beyond glucose normalization as a singular goal and have worked to identify direct impact on macrovascular outcomes. These data often utilize biomarkers as surrogate endpoints or secondary endpoints. New literature must be put into clinical context. Additionally, because of new therapeutic options, clinicians caring for cardiovascular patients must now be more involved in managing or advising on optimal selection of therapies for patients with diabetes.

The content of this educational activity was determined by a rigorous review of recent medical literature as well as the changes in biomarker evidence, use and guidelines in the United States over the past 4 years. Evidence-based medical education is of significant importance to the target clinical audience across the US, including but not limited to San Diego & Los Angeles.

References:
1. http://circ.ahajournals.org/content/123/8/933
3. http://www.clinchem.org/content/58/1/127.full.pdf+html

ACCREDITATION
This Live activity, Biomarkers in Heart Failure and Acute Coronary Syndromes: Diagnosis, Treatment and Devices, with a beginning date of March 1, 2019 has been reviewed and is acceptable for up to 6.5 Prescribed credit(s) by the American Academy of Family Physicians. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

AMA: AAFP Prescribed credit is accepted by the American Medical Association as equivalent to AMA PRA Category 1 Credit™ toward the AMA Physician's Recognition Award.

AANPCP: The American Academy of Nurse Practitioners Certification Program (AANPCP) accepts AAFP Prescribed credit.

ANCC: According to the ANCC, the continuing education hours approved by the AAFP meet the ANCC-accredited CNE criteria.

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CULTURAL AND LINGUISTIC COMPETENCY
This activity is in compliance with California Assembly Bill 1195 which requires continuing medical education activities with patient care components to include curriculum in the subjects of cultural and linguistic competency. Cultural competency is defined as a set of integrated attitudes, knowledge, and skills that enables health care professionals or organizations to care effectively for patients from diverse cultures, groups, and communities. Linguistic competency is defined as the ability of a physician or surgeon to provide patients who do not speak English or who have limited ability to speak English, direct communication in the patient’s primary language. Cultural and linguistic competency was incorporated into the planning of this activity.
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FACULTY

UC SAN DIEGO PROGRAM CO-DIRECTORS

Lori Daniels, MD, MAS, FACC, FAHA
Professor of Medicine
Director, Cardiovascular Intensive Care Unit
UCSD Division of Cardiovascular Medicine
UC San Diego

Eric Adler, MD, FACC
Professor of Medicine
Medical Director, Cardiac Transplant
Heart Failure and Transplant Cardiology

Ulrika Birgersdotter-Green, MD
Professor of Medicine
Director, Pacemaker & ICD Services

Daniel Blanchard, MD, FACC
Professor of Clinical Medicine
Division of Cardiovascular Medicine

Antonio Guido, MD
Assistant Clinical Professor of Medicine
Division of Cardiovascular Medicine

Jonathan Hsu, MD, MAS
Associate Professor
Section of Cardiac Electrophysiology
Division of Cardiology

C. Noel Bairey Merz, MD, FACC, FAHA, FESC
Director, Barbra Streisand Women’s Heart Center
Director, Linda Joy Pollin Women’s Heart Health Program
Director, Erika Glazer Family Foundation
Women’s Heart Disease Initiative
Professor of Medicine Cedars-Sinai Medical Center
Los Angeles, CA

Christopher deFilippi, MD
Vice-Chairman of Academics Affairs
Inova Heart and Vascular Institute
Adjunct Professor of Medicine, VCU
Falls Church, VA

Uri Elkayam, MD, FACC
Professor of Medicine
Keck School of Medicine
University of Southern California
Los Angeles, CA

GUEST FACULTY

Howie Tran, MD, FACC
Assistant Clinical Professor of Medicine
Heart Failure and Transplant Cardiology

Nicholas Wettersten, MD
Assistant Clinical Professor
Department of Cardiology

Pam R. Taub, MD, FACC
Associate Professor of Medicine
Director of Hannah and Gene Step Cardiac
Wellness and Rehabilitation Center
Division of Cardiovascular Medicine

Marcus Anthony Urey, MD
Assistant Clinical Professor of Medicine
Division of Cardiovascular Medicine

C. Noel Bairey Merz, MD, FACC, FAHA, FESC
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Professor of Medicine
Keck School of Medicine
University of Southern California
Los Angeles, CA

GUEST FACULTY

Peter A. McCullough, MD
Consultant Cardiologist and
Chief of Medicine
Baylor University Medical Center
Dallas, TX

David Morrow, MD
Director, Levine Cardiac Intensive Care Unit
Brigham and Women’s Hospital
Professor of Medicine
Harvard Medical School
Boston, MA

W. Frank Peacock, MD, FACEP, FACC
Associate Chair and Research Director
Baylor College of Medicine
Houston, TX

Alan Wu, PhD
Professor, Lab Medicine
UC San Francisco
San Francisco, CA

UC SAN DIEGO PARTICIPATING FACULTY

Jia Shen, MD
Assistant Professor of Medicine
Department of Cardiology

Nicholas Wettersten, MD
Assistant Clinical Professor
Department of Cardiology

Alan Maisel, MD, FACC
Emeritus Professor of Cardiology
UC San Diego

C. Noel Bairey Merz, MD, FACC, FAHA, FESC
Director, Barbra Streisand Women’s Heart Center
Director, Linda Joy Pollin Women’s Heart Health Program
Director, Erika Glazer Family Foundation
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Department of Cardiology

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Associate Chair and Research Director
Baylor College of Medicine
Houston, TX

Alan Wu, PhD
Professor, Lab Medicine
UC San Francisco
San Francisco, CA
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<th>Nature of Relevant Relationship</th>
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<th>Name</th>
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<td>David A. Morrow, MD</td>
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The following have no relevant financial relationships to disclose: Ulrika Birgersdotter-Green, MD, Daniel Blanchard, MD, Uri Elkayam, MD, Peter McCullough, MD, Jia Shen, MD, Howie Tran, MD, Marcus Anthony Urey, MD, Nicholas Wettersten, MD

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# The 15th Annual Biomarkers in Heart Failure and Acute Coronary Syndromes: Diagnosis, Treatment and Devices

Friday, March 1, 2019

Estancia La Jolla Hotel                      La Jolla, California

## PROGRAM

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<td>Registration/Coffee</td>
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<td>7:00-8:00am</td>
<td>Product Theatre Breakfast (Non-CME) - Support provided by Janssen</td>
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<tr>
<td>8:05-8:15am</td>
<td>Program Overview - Drs. Lori Daniels and Alan Maisel</td>
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### SESSION I - ACUTE CORONARY SYNDROME - Alan Maisel, MD (Moderator)

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<td>8:15-8:45am</td>
<td>State of the Art Lecture - hsTn in Acute Coronary Syndrome - David Morrow, MD</td>
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<td>8:45-8:55am</td>
<td>hsTn Experience in the USA - Lori Daniels, MD</td>
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<td>8:55-9:05am</td>
<td>hsTn in the Emergency Department - Frank Peacock, MD</td>
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<td>9:05-9:15am</td>
<td>hsTn in Cardiovascular Disease Prevention - Christopher deFilippi, MD</td>
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<td>9:15-9:55am</td>
<td>Acute Coronary Syndrome Case Presentations/Panel</td>
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<td>Drs. Maisel, Daniels, Peacock, deFilippi and Wu</td>
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<td>9:55-10:25am</td>
<td>Break/Visit Exhibits</td>
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### SESSION II - BIOMARKER GUIDED THERAPY - Lori Daniels, MD (Moderator)

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<tr>
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<td>Biomarker Guided Heart Failure Therapy - Lori Daniels, MD (Moderator)</td>
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<tr>
<td>10:25-10:30am</td>
<td>Introduction</td>
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<tr>
<td>10:30-10:40am</td>
<td>PRO: Neuropeptides, ST2 - Gregg Fonarow, MD</td>
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<td>10:40-10:50am</td>
<td>CON: Neuropeptides, ST2 - Peter McCullough, MD</td>
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<td>10:50-10:55am</td>
<td>PRO: Rebuttal - Gregg Fonarow, MD</td>
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<tr>
<td>10:55-11:00am</td>
<td>CON: Rebuttal - Peter McCullough, MD</td>
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<tr>
<td>11:00-11:05am</td>
<td>Debate Conclusion/Questions - Lori Daniels, MD</td>
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<tr>
<td>11:05-11:15am</td>
<td>Potassium as a Treatable Biomarker in Cardiovascular Disease:</td>
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<td>New Keys to Hyperkalemia - Nicholas Wettersten, MD</td>
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<tr>
<td>11:15-11:30am</td>
<td>PCSK9 Inhibitors and Modulators - Pam Taub, MD</td>
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<tr>
<td>11:30-11:45am</td>
<td>International Normalized Ratio (INR) as a Biomarker - Anticoagulation in AFib, Heart Failure and Cardiovascular Disease - Daniel Blanchard, MD</td>
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<tr>
<td>11:45-12:10pm</td>
<td>Heart Failure Case Presentations and Panel</td>
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<td></td>
<td>Drs. Wettersten, Elkayam, Fonarow and Adler</td>
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<tr>
<td>12:10-1:30pm</td>
<td>Lunch</td>
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### SESSION III - DIABETES, WOMEN’S CVD, AND MODERN MEDICINE - Uri Elkayam, MD (Moderator)

<table>
<thead>
<tr>
<th>Time</th>
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<tbody>
<tr>
<td>1:30-1:45pm</td>
<td>Cardiologists and HbA1c: Novel Diabetes Drugs and the Cardiologist as Diabetician - Gregg Fonarow, MD</td>
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<tr>
<td>1:45-2:15pm</td>
<td>Keynote Lecture - Women’s Heart Disease - C. Noel Bairey Merz, MD</td>
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<tr>
<td>2:15-2:30pm</td>
<td>Breast Arterial Calcification: A Women’s Biomarker for the Future - Lori Daniels, MD</td>
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<tr>
<td>2:30-2:45pm</td>
<td>Wearable Devices for Heart Disease, Sleep Apnea and Health - Jia Shen, MD</td>
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<tr>
<td>2:45-3:00pm</td>
<td>Cardiomems: Incorporating a Pulmonary Artery Device and Biomarkers in Outpatients with Heart Failure - Howie Tran, MD</td>
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<tr>
<td>3:00-3:15pm</td>
<td>INR as a Biomarker - Part 2: Left Atrial Appendage Occlusion Devices for Doing Away with INR - Jonathan Hsu, MD</td>
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<tr>
<td>3:15-3:45pm</td>
<td>Coffee Break/Visit Exhibits</td>
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### SESSION IV - BIOMARKERS IN ARRHYTHMIAS, HEART FAILURE, AND PULMONARY ARTERIAL - Alan Maisel, MD (Moderator)

<table>
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<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>3:45-4:00pm</td>
<td>Advanced Therapies in Heart Failure - Eric Adler, MD</td>
</tr>
<tr>
<td>4:00-4:10pm</td>
<td>Biomarkers in the Age of Sacubitril/Valsartan - Alan Maisel, MD</td>
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<tr>
<td>4:10-4:35pm</td>
<td>Biomarkers and Arrhythmias/Devices - Ulrika Birgersdotter-Green, MD</td>
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<tr>
<td>4:35-5:00pm</td>
<td>Biomarkers and Treatment in Pulmonary Arterial Hypertension - Marcus Anthony Urey, MD</td>
</tr>
<tr>
<td>4:50-5:00pm</td>
<td>Concluding Remarks - Drs. Lori Daniels and Alan Maisel</td>
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Dr. Lori Daniels is a cardiologist at the University of California, San Diego and Director of the Coronary Care Unit. She is a graduate of Harvard College in Cambridge, Massachusetts and Harvard Medical School in Boston, Massachusetts. She completed her internship and residency at the University of California, San Diego Medical Center and subsequently served as Chief Resident in Internal Medicine there. She also completed her Fellowship in Cardiology at UCSD Medical Center, serving as Chief Fellow during her final year. She received a Masters of Advanced Studies in Clinical Research, and is a Fellow of the American College of Cardiology.

Dr. Daniels is the recipient of an American Heart Association Postdoctoral Research Grant, an American College of Cardiology/Guidant Foundation Research Grant in Women’s Cardiovascular Health, and an American Heart Association Scientist Development Grant. Her research interests focus on using biomarkers to assess cardiovascular risk in a variety of populations; she also studies cardiovascular outcomes in young adults with a childhood history of Kawasaki Disease, and coronary/pulmonary angiographic findings in patients with chronic thromboembolic pulmonary hypertension.
Dr. Alan Maisel graduated from the University of Michigan Medical School, received his internal medicine training at Michael Reese Hospital in Chicago, where he was chief resident, and completed a cardiology fellowship at the University of California, San Diego.

Dr. Maisel is a Emeritus Professor of Cardiology at the University of California, San Diego (UCSD). Dr. Maisel is active on the faculty at UCSD where he has won numerous teaching awards. He just completed a ten-year stint as Associate Editor of the Journal of the American College Cardiology.

Dr. Maisel is considered one of the world’s experts on cardiac biomarkers and has over 400 scientific publications. He has authored several ground-breaking manuscripts that have paved the way for development of diagnostic tools for patients with congestive heart failure. In particular, he was the leading investigator on studies that brought the use of BNP into clinical practice. He has been lead investigator on seven multicentre biomarker trials.

Dr. Maisel has co-founded three companies, Cardero Therapeutics, Asceptiscope, and Whispering Hearts.

Dr Maisel is also a writer of medical fiction. His first novel, Bedside Manners was optioned to Warner Brothers. His second novel, Brain Chicane, is about a young and idealistic physician working at the premier multiple-organ transplant hospital in Chicago where he investigates overdose cases that are not totally kosher.

He is the primary care-giver for five children and gave up on sleep five years ago.
Eric Adler was born in New York City, New York. He attended Northwestern University for Undergraduate Studies followed by Boston University where he received his MD in 2000. While at Boston University he was awarded the prestigious Sarnoff Fellowship for Cardiovascular Research. He completed his clinical training in internal medicine at the University of Washington and in Cardiovascular Disease at the Mount Sinai School of Medicine. From 2009-2011 he was an Assistant Professor at the Oregon Health and Science University and is currently an Associate Clinical Professor of Medicine and Medical Director of Cardiac Transplant at the University of California, San Diego

Eric’s clinical interests are in the care of patients with advanced heart failure, mechanical circulatory support and cardiac transplantation. He has a strong interest in the use of palliation in heart failure, and has written numerous review articles on the topic.

The focus of his laboratory is the use of pluripotent stem cells for the study and treatment of cardiovascular disease. In previous work he demonstrated the utility of these stem cells for the isolation of enriched populations of heart cells. These cells can be isolated from both mice and humans, and improve cardiac function in animal models of myocardial infarction. He also developed novel techniques for tracking these cells once they are injected into the body. More recently he collaborated on projects whose focus is the creation of stem cell derived heart cells from patients with inherited forms of cardiovascular disease. These cells retain essentially qualities of the patients from which they were derived. We believe these cells offer an unprecedented opportunity to study human heart disease at a molecular level.
Dr Ulrika Birgersdotter-Green is a professor of medicine at UCSD School of Medicine, Division of Cardiology. She has been the Director of the Pacemaker and ICD Services since 1997. Dr Green is recognized as a renowned researcher as well as clinician, receiving the top “Doctors in San Diego” award.

Dr Green received her medical degree from the Karolinska Institute in Stockholm, Sweden. She completed her residency in internal medicine, as well as a Fellowship in Clinical Pharmacology at Vanderbilt University Medical Center, and received her training in Cardiology and Cardiac Electrophysiology at University of California, San Diego.

Dr Green’s primary research interests are in the areas of device based therapies for sudden cardiac death and heart failure management. She has a particular interest in mechanisms for ventricular fibrillation and methods for defibrillation, and through her research has helped develop new methods for device testing. She continues to be the Primary Investigator on numerous clinical trials.

Dr Green manages a large ICD and pacemaker program treating over 3000 patients a year. It encompasses all aspects of device management including complex device implantation and lead extraction. Dr Green currently manages one of the largest lead extraction programs in southern California. Through her interest in telemedicine, Dr Green has developed an innovative home monitoring program of devices, allowing patients to have their device checked from home. There are currently over 1000 patients enrolled in this “virtual clinic”.

She is an active member on a national level in the Heart Rhythm Society. She is also the Device Section Editor for Innovations in Cardiac Rhythm Management Journal. Additionally she publishes regularly in major cardiology journals. Dr Green is also actively involved in the UCSD School of Medicine teaching and education mission.
Dr. Blanchard is a professor of medicine in the Division of Cardiovascular Medicine at UCSD. He is currently Director of the Cardiology Fellowship Program at UCSD. His clinical interests include general cardiology, echocardiography, and advanced cardiac imaging techniques. His research interests have focused on cardiac imaging in pulmonary hypertension and right ventricular overload.
Dr. Jonathan Hsu is an Associate Clinical Professor of Medicine at UCSD School of Medicine, Division of Cardiology. His primary clinical interest is in cardiac electrophysiology, and he specializes in both the medical and procedural care of patients with all types of heart rhythm disturbances.

Dr. Hsu is also a clinical research investigator with formal advanced training (Master’s Degree) in clinical research methods and biostatistics. His research focuses on the epidemiology and clinical outcomes in patients with all types of cardiac arrhythmias and devices, including reducing the risk of stroke in atrial fibrillation patients with oral anticoagulants and reducing complications in implantable-cardioverter defibrillator recipients. Dr. Hsu is also actively involved in formal didactic teaching at the UCSD School of Medicine, and is dedicated to the education mission of UCSD through instruction of medical students, residents, and fellows.

Dr. Hsu is specially trained in catheter ablation to treat arrhythmias such as supraventricular tachycardia (including atrial fibrillation) and ventricular tachycardia in addition to implantation and management of cardiac rhythm devices including pacemakers, implantable-cardioverter defibrillators, and cardiac resynchronization therapy (biventricular) devices.

Dr. Hsu has a special clinical interest in quality of cardiovascular care improvement and outcomes research. He has specific expertise in Registry and large database analyses to improve the medical and procedural care of patients with arrhythmias.

Dr. Hsu completed fellowship training in general cardiology and received additional advanced subspecialty training in cardiac electrophysiology at the University of California, San Francisco (UCSF), where he also completed his Master’s Degree in Clinical Research (MAS). He completed both his internship and residency at Massachusetts General Hospital. He earned his undergraduate and medical degree at Northwestern University.
Jia Shen, MD, MPH
Assistant Professor of Medicine
Department of Cardiology
University of California, San Diego
San Diego, CA

Jia Shen, MD, MPH is a board-certified cardiologist who specializes in the treatment and prevention of cardiovascular diseases. As an Assistant Professor at UC San Diego School of Medicine, Dr. Shen’s research interests include cardiac rehabilitation, global burden of cardiovascular disease risk factors. She is interested in lifestyle and dietary interventions and is currently working on an application to improve cardiac rehabilitation services. She holds a Master of Public Health degree from Harvard School of Public Health in Boston. She is board certified in internal medicine and cardiovascular disease.
Pam R. Taub, MD, FACC, is a board-certified cardiologist who focuses on general and preventive cardiology. As a general cardiologist, she works with patients to diagnose and prevent heart disease, as well as manage conditions such as hypertension (high blood pressure), coronary artery disease, or heart failure.

Dr. Taub believes that prevention is the new frontier in cardiovascular medicine. She takes an evidence-based approach to care and tailors it to each patient, with the goal of minimizing medications and procedures. She also collaborates with other specialists to provide cardiac care for patients with complex, multi-system diseases such as cancer and autoimmune disease.

Dr. Taub believes in empowering and educating patients by sharing the latest advances in research and technology, and she enjoys speaking to the community about cardiovascular disease prevention.

Her own research—focused on how epicatechin (a compound found in dark chocolate) can improve mitochondrial structure and exercise capacity in patients with heart failure and diabetes—has received funding from the National Institutes of Health and the American College of Cardiology, and has resulted in multiple publications in top journals. She is also developing and testing new biomarkers (blood tests) to predict cardiovascular risk, as well as studying the mechanisms of statin-related muscle complaints and decreases in exercise capacity and using epicatechin to treat them.

Dr. Taub completed a fellowship in cardiology at UC San Diego School of Medicine, where she was chief cardiology. She completed a residency in internal at the University of Washington Medical Center and earned her medical degree at Boston University School of Medicine. She is board-certified in internal medicine, cardiovascular disease, and nuclear cardiology. Dr. Taub is a fellow of the American College of Cardiology (FACC).
Howie Tran, MD, is an assistant clinical professor of medicine and a member of the Sulpizio Cardiovascular Center team. He is a board certified cardiologist and specializes in the care of patients with advanced heart failure, mechanical circulatory support and Dr. Tran earned his medical degree from Drexel University College of Medicine in Philadelphia. He is a graduate of the internal medicine residency program at Brown University and stayed for the completion of his cardiovascular disease fellowship. Dr. Tran then returned to California for subspecialty training in advanced heart failure, mechanical circulatory support and transplant cardiology at the University of California, San Diego.

Clinical Expertise
- Treatment of end stage heart failure
- Management of percutaneous mechanical circulatory support
- Medical management of orthotopic heart transplantation
- Management of durable ventricular assist device (VADs)
Marcus Anthony Urey, MD
Assistant Clinical Professor of Medicine
Division of Cardiovascular Medicine
University of California, San Diego
San Diego, CA

Marcus Anthony Urey, MD, is a board-certified cardiologist specializing in advanced heart failure, mechanical circulatory devices and heart transplantation. He completed fellowships in both advanced heart failure and heart transplantation at University of Texas Southwestern Medical Center in Dallas, where he was also a fellow in general cardiology and a resident in internal medicine. He earned his medical degree from UCLA David Geffen School of Medicine. He is board certified in cardiovascular disease and internal medicine. As an assistant professor in the Department of Medicine, Dr. Urey trains medical students, interns and residents at UC San Diego School of Medicine.
Nicholas Wettersten, MD
Assistant Clinical Professor
Department of Cardiology
University of California, San Diego
San Diego, CA

Nicholas Wettersten is currently a fellow in Cardiovascular Medicine at the University of California, San Diego. He received his medical degree from the University of California, Davis and continued on at UC Davis for his Internal Medicine training before coming to UC San Diego for his fellowship. His research interests include the use of biomarkers for the diagnosis, risk-stratification and management of cardiovascular diseases with specific interests in cardiorenal syndrome and outcomes in heart failure. He will complete his fellowship in 2017 after which he will continue his training in the Advanced Heart Failure Fellowship at UC San Diego.
Dr. Bairey Merz’s research interests include women and cardiovascular disease, mental stress and heart disease, the role of exercise and stress management in reversing disease, the role of cholesterol and nutrition management in heart disease, adverse pregnancy outcomes and cardiovascular disease, and precision medicine monitoring to predict unexpected cardiovascular events. She is chair of the National Heart, Lung and Blood Institute (NHLBI)-sponsored WISE (Women’s Ischemic Syndrome Evaluation) initiative, which is investigating potential methods for more effective diagnosis and evaluation of ischemic heart disease in women. Dr. Bairey Merz has received investigational grants from the National Heart, Lung and Blood Institute (NHLBI), NIH-National Center for Alternative and Complementary Medicine (NCCAM), the National Institutes of Aging (NIA), the Flight Attendants Medical Research Institute, the Pfeiffer Foundation, the Eli and Edythe Broad Foundation, the Barbra Streisand Foundation, the Erika J. Glazer Women’s Heart Research Initiative, the Society for Women’s Health Research, the Linda Joy Pollin Women’s Heart Health Program, and the Congressionally Directed Medical Research Program of the Department of Defense.
Since 2016, Dr. deFilippi serves as the Inova Heart and Vascular Institute (IHVI) Vice-Chair of Academic Affairs. Inova is a five hospital and diverse ambulatory practice system serving the majority of the population in Northern Virginia. In his present capacity, Dr. deFilippi has developed IHVI as a large clinical research presence and directs the new ACGME accredited cardiovascular disease training program. Dr. deFilippi was previously an Associate Professor of Medicine at the University of Maryland. He did his residency and fellowship training at the University of Texas Southwestern. He continues to actively pursue research and publish focusing on evaluating in-vitro diagnostics and proteomics discovery for diagnosis, prognosis, and therapy guidance within cardiovascular disease across the spectrum of healthcare from detection of preclinical disease to diagnosis and treatment in the critically ill. Much of his effort continues to focus on “at-risk” asymptomatic populations for heart failure and atherosclerotic disease including patients with renal disease, older adults and patients with well controlled HIV. He has authored more than 150 peer reviewed publications. He serves on the editorial boards of Circulation and JACC Heart Failure and is an Associate Editor of Journal of Applied Laboratory Medicine.
Uri Elkayam, MD received his medical degree from the Tel-Aviv University, Israel, in 1973 and is presently Professor of Medicine (Cardiology) at the University of Southern California in Los Angeles. He is a past member of the executive council and chairman of the corporate affairs committee of the American Society of Cardiac Failure. Doctor Elkayam is a member of the editorial boards of the American Journal of Cardiology, JACC heart failure, Cardiology, Journal of cardiovascular pharmacology and Therapeutics and Cardiology in Review and a past member of the editorial boards of JACC and the Journal of Cardiac Failure. He is a fellow of the American College of Cardiology, American Heart Association and American College of chest physicians.

Doctor Elkayam’s research and clinical interests are in the areas of congestive heart failure, heart disease and pregnancy, valvular heart disease, cardiomyopathies and cardiovascular pharmacology. He has been involved in more than 100 self initiated; NIH and industry funded research projects and served in a leading position in numerous national and international multi-center studies. He is the author or co-author on over 190 publications and over 80 book chapters and has the distinction of being listed in Best Doctors in America and America’s Top Doctors from 2001 to 2016 and as one of the top 100 most influential Israelis in the U.S. in 2011.
Gregg C. Fonarow, MD, FACC, FAHA is the Eliot Corday Professor of Cardiovascular Medicine and Science at the University of California, Los Angeles. He serves as Director of the Ahmanson-UCLA Cardiomyopathy Center, Co-Director of UCLA's Preventative Cardiology Program, and Clinical Co-Chief of Cardiology, UCLA Division of Cardiology. He attained the rank of Professor of Medicine, Geffen School of Medicine at UCLA in 2003. His research interests center on acute and chronic heart failure, preventative cardiology, quality of care, outcomes, and implementing systems of care to improve clinical outcomes. Dr. Fonarow has published over 800 research studies and clinical trials in heart failure, disease management, preventative cardiology, and quality of care/outcomes research. New therapies and management strategies for advanced heart failure and research into the pathophysiology of this disease are conducted at UCLA under his direction. He has also developed and successfully implemented a comprehensive atherosclerosis treatment program at the UCLA Medical Center (Cardiovascular Hospitalization Atherosclerosis Management Program: CHAMP), which served as the model for the American Heart Association's Get With The Guidelines Program. Dr. Fonarow serves on the steering committee for the AHA's Get With The Guidelines Program and was national principle investigator of ADHERE and OPTIMIZE-HF. He served as co-chair of IMPROVE-HF. He is on the steering committee and serves as an investigator for a number of randomized clinical trials in heart failure. He serves as a reviewer and serves on the editorial boards for a number of leading cardiovascular journals. Dr. Fonarow received the outstanding UCLA Cardiology Faculty Teaching Award in 1997 and was honored by the American College of Cardiology with the W. Proctor Harvey Young Teacher Award in 1998. He was awarded the Eliot Corday Chair in Cardiovascular Medicine and Science in 2003. He received an AHA Award of Meritorious Achievement in 2004. In 2009, he received the Raymond D. Bahr Award of Excellence and the Turning Guidelines into Lifelines Award from the AHA. In 2015, he received the Clinical Research Forum’s Distinguished Clinical Research Achievement Award.
After receiving a bachelor’s degree from Baylor University, Dr. McCullough completed his medical degree as an Alpha Omega Alpha graduate from the University of Texas Southwestern Medical School in Dallas. He went on to complete his internal medicine residency at the University of Washington in Seattle, cardiology fellowship including service as Chief Fellow at William Beaumont Hospital, and master’s degree in public health at the University of Michigan. Dr. McCullough is a consultant cardiologist and Vice Chief of Medicine at Baylor University Medical Center in Dallas, TX. He is a Principal Faculty in internal medicine for the Texas A & M University Health Sciences Center. Dr. McCullough is an internationally recognized authority on the role of chronic kidney disease as a cardiovascular risk state with > 1000 publications and > 500 citations in the National Library of Medicine. His works include the “Interface between Renal Disease and Cardiovascular Illness” in Braunwald’s Heart Disease Textbook. Dr. McCullough is a recipient of the Simon Dack Award from the American College of Cardiology and the International Vicenza Award in Critical Care Nephrology for his scholarship and research. Dr. McCullough is a founder and current president of the Cardiorenal Society of America, an organization dedicated to bringing cardiologists and nephrologists together to work on the emerging problem of cardiorenal syndromes. His works have appeared in the New England Journal of Medicine, Journal of the American Medical Association, Lancet and other top-tier journals worldwide. He is the co-editor of Reviews in Cardiovascular Medicine, and associate editor of the American Journal of Cardiology and Cardiorenal Medicine. He serves on the editorial boards of multiple specialty journals. Dr. McCullough has made presentations on the advancement of medicine across the world and has been an invited lecturer at the New York Academy of Sciences, the National Institutes of Health, U.S. Food and Drug Administration (FDA), European Medicines Agency, and the U.S. Congressional Oversight Panel.

Major Contributions
• Senior leadership and oversight of clinical, education, and research operations at major academic medical centers in Detroit, Kansas City, and Dallas
• Led observational studies and randomized trials of therapies for acute kidney injury, hypertension, acute coronary syndromes, heart failure, and cardiorenal syndromes
• Chaired and participated on 15 data safety monitoring committees for large randomized trials
• Advised sponsors and the FDA resulting in approval of 15 new drugs and 3 novel in vitro diagnostic tests used today around the world
David A. Morrow, MD, MPH is the Director of the Samuel A. Levine Cardiac Intensive Care Unit and Section Head for Critical Care Cardiology in the Division of Cardiovascular Medicine at Brigham and Women’s Hospital and a Professor of Medicine at Harvard Medical School. Dr. Morrow is a Senior Investigator in the Thrombolysis in Myocardial Infarction Study Group at Brigham and Women’s Hospital with a research focus in cardiovascular biomarkers, as well as the management of unstable and stable ischemic heart disease. He directs the TIMI Biomarker Program.

He is an internationally recognized expert in risk stratification in patients with ischemic heart disease. He has served on the National Academy of Clinical Biochemistry (NACB) Laboratory Medicine Practice Guidelines Committee on Biochemical Cardiac Markers for which he led the clinical section on acute coronary syndromes, and on the Program Committee for the American Heart Association Council on Clinical Cardiology. He is a member of the Executive Committee for the Global Task Force for a Universal Definition of Myocardial Infarction. He has sat on American College of Cardiology/American Heart Association Guidelines Committees for the evaluation and management of chest pain and the management of ST-elevation Myocardial Infarction. He is on the editorial boards of the American Heart Journal, Circulation, Clinical Chemistry, European Heart Journal – Acute Cardiovascular Care, and the Journal of the American College of Cardiology. He was special section Co-Editor for Continuing Medical Education at Circulation. He has been the recipient of the Lerner Young Investigator Award, the William W. Parmley Young Author Achievement Award, and the Eugene Braunwald Teaching Award. Dr. Morrow has more than 300 original scientific reports, reviews, editorials, book chapters and electronic publications in his areas of expertise.
William Franklin Peacock, IV, MD, FACEP, FACC
Professor, Emergency Medicine
Associate Chair and Research Director
Baylor College of Medicine
Houston, TX

W. Frank Peacock IV, MD, FACEP, FACC is a Professor of Emergency Medicine, Associate Chair, and Research Director for the department of Emergency Medicine at Baylor College of Medicine, in Houston, Texas. He has >500 publications, predominantly on Emergency Cardiology, and he is the two-time winner of the Best Research Paper Award from the American College of Emergency Physicians. Finally, he is the founder of Comprehensive Research Associates, LLC, and Emergencies in Medicine, LLC.
Alan H.B. Wu, Ph.D., DABACC, is Chief of Clinical Chemistry and Toxicology at San Francisco General Hospital Professor of Laboratory Medicine, University of California, San Francisco, and medical director for the Pharmacogenomics Laboratory. He received B.S. degrees in chemistry and biology at Purdue University, West Lafayette, Indiana, and a Ph.D. degree in analytical chemistry at the University of Illinois, Champaign-Urbana, Illinois. He completed a postdoctoral fellowship in clinical chemistry at Hartford Hospital. He is certified by the American Board of Clinical Chemistry in Clinical Chemistry and Toxicological Chemistry. His research interests include pharmacogenomics, clinical toxicology and cardiac biomarkers. Dr. Wu has over 400 publications in peer-reviewed journals. He has also written five paperback books consisting of short stories designed to promote the value of the clinical laboratory and pharmacogenomics to the general public.