



## WORLD MEDICAL INNOVATION FORUM

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CARDIOVASCULAR  
May 1–3, 2017 | BOSTON

[worldmedicalinnovation.org](http://worldmedicalinnovation.org)



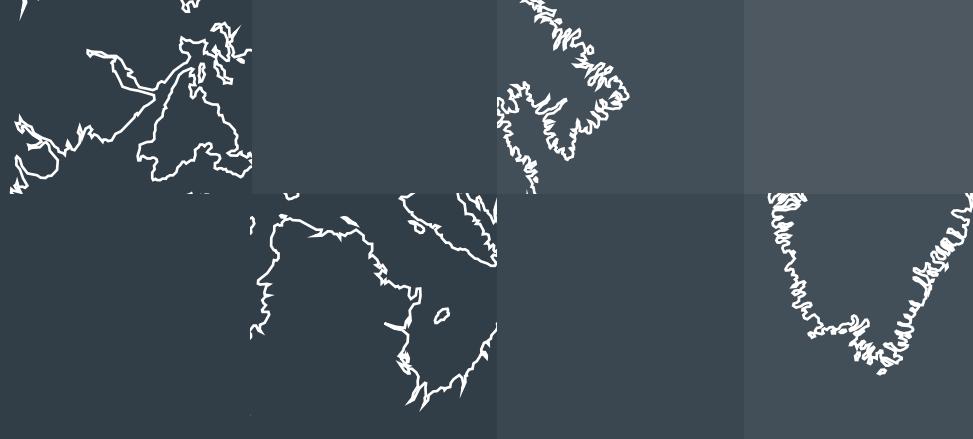
**2016 Fireside Chat:**  
**Joseph Jimenez, CEO, Novartis**

Gregg Meyer, MD  
*Chief Clinical Officer, Partners HealthCare*  
Joseph Jimenez  
*CEO, Novartis*

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## Dear Colleagues:

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Welcome to the 3rd annual World Medical Innovation Forum. Cardiovascular and cardiometabolic care are among the most important drivers of the current healthcare revolution. With 24 million heart disease-related deaths forecasted for 2030, current delivery systems are being disrupted by the convergence of new therapies, technologies, industries and digital integration. This Forum brings together the leaders who are shaping the future of cardiovascular care with the goal of accelerating the rate at which new capabilities can reach patients.

The World Medical Innovation Forum was established to reaffirm the importance of collaborative innovation - academia, industry and government working jointly to break through historic boundaries. Our goal is to provide the insights and tools needed to deliver the most effective care to every patient during this time of change. Thank you for joining us.

We are grateful to the more than 120 senior executives, investors, clinicians and investigators who will speak at the Forum. In total, there are more than 1,000 attendees from industry, investment, government, and academia. We are pleased that so many faculty from our academic medical centers and community hospitals including Brigham Health and Massachusetts General Hospital are participating. They and their colleagues conduct more than \$1.6 billion in research annually.

I thank the many sponsors representing some of the most innovative companies in healthcare. Without their support, this World Forum would not have been possible. Thank you to the Steering Committee and Planning Team for their outstanding contributions and especially to Anne Klibanski, MD, Chief Academic Officer, and Chris Coburn, Chief Innovation Officer, for the vision, resourcefulness and commitment that has resulted in the 2017 World Medical Innovation Forum. We hope that many of you will join us here at the Westin Copley next year, April 23-25, 2018 when we will reconvene the World Medical Innovation Forum and focus on Artificial Intelligence and healthcare.

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**David Torchiana, MD**  
President and CEO, Partners HealthCare

## We Welcome You.

Thank you for joining us. Over the next three days you will be part of a gathering tailored to maximize the exchange of insights among speakers, attendees and hosts. The unique structure of the Forum enables in depth conversations among expert panelists meant to provide insights and urgency to the future of cardiovascular care. We look to audience members to engage speakers and each other as we work together to drive the solutions that patients with cardiovascular disease are so in need of.

Innovation in cardiovascular and cardiometabolic care is accelerating rapidly with new capabilities and technologies. Game changing technologies are reaching patients in ways never before possible. At more than \$200 billion annually, cardiovascular remains health care's largest market.

The Forum is brought to you by Innovation, the business development arm of Partners HealthCare charged with the commercial application of the breakthroughs of its faculty and staff into patient benefiting technologies, therapeutics, procedures, and care delivery systems worldwide.

We would like to express our deep appreciation to the many individuals who made this Forum possible. We are particularly grateful to our speakers for sharing their substantial expertise and unique perspectives. Generous support by our leading sponsors—Boston Scientific, Amgen, Lilly, GE, Pfizer, Novartis, AstraZeneca, Bayer, Bard, Edwards Lifesciences, Mintz Levin, Novo Nordisk and STAT—contributed to making this a world class event. Finally, we want to recognize the Steering Committee, especially co-chairs Calum MacRae, MD, PhD and Anthony Rosenzweig, MD, whose insights and standing in the field made the Forum possible. We are grateful to the Planning Team whose dedicated work over the last 18 months shaped every aspect of this undertaking.

Enjoy the Forum!



**Anne Klibanski, MD**  
Chief Academic Officer,  
Partners HealthCare



**Christopher Coburn**  
Chief Innovation Officer,  
Partners HealthCare

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## IT TAKES COLLABORATION TO MAKE SCIENCE MORE TRANSFORMATIVE.

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we learn with you.**

We share your passion to tackle the toughest healthcare challenges. It's why we work side-by-side with you, so we can better understand your clinical needs and work collaboratively to address them. We'll do everything it takes to deliver the innovative solutions that make a more meaningful difference in your patients' lives. This is the commitment behind every product, solution and relationship we build. It's what we do every day to advance science for patients, for life.

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# BREAKTHROUGH TECHNOLOGIES

## First Look

The Next Wave of  
Cardiovascular Breakthroughs

### FIRST LOOK PRESENTATIONS

**Monday, May 1, 2017 | 8:00 am**

PFIZER BALLROOM, 3<sup>RD</sup> FLOOR

Early career Harvard Medical School investigators kick-off the World Medical Innovation Forum with rapid fire presentations of their high potential new technologies. Nineteen rising stars from Brigham Health and Massachusetts General Hospital will highlight in ten minute presentations their discoveries and insights that will be the disruptive cardiovascular care of the future. This session is designed for investors, leaders, donors, entrepreneurs and investigators and others who share a passion for identifying emerging high impact technologies. The top presenter each from BWH and MGH will be awarded the Austen-Braunwald Innovation Prize on Day 2 of the Forum. The prize carries a \$10,000 award.



**W. Gerald Austen, MD**  
Surgeon-in-Chief, Emeritus, MGH;  
Chairman, MGH Chiefs Council;  
Edward D. Churchill Distinguished  
Professor of Surgery at HMS



**Eugene Braunwald, MD**  
Physician-in-Chief, Emeritus, BWH;  
Founding Chair, TIMI Study Group;  
Distinguished Hersey Professor of  
Medicine at HMS

### AUSTEN-BRAUNWALD AWARD

The inaugural Austen-Braunwald Innovation Award will be given this year to honor the First Look presenter who most embodies the innovative, entrepreneurial and forward thinking of W. Gerald Austen, MD and Eugene Braunwald, MD—two of the world's finest cardiovascular pioneers. Awards will be presented to one Brigham Health presenter and one Massachusetts General Hospital presenter. The \$10,000 award will be granted by a small selection committee for overall presentation quality, innovativeness, commercial potential, caliber of disruption, and market need.

The Award will be judged throughout the morning session with winners announced on **Tuesday, May 2 at 12:15PM-12:30PM**.


**Elena Aikawa, MD, PhD**

*Director, Heart Valve Translational Research Program, BWH; Associate Professor of Medicine, Harvard Medical School*

Novel Target Discovery Pipeline for Calcific Aortic Valve Disease


**Jennifer Ho, MD**

*Assistant Physician in Medicine, MGH; Member of the Faculty of Medicine, Harvard Medical School*

Characterizing an Early HFP EF Phenotype: Cardiometabolic Disease and Pulmonary Hypertension


**Manu Beerens, PhD**

*Postdoctoral Research Fellow, BWH; Instructor in Medicine, Harvard Medical School*

A Zebrafish Pipeline for Cardiovascular Precision Medicine


**Amit Khera, MD**

*Cardiologist, MGH; Instructor, Harvard Medical School*

Genetic Risk, Adherence to a Healthy Lifestyle, and Coronary Disease


**Caroline Burns, PhD**

*Associate Biologist, MGH; Associate Professor of Medicine, Harvard Medical School*

Using Zebrafish to Understand and Harness Cardiac Regeneration


**Mark Lindsay, MD, PhD**

*Physician, MGH; Assistant Professor, Harvard Medical School*

A Novel Epigenetic Complex Implicated in Thoracic Aortic Aneurysm (TAA)


**Susan Cheng, MD**

*Associate Physician, BWH; Assistant Professor, Harvard Medical School*

Bioactive Lipid Profiling Can Identify Potential Targets for Altering Life Course Trajectories Toward Cardiometabolic Disease


**Steven Lubitz, MD**

*Cardiac Electrophysiologist, MGH; Assistant Professor of Medicine, Harvard Medical School*

Atrial Fibrillation: Causal Basis and Personalized Risk Assessment


**Sammy Elmariyah, MD**

*Assistant in Medicine, MGH; Assistant Professor of Medicine, Harvard Medical School*

Small Molecule Predictors of Outcome After Cardiac Interventions


**Rajeev Malhotra, MD**

*Associate Director, Cardiopulmonary Exercise Laboratory, Cardiac Intensive Care Unit, MGH; Instructor in Medicine, Harvard Medical School*

Targeting Vascular Calcification to Prevent Cardiovascular Disease


**Mark Feinberg, MD**

*Physician, BWH; Associate Professor of Medicine, Harvard Medical School*

Translational Trials in non-coding RNAs


**Bradley Maron, MD**

*Associate Physician, BWH; Assistant Professor, Harvard Medical School*

Stratifying Exercise Dysfunction


**Yick Fong, PhD**

*Research Scientist, BWH; Assistant Professor of Medicine, Harvard Medical School*

New Approaches to Controlling Stem Cell Fate


**Benjamin Olenchock, MD, PhD**

*Cardiovascular Medicine Specialist, BWH; Instructor in Medicine, Harvard Medical School*

Novel Mouse Models of Remote Cardioprotection


**John Groarke, MD**

*Cardiologist, BWH; Cardio-oncologist, Dana-Farber Cancer Institute; Instructor of Medicine, Harvard Medical School*

Exercise Prescription to Improve Cardiovascular and Cancer Outcomes in Cancer Survivors


**Jorge Plutzky, MD**

*Director, Preventive Cardiology, Cardiovascular Medicine, BWH; Associate Professor, Harvard Medical School*

Harnessing Endogenous Mechanisms of Programmed Gene Expression for Therapeutic Benefit In Cardiometabolic Disorders


**John Higgins, MD**

*Associate Pathologist, MGH; Associate Professor, Harvard Medical School*

Personalizing Diabetic Management with Hemoglobin A1c


**Jason Roh, MD**

*Assistant in Medicine, MGH; Instructor, Harvard Medical School*

Aging and the Activin Type II Receptor Pathway: A New Target for Heart Failure Therapy?


**Paul Yu, MD, PhD**

*Physician, BWH; Associate Professor of Medicine, Harvard Medical School*

Signaling and Pulmonary Vascular Disease

# BREAKTHROUGH TECHNOLOGIES

## Discovery CAFÉ

a World Medical Innovation Forum Event

### BREAKOUT SESSIONS

Sharing Perspectives

**Monday, May 1, 2017 | 11:45 am – 1:05 pm**

3<sup>RD</sup> FLOOR and 7<sup>TH</sup> FLOOR, See locations on page 11

Seven intensive workshops led by our top faculty will address cutting-edge cardiovascular topics. Seating is reserved at the point of registration. Lunch included.



## Heart Failure: Back in The Game through New Pathways ESSEX NORTH | 3<sup>RD</sup> FLOOR



**INTRODUCER | Dan Castro**  
*Managing Director, Licensing, Partners HealthCare*



**Anju Nohria, MD**  
*Director, Cardio-Oncology Program, BWH; Dana-Farber Cancer Institute; Assistant Professor, Harvard Medical School*



**Christopher Newton-Cheh, MD**  
*Cardiologist, Heart Failure and Transplantation, MGH; Assistant Professor of Medicine, Harvard Medical School*



## Molecular and Advanced Imaging: New Biological Endpoints – Function Over Structure BALTIC | 7<sup>TH</sup> FLOOR



**INTRODUCER | Glenn Miller, PhD**  
*Market Sector Leader, Partners HealthCare*



**Mercelo Di Carli, MD**  
*Chief, Division of Nuclear Medicine and Molecular Imaging, BWH; Professor of Radiology and Medicine, Harvard Medical School*



**Sharmila Dorbala, MD**  
*Director, Nuclear Cardiology, BWH; Associate Professor of Radiology, Harvard Medical School*



**Farouc Jaffer, MD, PhD**  
*Director, Coronary Intervention, MGH; Associate Professor of Medicine, Harvard Medical School*

## Open Innovation in Medical Devices: What is it? What Are the Barriers? ESSEX SOUTH | 3<sup>RD</sup> FLOOR



**INTRODUCER | Pat Fortune, PhD**  
*Vice President for Market Sectors, Partners HealthCare*



**Elazer Edelman, MD, PhD**  
*Coronary Care Unit Cardiologist, BWH; Professor of Medicine, Harvard Medical School*



**Ronald Tompkins, MD**  
*Director, Center for Surgery, Innovation & Bioengineering, MGH; Sumner M. Redstone Professor of Surgery, Harvard Medical School*



**Bruce Rosengard, MD**  
*Chief Medical Science and Technology Officer, Johnson & Johnson*



## Payment Models: Provider's Perspective NORTH STAR | 7<sup>TH</sup> FLOOR



**INTRODUCER | Sepideh Hashemi**  
*Market Sector Leader, Partners HealthCare*



**Thomas Gaziano, MD**  
*Associate Physician, Cardiovascular Medicine, BWH; Assistant Professor, Harvard Medical School*



**Jason Wasfy, MD**  
*Assistant Medical Director, MGH; Assistant Professor, Harvard Medical School*

## Cardiac Replacement Therapy: The Next Ten Years GREAT REPUBLIC | 7<sup>TH</sup> FLOOR



**INTRODUCER | Seema Basu, PhD**  
*Market Sector Leader, Partners HealthCare*



**Garrick Stewart, MD**  
*Associate Physician, Medical Director, Mechanical Circulatory Support Unit, BWH; Instructor in Medicine, Harvard Medical School*



**Erin Coglianese, MD**  
*Medical Director, Mechanical Cardiac Support Program, MGH*



## Wearables for Cardiovascular Health: How to Validate and Integrate in Care Paths? PARLIAMENT/ADAMS | 7<sup>TH</sup> FLOOR



**INTRODUCER | Thomas Aretz, MD**  
*Vice President, Global Programs, Partners HealthCare*



**David Levine, MD**  
*Home Hospital Director, BWH; Fellow in General Internal Medicine, Harvard Medical School*



**Kamal Jethwani, MD**  
*Senior Director, Connected Health Innovation, Partners HealthCare; Assistant Professor, Dermatology, Harvard Medical School*



**Paolo Bonato, PhD**  
*Director, Motion Analysis Laboratory, Spaulding Hospital; Associate Professor, Harvard Medical School*

## Image Based Artificial Intelligence: Which Cardiac Disease Segments and Why? EMPIRE | 7<sup>TH</sup> FLOOR



**INTRODUCER | Trung Do**  
*Vice President, Business Development, Partners HealthCare*



**George Washko, MD**  
*Associate Physician, BWH; Associate Professor of Medicine, Harvard Medical School*



**Mark Michalski, MD**  
*Executive Director, Center for Clinical Data Science, BWH, MGH*

# STEERING COMMITTEE

Many thanks to the exceptional Co-chairs and all the members of the Steering Committee for their leadership in shaping the Forum agenda, identifying speakers and securing sponsors



**Calum MacRae, MD, PhD**  
Chief of Cardiovascular Medicine, BWH;  
Associate Professor of Medicine,  
Harvard Medical School  
(World Forum Co-Chair)



**Anthony Rosenzweig, MD**  
Chief, Cardiology Division, MGH;  
Professor of Medicine,  
Harvard Medical School  
(World Forum Co-Chair)



**Morris Birnbaum, MD, PhD**  
SVP and CSO, CVMET, Pfizer



**Farouc Jaffer, MD, PhD**  
Director, Coronary Intervention, Cardiac  
Catheterization Laboratory; Cardiology Division,  
MGH; Associate Professor of Medicine,  
Harvard Medical School



**Elazer Edelman, MD, PhD**  
Senior Attending Physician, BWH;  
Professor of Medicine, Harvard Medical School



**Sekar Kathiresan, MD**  
Director, Center for Human Genetic Research,  
MGH; Associate Professor of Medicine, Harvard  
Medical School



**Jean-François Formela, MD**  
Partner, Atlas Venture



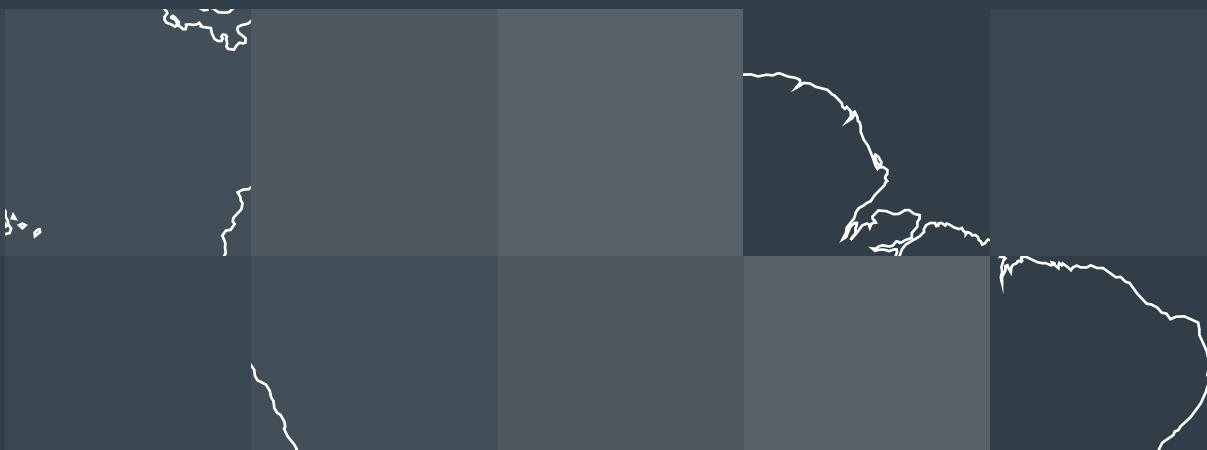
**Anne Klibanski, MD**  
Chief Academic Officer, Partners HealthCare;  
Laurie Carroll Guthart Professor of Medicine,  
Academic Dean for Partners,  
Harvard Medical School



**Michael Jaff, DO**  
President, Newton-Wellesley Hospital,  
Partners HealthCare; Professor of Medicine,  
Harvard Medical School



**Paul LaViolette**  
Managing Partner and COO,  
SV Life Sciences Advisers





**Laura Mauri, MD**

Director, Division of Cardiovascular Medicine  
Center for Clinical Biometrics and Harvard Clinical Research Institute, BWH; Associate Professor of Medicine, Harvard Medical School



**Robert Plenge, MD, PhD**

VP, Head of Translational Medicine, Merck



**Marc Sabatine, MD**

Chairman, TIMI Study Group, Lewis Dexter, MD Distinguished Chair in Cardiovascular Medicine, BWH; Professor of Medicine, Harvard Medical School



**Christine Seidman, MD**

Director, Cardiovascular Genetics Center, BWH; Thomas W. Smith Professor of Medicine and Genetics, Harvard Medical School



**Jagmeet Singh, MD, DPhil**

Associate Chief, Cardiology Division, Massachusetts General Hospital Heart Center; Professor of Medicine, Harvard Medical School



**Thor Sundt, MD**

Chief, Division of Cardiac Surgery, Director, Corrigan Minehan Heart Center, MGH; Churchill Professor of Surgery, Harvard Medical School



**Craig Thompson, MD**

CMO, Interventional Cardiology, Boston Scientific



**Malissa Wood, MD**

Co-Director, MGH Heart Center Corrigan Women's Heart Health Program, MGH; Associate Professor, Harvard Medical School



Lilly salutes the 2017 World Medical Innovation Forum and all who work to improve the lives of patients.

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# Leading the Cardiovascular Revolution



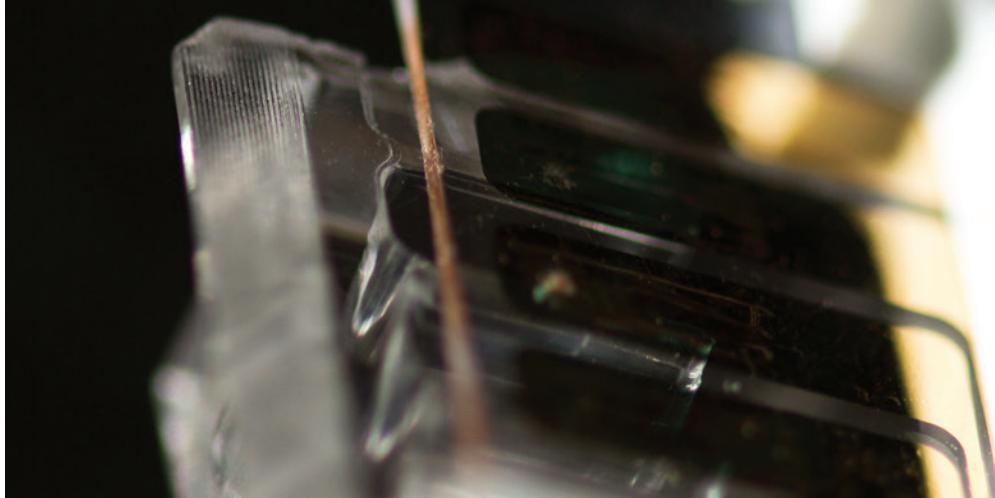
**Calum MacRae, MD, PhD**  
World Forum Co-Chair  
Chief of Cardiovascular Medicine,  
BWH; Associate Professor of Medicine,  
Harvard Medical School



**Anthony Rosenzweig, MD**  
World Forum Co-Chair  
Chief, Cardiology Division, MGH;  
Professor of Medicine,  
Harvard Medical School



Cardiovascular Disease (CVD) remains the leading cause of mortality in the U.S. and the developed world, accounting for approximately one of every three deaths. The burden of CVD is predicted to increase, with 40.5% of the U.S. population expected to be affected and direct medical costs projected to reach \$818 billion dollars in 2030. Fortunately, scientists and clinicians have an unparalleled array of tools with which to study and treat heart disease. Physicians and researchers at Partners HealthCare, including Brigham and Women's Hospital (BWH) and Massachusetts General Hospital (MGH), employ the entire range of approaches to better understand, prevent, detect, and treat CVD. Physicians and researchers at BWH and MGH are on the vanguard of care, helping to usher in this new epoch in the largest segment of health care.



## HEART FAILURE

The spectrum of cardiovascular disease is changing, with a rising burden of heart failure and rhythm disorders. While current drug combinations reduce mortality in heart failure with reduced ejection fraction (HFrEF), no optimal treatment exists for heart failure with preserved ejection fraction (HFpEF). Our researchers are pursuing strategies to alter the course of disease and prolong life in patients with both types of heart failure.

- BWH pioneered the diagnostic testing of patients at risk for genetic forms of heart disease. Christine Seidman, MD and colleagues discovered that titin-truncating mutations are the most common genetic cause of severe and familial dilated cardiomyopathy, impairing the cardiomyocyte's contractile function. Their findings enabled development of new strategies for disease prevention and treatment in carriers. In February, Carolyn Yung Ho, MD and colleagues in the multicenter HCMNet study described two methods for discriminating phenotypic subgroups in sarcomere mutation carriers with hypertrophic cardiomyopathy. Neal Lakdawala, MD and Calum MacRae, MD, PhD led the first clinical trial of a molecularly targeted therapy in heart failure in patients with mutations in the lamin A/C gene.
- In 2015, the groundbreaking PARADIGM-HF clinical trials led to U.S. FDA approval for Novartis' Entresto (sacubitril/valsartan) to treat heart failure in patients with HFrEF. The follow-up PARAGON-HF trial, with BWH researchers Scott Solomon, MD, serving as primary PI and Akshay Desai, MD, leading the clinical endpoints committee, will determine whether sacubitril/valsartan is superior to valsartan alone in symptomatic patients with HFpEF.
- A major challenge in drug development is the identification of cellular assays that accurately recapitulate human myocardial physiology in vitro. The laboratory of Ibrahim Domian, MD, PhD at MGH seeks to generate human model systems of heart failure by recreating the cardiac microenvironment in pluripotent stem cell models of the human heart and constructing biomechanically active heart tissue.

- The laboratory of Harald Ott, MD at MGH has pioneered an approach to full heart transplant that involves recellularization of a decellularized donor heart. In a 2016 study by Jacques Guyette, PhD and colleagues, this group demonstrated for the first time that human cardiomyocytes derived from induced pluripotent stem cells can adhere to the decellularized myocardium and form force-generating muscle.
- The MGH Cardiopulmonary Exercise Testing Laboratory at MGH, directed by Gregory Lewis, MD, is a national referral center for evaluating symptoms that arise during physical activity. The CPET Lab uses a diverse array of physiologic measures to identify heart failure sub-phenotypes through comprehensive exercise-based evaluations. Early findings from high-coverage metabolomic profiling during CPET indicate that these profiles may accurately identify distinct patterns of cardiac dysfunction.

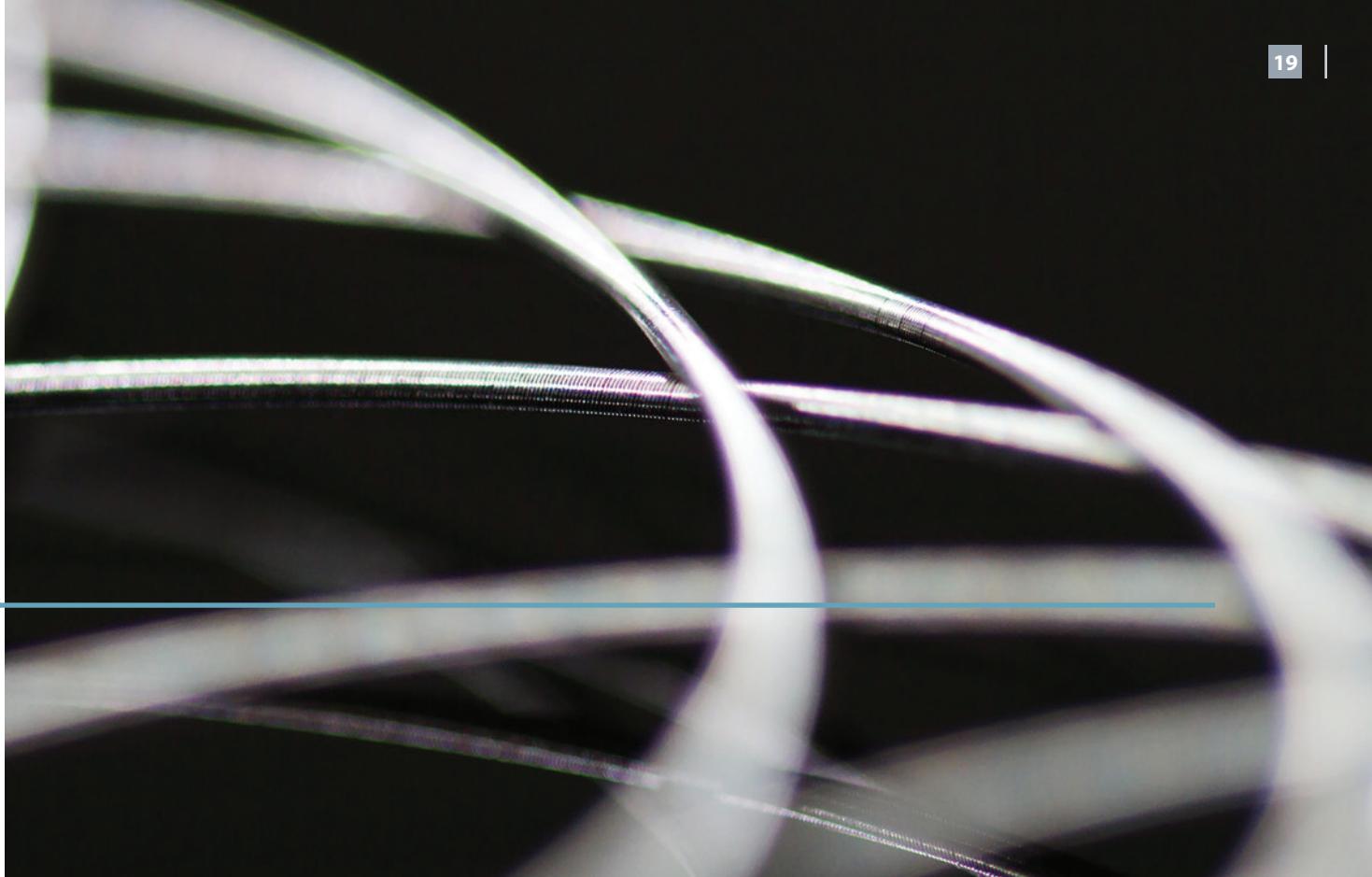
In addition to their use in diagnosis and imaging, biomarkers play multiple roles in the study of heart failure, serving as inclusion criteria for clinical trials, indicators of drug toxicity, surrogate end points, and targets for therapy. Our colleagues continue to lead the field in discovery and application of biomarkers to study and treat CVD.

- Work led by James Januzzi, MD at MGH, has identified dozens of biomarkers that contribute to a biomarker profile in heart failure and set international standards for biomarker use in diagnosis, prognosis, and management of patients suffering from heart failure or acute coronary syndromes. In March, Nasrien Ibrahim, MD and colleagues described a combined clinical and biomarker score with a high accuracy for predicting the presence of significant coronary artery disease in patients referred for angiography.
- Extracellular microRNAs are stable, circulating biomolecules that modulate gene expression across different tissue types. Ravi Shah, MD and Saumya Das, MD, PhD at MGH and colleagues have identified a miRNA that is cardioprotective in mice and, in humans, is associated with subclinical CVD and with cardiac remodeling in heart failure. In a study of individuals with HFrEF, they identified an extracellular miRNA signature panel that is associated with the response to medical therapy.

- Digital biomarkers offer the potential not only for stratification of disease but also for the real time monitoring of disease progression and response to therapy. BWH researcher, Sunil Kapur, MD has developed a series of digital biomarkers that enable the efficient stratification of HFrEF and allow potential insights into therapeutic response.

## DEVICES AND INTERVENTIONS

- Partners researchers are leaders in the development of less-invasive circulatory assist devices. The Heart & Vascular Center at BWH was one of the first to implant the HeartMate 3 left ventricular assist device, which is able to take over the pumping function of the left ventricle. Mandeep Mehra, MD was a co-principal investigator for the pivotal MOMENTUM 3 HeartMate 3 clinical trial, which achieved an 80% survival rate at 1 year and 50% reduction in gastrointestinal bleeding and strokes.
- The Heart Transplantation and Ventricular Assist Devices program at MGH, led by surgical director David D'Alessandro, MD and medical director Greg Lewis, MD, directs research focused on organ recovery and discovery of novel therapeutics to treat end stage heart failure. Their Mechanical-Assist Team recently participated in the MOMENTUM 2 study, the largest VAD trial of its kind, comparing the HeartMate 3™ and the HeartMate II® in approximately 1,800 patients. MGH is also a Center of Excellence for Extracorporeal Membrane Oxygenation (ECMO), a specialized type of life support for the heart and lungs.
- Cardiac surgeons and interventionists at BWH, including Tsuyoshi Kaneko, MD, Pinak Shah, MD, and Prem Shekar, MD, are advancing minimally invasive methods of mitral valve repair, reducing the need for both blood transfusion and re-operation for post-operative bleeding. Their procedures are enabling them to repair the mitral valve in patients traditionally considered too high-risk for open valve repair surgery.



## ATRIAL FIBRILLATION AND OTHER ARRHYTHMIAS

Left untreated, atrial fibrillation (AF) doubles the risk of heart-related death and increases the risk of stroke five-fold. Researchers in the Cardiac Arrhythmia Service at MGH and the Heart Rhythm Disorders Program at BWH focus on AF and other arrhythmias, which affect up to one in every hundred people.

- Cardiac arrhythmias are a leading cause of morbidity and sudden death. In October, cardiac electrophysiologist Steven Lubitz, MD, at MGH and colleagues published a study comparing AF genetic risk scores and incident AF in 18,919 individuals. The researchers found that comprehensive AF genetic risk scores were associated with both incident AF and cardioembolic stroke, suggesting that AF genetic risk might improve identification of subclinical AF and/or help to distinguish between stroke mechanisms.
- Although research has identified genetic variants associated with AF, the cause of AF in patients who inherit these gene variants remains unknown. A Transatlantic Network of Excellence is seeking new insights into the cause of AF, using novel “four-dimensional” analyses of genome interactions that combine 3D genomic structure and genetic history. Network scientist Patrick Ellinor, MD, PhD at MGH, directs research focused on the genetics and therapeutics of AF.

- Treatment decisions in AF are based on clinical assessment of risk. In a subanalysis of the ENGAGE AF-TIMI 48 Randomized Clinical Trial published in December, BWH researchers Christian Ruff, MD, Robert Giugliano, MD, Eugene Braunwald, MD, Sabina Murphy, Elliott Antman, MD, David Morrow, and colleagues developed a cardiovascular biomarker score for indication of risk in patients with AF. Using three biomarkers, they found that a prototype multimarker risk score significantly enhanced risk assessment for stroke, systemic embolic events, or death compared with traditional clinical risk stratification.
- The Heart Rhythm Disorders Program at BWH is devoted solely to the care of patients with irregular heart rhythms, heart palpitations, and rapid heartbeat conditions, with a specialized team that performs more than 3,000 procedures annually. Laurence Epstein, MD has pioneered many of the techniques in transvenous lead management and extraction and has built one of the leading extraction programs in the world. Christine Albert, MD investigates predictors and triggers of atrial fibrillation and sudden cardiac death. In 2016, Albert and colleagues found that women with new-onset atrial fibrillation have an increased risk of malignant cancer.

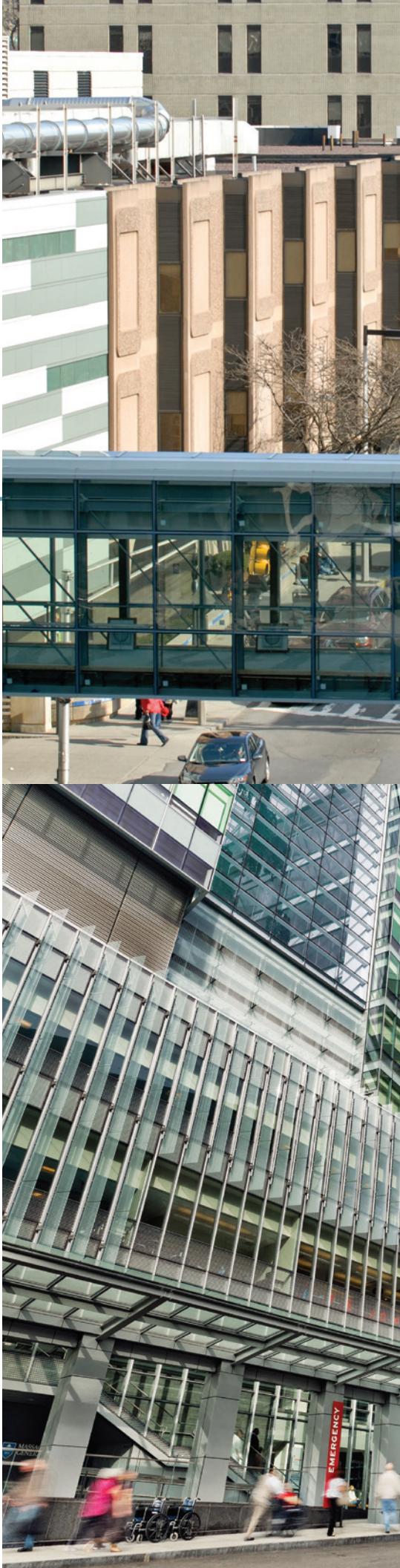


- Catheter ablation is important for reducing the frequency of spontaneous arrhythmias. Physician-researchers in the BWH Clinical Cardiac Electrophysiology Program led by William Stevenson, MD and Gregory Michaud, MD have developed a new ablation catheter capable of reaching areas deep within the heart wall to stop ventricular tachycardia in areas where conventional catheter ablation is often unable to reach. This year, the Heart & Vascular Center will become the first in the nation to pilot the use of this catheter in a limited feasibility study of ventricular tachycardia originating deep in the heart wall.

## HYPERTENSION AND STROKE

Stroke is the fifth leading cause of death in the U.S. – causing more than 170,000 deaths a year – and the number one cause of disability. Although high blood pressure is a major cause of heart disease and stroke, its underlying causes are poorly understood.

- An improved understanding of the pathways that influence blood pressure can open new avenues for drug development. Christopher Newton-Cheh, MD at MGH co-directed two studies using novel, custom genotyping arrays (Exome Chip and Cardio-Metabochip) to identify new gene variants associated with hypertension. These studies, which involved over 260 institutions in 20 countries and represented the largest reported meta-analyses of investigations into the genetics of hypertension, identified a total of 44 novel risk-associated genes.
- Kathryn Rexrode, MD at BWH examines risk factors for ischemic stroke and coronary heart disease in women. A large, prospective cohort study in women in the Nurses' Health Study II with more than 20 years of follow-up, led by Rexrode and published in 2016, indicated a consistent link between migraine and cardiovascular disease events, including cardiovascular mortality. The authors recommended that women with migraine be evaluated for their vascular risk.
- As the oldest cardiovascular Academic Research Organization in North America, the Thrombosis in Myocardial Infarction (TIMI) Study Group, led by Marc Sabatine, MD, Eugene Braunwald, MD, Marc Bonaca, MD, David Morrow, MD, Deepak Bhatt, MD and others, provides robust expertise in the key aspects of clinical trials. Over the last 30 years, The TIMI Study Group has conducted 60 trials, studying a range of interventions in more than 50 countries and at more than 5,000 separate sites. In 2016, the PEGASUS-TIMI 54 trial demonstrated that administration of 60 mg ticagrelor twice daily significantly reduced the risk of stroke in high-risk patients with prior myocardial infarction.



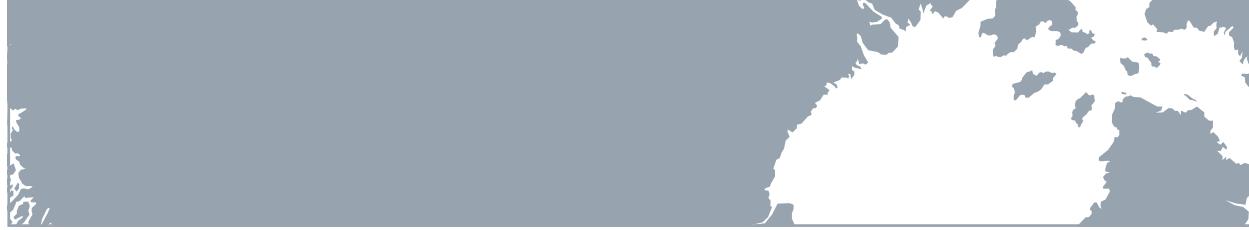


- Among the almost 800,000 strokes that occur each year in the U.S., 20 percent of those involving inadequate blood flow to the brain are caused by narrowing of the carotid artery, the brain's primary blood supply. The ACT1 study led by Kenneth Rosenfield, MD, at MGH, found that carotid-artery stenting is just as safe and effective in treating patients who have asymptomatic narrowing of the carotid artery as carotid endarterectomy, which involves surgical removal of plaque deposits. The CREST 2 Trial, which is ongoing, measures the effect of stenting or endarterectomy compared to intensive medical treatment alone in asymptomatic patients with severe carotid stenosis.

## CARDIOMETABOLIC DISEASE

The incidence of diabetes mellitus (DM) in the U.S. has doubled over the past three decades, with an estimated 31 million adults currently affected. By 2050, DM is predicted to affect 12% of the total population. DM and metabolic syndrome are major risk factors for CVD, and the high prevalence of both conditions creates a compelling argument for addressing them directly in the context of improving cardiovascular health.

- Paul Huang, MD, PhD and Dmitriy Atochin, MD, PhD at MGH seek to understand the way in which metabolic diseases, such as obesity and diabetes, affect blood vessel function and lead to the development of atherosclerosis and heart disease. In 2016, in collaboration with colleagues in Russia, these researchers demonstrated that administration of a compound that both inhibits cell death and releases nitrous oxide can improve stroke outcome in a mouse model of cerebral reperfusion. The implications for this work include new methods for the treatment and prevention of heart attacks, stroke, and high blood pressure.



- In the Bypass Angioplasty Revascularization Investigation in Type 2 Diabetes (BARI 2D) study, researchers led by Brendan Everett, MD and Deepak Bhatt, MD at BWH showed that a high-sensitivity troponin assay can identify diabetic patients with stable ischemic heart disease who are at greater risk for heart attack, stroke, or death from cardiovascular causes within five years. This assay provides an opportunity to improve cardiovascular outcomes in high-risk patients with diabetes and stable heart disease.

## UNDERSTANDING CARDIOVASCULAR DISEASE

Across the Harvard Medical community, researchers employ a wide spectrum of approaches to investigate the genetic, biochemical, and physiologic components of disease in human and model systems. Positive results from the laboratory are rapidly translated for clinical testing.

- The laboratory of Farouc Jaffer, MD, PhD at MGH, is developing bench-to-bedside approaches to image and understand *in vivo* inflammation and thrombogenesis in vascular disease. Together with colleagues in molecular imaging chemistry, Jaffer's group has developed an array of molecular imaging agents to report on macrophages, fibrin, cathepsin K, VCAM-1, thrombin, and activated factor XIII. In a study using nanomaterials synthesized by Jason McCarthy, PhD at MGH, Jaffer and colleagues found that fibrin molecular imaging may be developed into a theranostic strategy capable of identifying venous thrombi amenable to fibrinolytic therapies.



The survival rate for individuals with out-of-hospital cardiac arrest remains below 15%. Researchers and clinicians at Partners are exploring multiple strategies for heart attack prevention.

- The laboratory of Geoff Burns, PhD and Caroline Burns, PhD at MGH is using small molecule chemical screens, morpholino-mediated gene knockdowns, and transgenic approaches in zebrafish to understand cardiac progenitor/stem cell biology during vertebrate development and regeneration. A 2016 study from this group demonstrated that the AP-1 transcription factor, Fos-like antigen 2 (Fosl2), potentiates the rate of cardiomyocyte development in the zebrafish heart tube. Surprisingly, mutant embryos eventually correct the myocardial deficit by extending the developmental window.
- Scientists at BWH in the laboratory of Mark Feinberg, MD identified novel modulators of microRNA pathways that can be used to manipulate many different biological pathways including lipoprotein metabolism and diabetic microvascular disease.

## HEART ATTACK

The survival rate for individuals with out-of-hospital cardiac arrest remains below 15%. Researchers and clinicians at Partners are exploring multiple strategies for heart attack prevention.

- In 2015, the TIMI Study Group at BWH, including Eugene Braunwald, MD, Marc Bonaca, MD, Marc Sabatine, MD, Deepak Bhatt, MD, and colleagues, published two practice-changing clinical trials. In a study of more than 4,000 patients, the TIMI researchers found that one year of therapy with the PCSK9 inhibitor, evocacumab, resulted in a 60 percent reduction in LDL cholesterol and a 50 percent lower rate of cardiovascular events compared with standard therapy alone. In the PEGASUS-TIMI randomized trial of more than 20,000 patients who'd had a heart attack within three years, the team demonstrated that extending dual antiplatelet therapy beyond the guideline-recommended one year after a heart attack led to a 15 percent reduction in the rate of cardiovascular death, heart attack, or stroke.
- In 2014, Laura Mauri, MD at BWH and colleagues in the Dual Antiplatelet Therapy (DAPT) study reported that DAPT beyond one year after placement of a drug-eluting stent, as compared with aspirin therapy alone, significantly reduced the risks of stent thrombosis and major adverse cardiovascular and cerebrovascular events while increasing bleeding. The authors described a DAPT score, which was recently shown to improve prediction of patient benefit and harm from continued DAPT beyond assessment of MI history alone. Results from the DAPT study informed changes in the November 2016 ACC/AHA guidelines for duration of DAPT in patients with coronary artery disease.

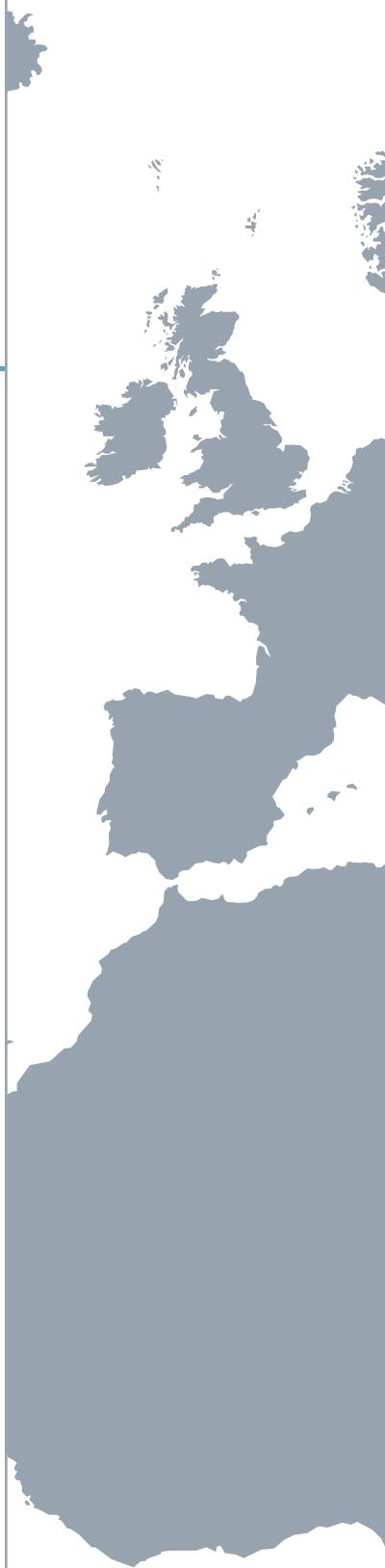


- Hospital readmissions of patients after PCI are common and costly. In September, Varsha Tanguturi, MD, Timothy Ferris, MD, Jason Wasfy, MD, and colleagues at MGH and Beth Israel Deaconess tested a strategy to reduce preventable readmissions after percutaneous coronary intervention (PCI). Several interventions were implemented before and after discharge, as well as a triage protocol to identify high-risk patients re-presenting at emergency rooms. With these interventions, the index hospital readmission rate declined from 9.6% to 5.3% in four years.

## PRECISION MEDICINE AND WEARABLES

The occurrence and course of CVD shows tremendous variation owing to the interactions of multiple genes with other genes, the environment, and behavior. Harvard Medical researchers are developing tools that can draw a precise portrait of CVD in the individual, reveal broader patterns in the population, and point the way to new therapies and interventions.

- In October, BWH's Calum MacRae, MD, PhD, became the recipient of One Brave Idea, a \$75 million 5-year research award to study coronary heart disease and its consequences. This unique team-based program, which aims to develop novel technologies to study the earliest phases of the onset of CHD, is funded by the American Heart Association, Verily, and AstraZeneca.
- Physicians at BWH led by Lynne Stevenson, MD, Akshay Desai, MD, and Deepak Bhatt, MD are pioneering the strategy of real-time hemodynamic monitoring to help HF patients improve their quality of life and stay out of the hospital. They participated in the CHAMPION trial, which demonstrated that hemodynamically-guided HF management can detect rising pulmonary pressure early, making it possible for physicians to adjust therapy in time to avert decompensation and avoid hospitalizations. Complete follow-up results from this trial, published in 2016, demonstrated a 48% reduction in rates of admissions to hospital for heart failure in what had formerly been the control group, after pulmonary artery pressure information became available to guide therapy.
- The Center for Assessment Technology and Continuous Health (CATCH) at MGH is combining diverse sources of information on patient health, ranging from medical records to smartphone applications, to better define wellness and disease. In 2016, Stanley Shaw, MD, PhD and colleagues used an electronic medical records database to identify non-traditional cardiovascular risk factors in patients with liver disease.



## CARDIOPROTECTION

- In November, researchers led by MGH's Sekar Kathiresan, MD, published results of a study that asked whether it was possible overcome a high genetic risk for heart attack by adhering to a healthy lifestyle. The researchers analyzed data from more than 50,000 individuals, determining genetic risk based on 50 genes and characterizing lifestyle based on four factors (smoking, obesity, exercise, and diet). For individuals at high genetic risk, a favorable lifestyle cut the chance of a heart attack by more than 50%, indicating that DNA is not destiny with regards to heart attack.
- The Center for Cardiovascular Disease Prevention, a translational research unit at BWH directed by Paul Ridker, MD, currently has two multi-national clinical trials underway to determine whether targeted anti-inflammatory agents can reduce the risk of recurrent heart attack and stroke. These trials, the Canakinumab Anti-inflammatory Thrombosis Outcomes Study (CANTOS) and the Cardiovascular Inflammation Reduction Trial (CIRT), represent the culmination of nearly 30 years of research on whether inflammation is fundamentally important in CVD and whether anti-inflammatory medications will be a valuable treatment for heart disease.
- Matthias Nahrendorf, MD, PhD at MGH, studies the role of immunity in cardiovascular disease, specifically in atherosclerosis and heart failure. The researchers used nanoparticles containing small interfering RNA (siRNA) to reduce expression of adhesion molecules at sites of arterial inflammation. They reported in 2016 that this led to improved recovery of heart function after an induced heart attack. Once this approach is translated, it may help to reduce inflammation in patients with ischemic organ injury, protecting cardiac patients from a second heart attack and helping the heart to recover.
- Anthony Rosenzweig, MD and his laboratory have been identifying the mechanisms mediating the cardiovascular benefits of exercise, which include a reduction in atherosclerotic vascular disease, cardioprotection, and improved ventricular remodeling after injury. Interestingly, virtually all the pathways identified to date which mediate the functional effects of exercise in the heart also protect against pathological stress, suggesting this is a fruitful area for discovering novel therapeutic targets.

## MENTAL HEALTH AND CVD

- Jeff Huffman, MD directs the MGH Cardiac Psychiatry Research Program, which aims to improve the mental health and medical outcomes of patients with heart disease. In October, Huffman and colleagues reported the results of a pilot study of a phone-based positive psychology intervention in patients following acute coronary syndrome. Treated patients demonstrated greater improvements in positive affect, anxiety, and depression compared to controls. •

# AGENDA

All speaker bios are at: [worldmedicalinnovation.org/speakers](http://worldmedicalinnovation.org/speakers)

## MONDAY, MAY 1<sup>ST</sup>

<b>7:00 am  </b>	<b>Registration and Breakfast</b>
<b>8:00 am</b>	<b>LILLY FOYER</b>
<b>8:00 am  </b>	<b>First Look: The Next Wave of Cardiology Breakthroughs</b>
<b>11:30 am</b>	<b>PFIZER BALLROOM</b>
	Harvard Medical School investigators describe their most promising work in rapid fire presentations highlighting commercial opportunities in cardiovascular and cardiometabolic care. Nineteen rising stars from BWH and MGH will present in 10-minute sessions.
	<i>*See pages 8–9 for presentation details</i>
<b>11:30 am  </b>	<b>Break and Move to Discovery Café Breakouts</b>
<b>11:45 am</b>	
<b>11:45 am  </b>	<b>Discovery Café Breakout Sessions: Sharing Perspectives</b>
<b>1:05 pm</b>	<b>3RD AND 7TH FLOOR</b>
	Top BWH and MGH faculty address compelling topics in clinical research and implementation of care. Lunch to be provided.
	<i>*See pages 10–11 for luncheon room locations</i>
<b>1:05 pm  </b>	<b>Break</b>
<b>1:30 pm</b>	
<b>1:30 pm  </b>	<b>Opening Remarks</b>
<b>1:35 pm</b>	<b>BOSTON SCIENTIFIC BALLROOM</b>
	INTRODUCTION BY
	<b>Anne Klibanski, MD</b> , Chief Academic Officer, Partners HealthCare; Laurie Carroll Guthart Professor of Medicine, Academic Dean for Partners, Harvard Medical School
	<b>David Torchiana, MD</b> , CEO, Partners HealthCare
	 



**1:35 pm |  
1:55 pm**

**Reinventing Cardiac Care  
BOSTON SCIENTIFIC BALLROOM**

The Forum Co-Chairs will welcome attendees with a brief description of the key opportunities and challenges that will be highlighted in the Forum. They will emcee the entire afternoon program.

**Calum MacRae, MD, PhD**, Chief of Cardiovascular Medicine, BWH; Associate Professor of Medicine, Harvard Medical School

**Anthony Rosenzweig, MD**, Chief, Cardiology Division, MGH; Professor of Medicine, Harvard Medical School



**1:55 pm |  
2:45 pm**

**CEO Roundtable:  
Today's Learning, Tomorrow's Opportunities  
BOSTON SCIENTIFIC BALLROOM**

Discussion on contribution of technology innovation to the treatment of cardiovascular disease reflecting on lessons and how they shape investment decisions.

**MODERATOR**

**Benjamin Pless**, Executive in Residence, Partners HealthCare Innovation

**John Flannery**, CEO, GE Healthcare

**Michael Minogue**, CEO, Abiomed

**Michael Mussallem**, CEO, Edwards Lifesciences

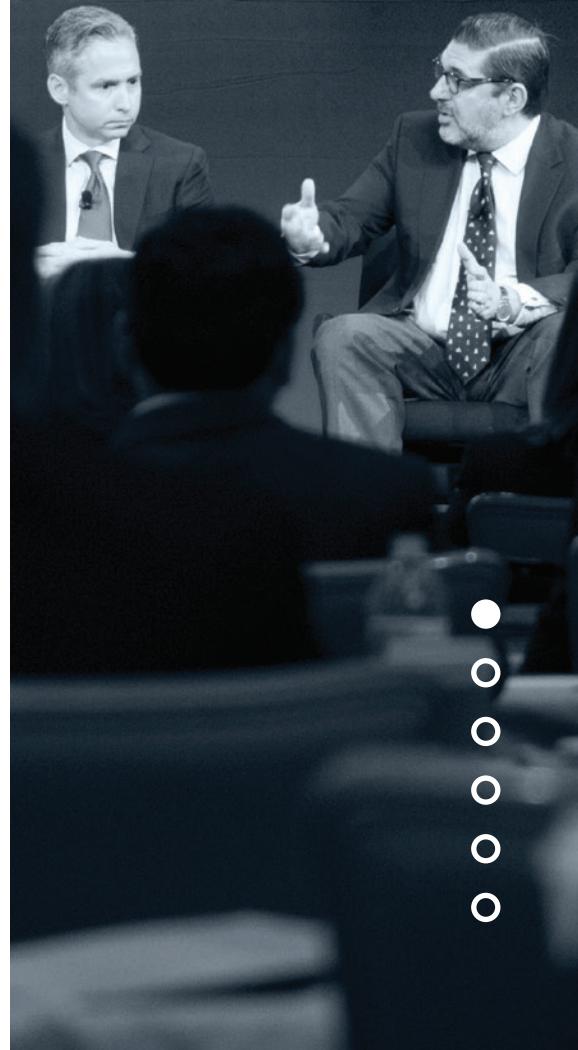
**Timothy Ring**, CEO, Bard

**Lewis Sandy, MD**, EVP, Clinical Advancement, UnitedHealth Group



# RUM

**SPAULDING  
REHABILITATION NETWORK**



## AGENDA | MONDAY, MAY 1<sup>ST</sup>

All speaker bios are at: [worldmedicalinnovation.org/speakers](http://worldmedicalinnovation.org/speakers)

**2:45 pm |  
3:35 pm**

### Tackling the AFib Epidemic BOSTON SCIENTIFIC BALLROOM

Evolving trends in diagnosis, prevention, and treatment of atrial fibrillation. Factors that will influence patient care over the next 5 years are considered, including risk stratification, procedure and technology options, and potential implications of CMS policies, such as bundling.

MODERATOR

**Jagmeet Singh, MD, DPhil**, Associate Chief, Cardiology Division, MGH Heart Center; Professor of Medicine, Harvard Medical School

**Patrick Ellinor, MD, PhD**, Director, Cardiac Arrhythmia Service, MGH; Associate Professor, Harvard Medical School

**Colleen Fowler**, VP, GM, AF Solutions, Medtronic

**Parashar Patel**, VP, Global Health Policy, Boston Scientific

**Michael Rousseau**, President, Cardiovascular and Neuromodulation, Abbott

**Steven Zelenkofske, DO**, VP US Medical Affairs, CVMD TA, AstraZeneca



**3:35 pm |  
4:05 pm**

### 1:1 Fireside Chat: Omar Ishrak, PhD, CEO, Medtronic BOSTON SCIENTIFIC BALLROOM

MODERATOR

**Paul LaViolette**, Managing Partner & COO, SV Life Sciences Advisers

**Omar Ishrak, PhD**, CEO, Medtronic



**4:05 pm |  
4:55 pm**

### Heart Failure's Therapeutic Mandate BOSTON SCIENTIFIC BALLROOM

One million patients are hospitalized annually for HF—80% of total US cost of HF management. After discharge from HF hospitalization, 24% are rehospitalized within 30 days, greater than 50% within 6 months. Perspective on disease management, addressing the issues of hospital readmission and optimizing therapies.

MODERATOR

**Akshay Desai, MD**, Director, Heart Failure Disease Management, BWH; Associate Professor, Harvard Medical School

**Philip Adamson, MD**, VP and Medical Director, Abbott

**Craig Basson, MD, PhD**, VP, Global Translational Medicine Head (CVM), Novartis Institutes for BioMedical Research; Senior Lecturer, Harvard Medical School

**Marc Semigran, MD**, CMO, Myokardia

**Kenneth Stein, MD**, SVP, CMO, Global Health Policy, Rhythm Management, Boston Scientific





4:55 pm |  
6:00 pm

### **CLINICAL HIGHLIGHT: A New Chapter of PAD**

BOSTON SCIENTIFIC BALLROOM

PAD is the most challenging atherosclerotic syndrome, largely due to the technological challenges of managing peripheral artery disease through minimally invasive strategies. Top physician, governmental, and industry leaders in the field discuss the potential for new breakthroughs including novel implantable devices, pharmacologic approaches, and reductions in associated cardiovascular morbidity and mortality. The panel will also discuss, Below The Knee: The Persisting Unmet Need.

#### MODERATOR

**Michael Jaff, DO**, President, Newton-Wellesley Hospital, Partners HealthCare; Professor of Medicine, Harvard Medical School

**Douglas Drachman, MD**, Director, Cardiology and Interventional Cardiology Fellowship Programs, MGH; Assistant Professor of Medicine, Harvard Medical School

**Tamara Syrek Jensen**, Director, Coverage and Analysis Group, CMS

**Misti Malone, PhD**, Chief, Peripheral Interventional Devices Branch, Food and Drug Administration

**Shaden Marzouk, MD**, CMO, Cardinal Health

**Matthew Menard, MD**, Co-Director, Endovascular Surgery, BWH; Assistant Professor, Harvard Medical School

**Jeff Mirviss**, SVP and President, Peripheral Interventions, Boston Scientific



6:00 pm |  
6:45 pm

### **Opening Reception**

LILLY FOYER





**2016 Fireside Chat:**  
**Giovanni Caforio, MD, CEO, Bristol-Myers Squibb**

Meg Tirrell  
*Biotech and Pharma Reporter, CNBC*  
Giovanni Caforio, MD  
*CEO, Bristol-Myers Squibb*





## AGENDA | TUESDAY, MAY 2<sup>ND</sup>

All speaker bios are at: [worldmedicalinnovation.org/speakers](http://worldmedicalinnovation.org/speakers)

**7:00 am |  
8:00 am**

**Continental Breakfast  
LILLY FOYER**

**7:00 am |  
7:45 am**

**FOCUS SESSION: Japan Today: Advancing Cardiometabolic Therapies  
PFIZER BALLROOM**

Discussion on unique aspects of cardiometabolic market in Japan, its projected trend over the next 5 years and explore transformative models of open innovation to accelerate development of new therapeutic options.

**MODERATOR**

**Masanori Aikawa, MD, PhD**, Yoshiro Miwa Associate Chair and Founding Director, Center for Interdisciplinary Cardiovascular Sciences, BWH

**Carsten Brunn, PhD**, Head of Pharmaceuticals, Americas Region, Bayer  
**Hiroyuki Kawabata**, Director, Health & Welfare Department, JETRO New York

**Makoto Suematsu, MD, PhD**, President, Japan Agency for Medical Research and Development

**Eiji Tanaka, PhD**, President, Head of Global Business Development, Mitsubishi Tanabe Pharma Holdings America, Inc.



**7:50 am |  
8:00 am**

**Opening Remarks  
BOSTON SCIENTIFIC BALLROOM**

**Christopher Coburn**, Chief Innovation Officer, Partners HealthCare



**8:00 am |  
8:50 am**

**Pricing to Enable Affordability and Innovation  
BOSTON SCIENTIFIC BALLROOM**

Balancing acceptable answers to high and escalating drug prices in the United States while making strides in medical innovation. Leaders in innovation, policy, care delivery, academia, and insurance discuss potential collaborative solutions.

**MODERATOR**

**Peter Slavin, MD**, President, MGH

**Katrina Armstrong, MD**, Physician-in-Chief, Department of Medicine, MGH; Jackson Professor of Clinical Medicine, Harvard Medical School

**George Barrett**, CEO, Cardinal Health

**Paul Fonteyne**, CEO, Boehringer Ingelheim USA

**Robert Ford**, EVP, Medical Devices, Abbott

**Benjamin Scirica, MD**, Director of Innovation, Cardiovascular Division, Senior Investigator, TIMI Study Group, BWH; Associate Professor of Medicine, Harvard Medical School



8:50 am |  
9:40 am

**CLINICAL HIGHLIGHT:  
Emerging Devices for Complex Structural Heart Disease**  
**BOSTON SCIENTIFIC BALLROOM**

Evolution of mitral disease management, current practice and impact of new technologies on both repair and replacement, implications of a heterogeneous patient population, triage, timing of intervention.

**MODERATOR**

**Jason Mills**, Managing Director, Head of US Healthcare Research, Canaccord Genuity

**Michael Dale**, Divisional Vice President and General Manager, Structural Heart, Abbott

**Ian Meredith, PhD**, EVP, Global CMO, Boston Scientific

**Patrick O'Gara, MD**, Director, Clinical Cardiology, Executive Medical Director, BWH; Professor of Medicine, Harvard Medical School

**Stanton Rowe**, CVP, Advanced Technology, CSO, Edwards Lifesciences

**Sean Salmon**, SVP and President, Coronary & Structural Heart, Medtronic



9:40 am |  
10:10 am

**1:1 Fireside Chat: John Lechleiter, PhD, Chairman, Eli Lilly**  
**BOSTON SCIENTIFIC BALLROOM**

**MODERATOR**

**Susan Dentzer**, CEO, Network for Excellence in Health Innovation

**John Lechleiter, PhD**, Chairman, Eli Lilly and Company



10:10 am |  
10:25 am

**Morning Break**  
**LILLY FOYER**

10:25 am |  
11:15 am

**Personal Monitoring for Disease Management**  
**BOSTON SCIENTIFIC BALLROOM**

Considering the evolving trends in viability and utilization and the opportunities wearables may present for real-world clinical decision making.

**MODERATOR**

**Joe Kvedar, MD**, VP, Connected Health, Partners HealthCare; Associate Professor of Dermatology, Harvard Medical School

**Adam Landman, MD**, CIO, VP, BWH; Course Co-Director, Harvard Medical School

**Michael Reitermann**, COO, Siemens Healthineers

**Jonathan Rennert**, CEO, Zoll Medical

**Stanley Shaw, MD, PhD**, CSO, One Brave Idea, BWH; Associate Dean for Executive Education, Harvard Medical School



<b>11:15 am   11:45 am</b>	<b>1:1 Fireside Chat: Robert Bradway, CEO, Amgen</b> <b>BOSTON SCIENTIFIC BALLROOM</b>
	<p><b>MODERATOR</b>  <b>Scott Sperling</b>, Co-President, Thomas H Lee Partners  <b>Robert Bradway</b>, CEO, Amgen</p>  
<b>12:00 pm</b>	<b>Lunch</b> <b>GE BALLROOM</b>
<b>12:15 pm   12:30 pm</b>	<b>Austen-Braunwald Award</b> <b>GE BALLROOM</b> <p>Awarded to one BWH and one MGH First Look participant who embodies the innovative, entrepreneurial, and visionary spirit of cardiovascular legends W. Gerald Austen, MD and Eugene Braunwald, MD. Granted based on select criteria, including overall presentation quality, innovativeness, commercial potential, caliber of disruption, and market need.</p>
<b>12:30 pm   1:00 pm</b>	<b>1:1 Fireside Chat: Frans Van Houten, CEO, Philips</b> <b>GE BALLROOM</b> <p><b>MODERATOR</b>  <b>Gregg Meyer, MD</b>, CCO, Partners HealthCare  <b>Frans van Houten</b>, CEO, Philips</p>  
<b>1:00 pm   1:10 pm</b>	<b>Transition</b>
<b>1:10 pm   2:00 pm</b>	<b>Global Clinical Trials: Next Generation Design and Scalability</b> <b>BOSTON SCIENTIFIC BALLROOM</b> <p>Cardiovascular trials currently account for 10 percent of all clinical trial participants. Discussion on design and implementation of clinical studies globally, considering strategies for patient access, regulatory implications, cost containment and management of relationships with global service providers.</p> <p><b>MODERATOR</b>  <b>Marc Sabatine, MD</b>, Chairman, TIMI Study Group, Lewis Dexter, MD Distinguished Chair in Cardiovascular Medicine, BWH  <b>Elisabeth Björk, MD, PhD</b>, VP, Cardiovascular &amp; Metabolic Disease Head, Global Medicines Development, AstraZeneca  <b>Daniel Bloomfield, MD</b>, SVP, Global Clinical Research, Therapeutic Area Head, Cardiometabolic &amp; Womens Health, MRL Lead, China R&amp;D, Merck  <b>Jonathan Plehn, MD</b>, VP Cardiovascular Medicine, Covance  <b>Norman Stockbridge, MD, PhD</b>, Director, Division of Cardiovascular and Renal Products, Food and Drug Administration  <b>Scott Wasserman, MD</b>, VP, Global Development, Amgen</p>      



## AGENDA | TUESDAY, MAY 2<sup>ND</sup>

All speaker bios are at: [worldmedicalinnovation.org/speakers](http://worldmedicalinnovation.org/speakers)

**2:00 pm |  
2:50 pm**

### Precision Cardiovascular Medicine: What is Different This Time

BOSTON SCIENTIFIC BALLROOM

Explore how precision medicine is changing the face of cardiovascular medicine specifically. The session will examine the impact of combined phenotypic and genotypic characterization on optimizing response to therapeutics, trial design, improving outcomes, and redefining reimbursement.

MODERATOR

**Alex de Winter, PhD**, Managing Director, GE Ventures

**Sean Harper, MD**, EVP, R&D, Amgen

**Kevin Hrusovsky**, CEO, Quanterix

**Dean Li, MD, PhD**, VP, Head Translational Medicine, Merck

**David Milan, MD**, Assistant in Medicine, MGH;  
Assistant Professor, Harvard Medical School

**Christine Seidman, MD**, Director, Cardiovascular Genetics Center, BWH; Thomas W. Smith Professor of Medicine and Genetics, Harvard Medical School



**2:50 pm |  
3:40 pm**

### CV Investing in the Next Decade

BOSTON SCIENTIFIC BALLROOM

View on investing landscape, opportunities in the CV/metabolic marketplace, the drugs, devices and diagnostics currently in pipelines and notable positive trends.

MODERATOR

**Meg Tirrell**, Reporter, CNBC

**Leslie Bottorff**, Managing Director, Healthcare, GE Ventures

**Jean-François Formela, MD**, Partner, Atlas Venture

**Bob Hopkins**, Managing Director, US Medical Technology, Equity Research, Bank of America Merrill Lynch

**Roger Kitterman**, VP, Venture, Partners HealthCare

**James Topper, MD, PhD**, Managing General Partner, Frazier Healthcare Partners





**3:40 pm |  
4:30 pm**

**CLINICAL HIGHLIGHT:  
Optimizing Care for the 51%: New Market Opportunities**  
**BOSTON SCIENTIFIC BALLROOM**

Address implications of gender as a key biological factor for personalized medicine. Stroke is likely to be the first cardiovascular event, tied to AF and secondarily to hypertension. Opportunities for medication utilization and optimization in context of, manifestation of disease and evidence, and treatment response.

**INTRODUCTION**

**Cathy Minehan**, Managing Director, Arlington Advisory Partners

**MODERATOR**

**Nancy Brown**, CEO, American Heart Association

**Christine Albert, MD**, Center for Arrhythmia Prevention, BWH;  
Professor of Medicine, Harvard Medical School

**Mark Cobbold, MD, PhD**, Center for Cancer Immunology, MGH;  
Member of the Faculty of Medicine, Harvard Medical School

**Adele Gulfo**, EVP & Head, Global Commercial Development, Mylan

**Allison Kean, MD**, CV Therapeutic Area Lead, Global Business Development, Pfizer

**Paul Underwood, MD**, Medical Director, Boston Scientific

**Malissa Wood, MD**, Co-Director, MGH Heart Center Corrigan Women's Heart Health Program, MGH; Associate Professor, Harvard Medical School



**4:30 pm |  
5:20 pm**

**Disruptive Therapeutic Platforms: New Tools, New Outcomes**  
**BOSTON SCIENTIFIC BALLROOM**

Recent advances of biological drugs have broadened the scope of therapeutic targets for a variety of human diseases. This holds true for dozens of RNA-based therapeutics currently under clinical investigation for diseases including heart failure. These emerging drugs could be considered in context of genomic/germ line screening, family history and epigenetics.

**MODERATOR**

**Tony Coles, MD**, CEO, Yumanity Therapeutics

**Stéphane Bancel**, CEO, Moderna

**Katrine Bosley**, CEO, Editas Medicine

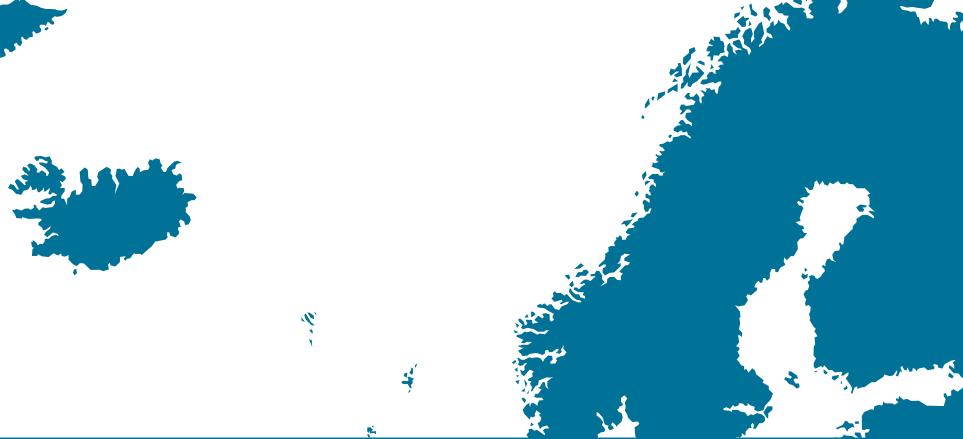
**John Maraganore, PhD**, CEO, Alnylam

**Ryuichi Morishita, MD, PhD**, Founder, AnGes



**5:20 pm |  
6:00 pm**

**Attendee Networking Reception**  
**NOVARTIS FOYER**



## AGENDA | WEDNESDAY, MAY 3<sup>RD</sup>

All speaker bios are at: [worldmedicalinnovation.org/speakers](http://worldmedicalinnovation.org/speakers)

**7:00 am | Continental Breakfast**

**7:30 am | LILLY FOYER**

**7:30 am | 1:1 Fireside Chat: Robert Califf, MD,  
Commissioner (former), Food and Drug Administration  
BOSTON SCIENTIFIC BALLROOM**

MODERATOR

**Joseph Loscalzo, MD, PhD**, Chairman, Department of Medicine, Physician-in-Chief, BWH; Hersey Professor of the Theory and Practice of Medicine, Soma Weiss, MD Distinguished Chair in Medicine, Harvard Medical School

**Robert Califf, MD**, Commissioner (former), Food and Drug Administration



**7:55 am | Innovation in Translational Trials**

**8:45 am | BOSTON SCIENTIFIC BALLROOM**

CV/metabolic disorders comprise aggregates of many niche diseases that may be targeted with therapies against specific molecular alterations, yet the final potential markets are much larger. This model creates challenges for both drug development and patient care with implications for initial indication selection and design and execution of clinical trials – from first-in-human through post marketing studies.

MODERATOR

**Mason Freeman, MD**, Director, Translational Research Center, MGH; Professor of Medicine, Harvard Medical School

**Seigo Izumo, MD**, SVP, Global Head of Regenerative Medicine Unit, Head of Scientific Affairs, Japan, Takeda

**John Lepore, MD**, SVP, R&D Pipeline, GlaxoSmithKline

**Jessica Mega, MD**, CMO, Verily

**Alan Moses, MD**, SVP, Global CMO, Novo Nordisk

**Sy Pretorius, MD**, SVP & CSO, PAREXEL International





## AGENDA | WEDNESDAY, MAY 3<sup>RD</sup>

All speaker bios are at: [worldmedicalinnovation.org/speakers](http://worldmedicalinnovation.org/speakers)

<b>8:45 am  </b> <b>9:15 am</b>	<b>1:1 Fireside Chat: Michael Mahoney, CEO, Boston Scientific</b> <b>BOSTON SCIENTIFIC BALLROOM</b> <b>INTRODUCTION</b> <b>Edward Lawrence</b> , Chairman, Board of Directors, Partners HealthCare; Retired Partner, Ropes & Gray <b>MODERATOR</b> <b>Meg Tirrell</b> , Reporter, CNBC <b>Michael Mahoney</b> , CEO, Boston Scientific
<b>9:15 am  </b> <b>10:05 am</b>	<b>New Targets in Coronary Artery Disease</b> <b>BOSTON SCIENTIFIC BALLROOM</b> Cardiovascular trials have a proud history of providing some of the most robust data in evidence-based medicine. However the growing size and complexity of these trials imperils their future. This panel will discuss the design and implementation of clinical studies globally, considering strategies for patient access, leveraging electronic health records and mobile device data, personalized medicine, regulatory implications, cost containment and management of relationships with global service providers. <b>MODERATOR</b> <b>Sekar Kathiresan, MD</b> , Director, Center for Human Genetic Research, MGH; Associate Professor of Medicine, Harvard Medical School <b>Aarif Khakoo, MD</b> , VP Research, Cardiometabolic Disorders Therapeutic Area Head, Site Head Amgen San Francisco, Amgen <b>Clive Meanwell, MD, PhD</b> , CEO, The Medicines Company <b>Paul Ridker, MD</b> , Director, Center for Cardiovascular Disease Prevention, BWH; Eugene Braunwald Professor of Medicine, Harvard Medical School <b>Craig Sponseller, MD</b> , CMO, Kowa Pharmaceuticals
<b>10:05 am  </b> <b>10:25 am</b>	<b>Morning Break</b> <b>LILLY FOYER</b>
<b>10:25 am  </b> <b>10:55 am</b>	<b>1:1 Fireside Chat: Gary Gibbons, MD, NHLBI</b> <b>BOSTON SCIENTIFIC BALLROOM</b> <b>MODERATOR</b> <b>Elizabeth Nabel, MD</b> , President, Brigham Health; Professor of Medicine, Harvard Medical School <b>Gary Gibbons, MD</b> , Director, NHLBI





**10:55 am |  
11:45 am**

### The Skinny on Fat: Therapeutic Opportunities

BOSTON SCIENTIFIC BALLROOM

Explore the evolving role of adipose tissue as an active endocrine organ and discuss the possibilities to discover novel signaling pathways relevant to cardiovascular health and viable druggable targets.

#### MODERATOR

**Ora Pescovitz, MD**, SVP and US Medical Leader,  
Eli Lilly and Company

**Morris Birnbaum, MD, PhD**, SVP and CSO, CVMET, Pfizer  
**Ludovic Helfgott**, Global VP, Cardiovascular,  
Renal and Metabolism, AstraZeneca

**Thomas Hughes, PhD**, CEO, Zafgen

**Lee Kaplan, MD, PhD**, Director, Obesity, Metabolism & Nutrition  
Institute, MGH; Associate Professor, Harvard Medical School

**Bruce Spiegelman, PhD**, Stanley J. Korsmeyer Professor of Cell  
Biology and Medicine, Dana-Farber Cancer Institute,  
Harvard Medical School



**11:45 am |  
12:45 pm**

### Disruptive Dozen: 12 Technologies that will reinvent Cardiovascular Care

BOSTON SCIENTIFIC BALLROOM

#### MODERATORS

**Calum MacRae, MD, PhD**, Chief of Cardiovascular Medicine,  
BWH; Associate Professor of Medicine, Harvard Medical School

**Anthony Rosenzweig, MD**, Chief, Cardiology Division,  
MGH; Professor of Medicine, Harvard Medical School



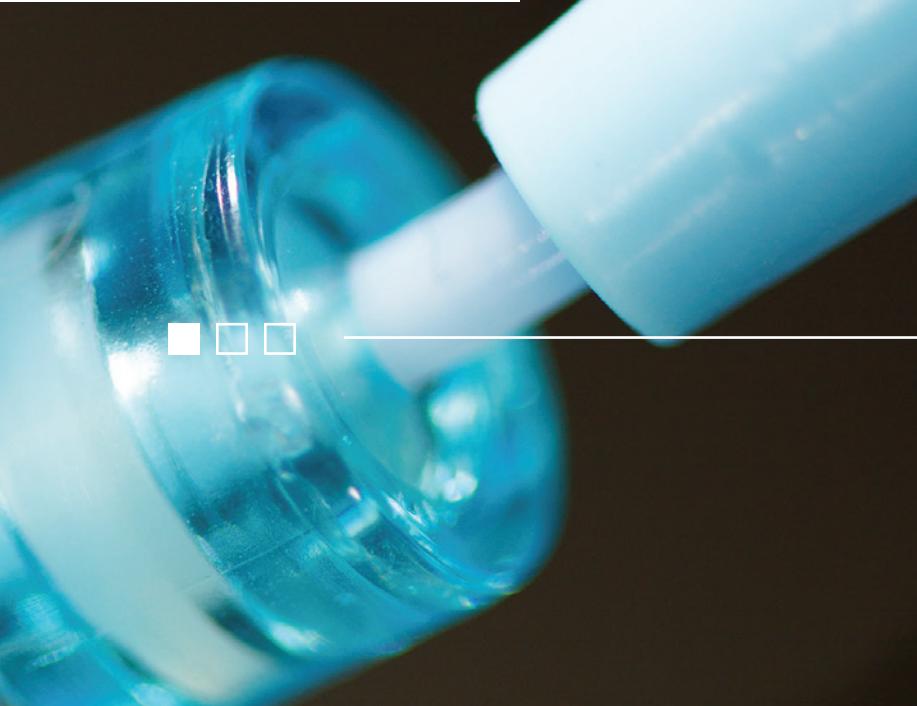
**1:00 pm**

### Forum Conclusion

LILLY FOYER

*\*Panels and speakers are subject to change.*







# Partners HealthCare INNOVATION

This World Forum is brought to you by Partners HealthCare Innovation, the 110-person business development unit responsible for the worldwide commercial application of the capabilities and discoveries of Partners' 68,000 employees. Innovation supports the research requirements of its 3,400 Harvard Medical School faculty and research hospitals. It has responsibility for industry collaborations, venture investing, international consulting, licensing, innovation management, company creation, technology marketing, open innovation alliances, and workforce development.

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- Boston Biomedical Innovation Center
- Business Development
- Innovation Operations
- Licensing and Innovation Management
- Market Sectors
- Open Innovation – Alliances and Fellows
- Partners HealthCare International
- Partners Innovation Fund

## FUNCTIONS

- Business development
- Company creation
- Industry collaborations
- Innovation management
- International consulting
- Licensing
- Research translation strategy and funding
- Technology marketing
- Venture investing
- Workforce capacity building for commercial collaborations





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*It was 5,000 researched compounds.*

*87 different protein structures.*

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# INFORMATION AND EVENTS

## REGISTRATION HOURS

Monday, May 1	7:00 am – 5:30 pm
Tuesday, May 2	7:00 am – 4:30 pm
Wednesday, May 3	7:00 am – 11:00 am

## NAME BADGES

Name badges will be provided at registration. On-site registration is available on the 4<sup>th</sup> Floor outside the Boston Scientific Ballroom during the hours noted above. Name badges must be worn during all events including meals and receptions. Please return your badge to the registration desk prior to your departure for recycling.

## EVENT LOCATIONS

### Registration Desk and Information (Daily)

Lilly Foyer, 4<sup>th</sup> Floor

### Continental Breakfast (Daily)

Lilly Foyer, 4<sup>th</sup> Floor

## MONDAY

### First Look Presentations

Pfizer Ballroom, 3<sup>rd</sup> Floor

*Continental breakfast will be available in the meeting room*

*See pages 8–9 for presentation details*

### Discovery Café Breakout Sessions

3<sup>rd</sup> and 7<sup>th</sup> Floors

*See pages 10–11 for luncheon room locations*

### Opening Reception

Lilly Foyer, 4<sup>th</sup> Floor

## TUESDAY

### Focus Session: Japan Today:

### Advancing Cardiometabolic Therapies

Pfizer Ballroom, 3<sup>rd</sup> Floor

### Forum Luncheon

General Electric Ballroom, 3<sup>rd</sup> Floor

### Attendee Networking Reception

Novartis Foyer, 3<sup>rd</sup> Floor

## WEDNESDAY

### Inaugural Innovators Recognition Dinner

Essex Ballroom, 3<sup>rd</sup> Floor | 5:30 pm

*Prior RSVP required – speak to registration desk for details*

# WORLD MEDICAL INNOVATION

F O R U M<sup>SM</sup>



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## SPEAKER BIOS

A complete list of speakers and their bios are available online via the agenda page of our website at: [worldmedicalinnovation.org/speakers](http://worldmedicalinnovation.org/speakers)

Thank you for attending the 2017 World Medical Innovation Forum. We look forward to seeing you in 2018.

**Artificial Intelligence**

APRIL 23–25, 2018

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*\*See page 58 for details*



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A special thanks to the Planning Committee and Event Team for their unstinting commitment over the last 18 months to create the 2017 World Medical Innovation Forum.

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Partners HealthCare

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Program Manager,  
World Medical Innovation Forum

**Madeleine Halle**

Program Coordinator  
(not pictured)

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The Innovation Fellows Program increases collaboration between the Partners HealthCare community and industry, and promotes workforce development. Participants gain on-site experience in a teamwork-based environment. It is an opportunity for a personnel exchange between PHS core hospitals – Brigham and Women's Hospital, Massachusetts General Hospital, and McLean Hospital – and participating biopharmaceuticals, venture capital firms, and other commercial entities. The Fellows Program matches the interests and qualifications of candidates and objectives of the host organizations, and offers on-site experiential learning to enhance capabilities and skills across the R&D pipeline and commercialization process.

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For more information, please contact:  
Cary Mazzone, Program Manager, Partners Innovation  
at [innovationfellows@partners.org](mailto:innovationfellows@partners.org)

# Join Us in 2018

artificial intelligence

The 2018 World Medical Innovation Forum focuses on the advancements and opportunities of Artificial Intelligence. The 2018 event will bring together industry-leading CEOs, Partners' HIT experts, investors and deal makers to share perspectives on how cognitive computation, machine learning and big data are having a transformative impact on patient care. International experts will be joined by 1,000 attendees from the senior ranks of the information technology, life science, pharmaceutical, government and health care investment communities, as well as top Partners HealthCare faculty and staff.

## Registration is now open.

Special discounted pricing is available from May 1 to May 31, 2017.  
Visit the Registration section of the website or the registration desk to take advantage of this special discount.

[www.worldmedicalinnovation.org](http://www.worldmedicalinnovation.org)

April 23–25, 2018



# MAPS

The Westin Copley Place, Boston  
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BALL ROOM

*Lilly*

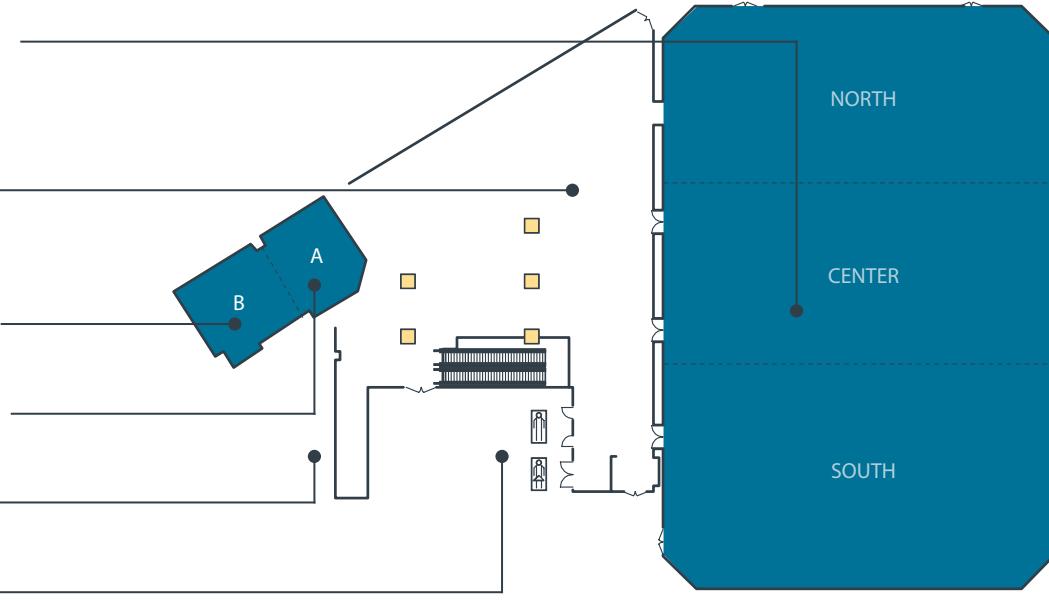
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## 3RD FLOOR

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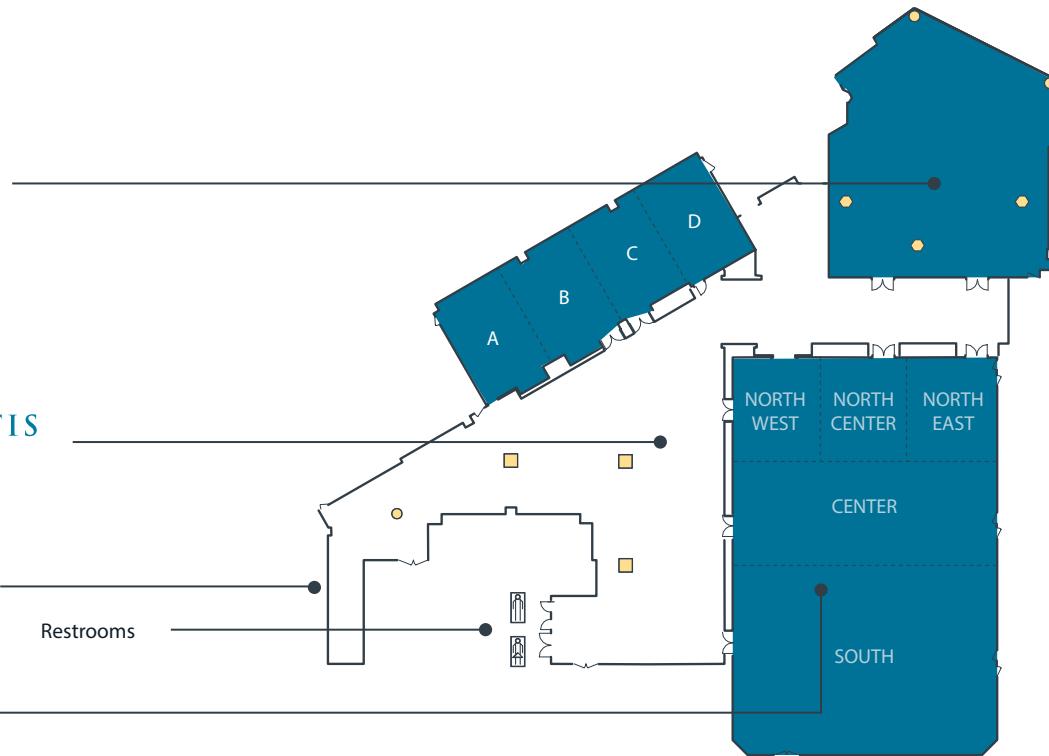
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