

# IMPACT REPORT Fall 2019



**“We’re proud that we offer the whole spectrum of care to a patient from preventive cardiology all the way through cardiac transplantation.”**

– Dr. William Katsiyiannis

## **COMMUNITY LEADERSHIP AND SUPPORT MAKE A STRONG PARTNERSHIP POSSIBLE:**

### **Minneapolis Heart Institute Foundation® (MHIF) and the Minneapolis Heart Institute® (MHI®)**

MHIF is proud of its rich, 37-year history focused on the MHIF vision of creating a world without heart and vascular disease. Dr. William Katsiyiannis, electrophysiologist and president of MHI®, recently shared his perspective on the continued strong partnership between MHIF and MHI®.

#### **Why is MHIF important to a practice like MHI®? How does it help to attract talent to the clinical practice?**

**Dr. Katsiyiannis:** MHIF is important to the practice because it serves as a real differentiator. It is the research and education wing that attracts many of us to the practice and fulfills us professionally. It attracts the best and brightest talents from throughout the country and we’re really blessed to be able to identify that talent and bring them here to Minneapolis.

The foundation is the draw for many of those folks. It’s led to our *US News* ranking that everyone recognizes. And sometimes we take it for granted here until we have people from around the country come and interview and say, “Really, you do that much research here? It’s that high quality and I have the opportunity to come here and do that research?” It’s the draw. It’s really the glue that makes us stick together in many ways. And it certainly elevates everyone’s game.

MHIF gives us great opportunity to access research. All of our partners in the practice have that opportunity. The foundation listens to their ideas and their dreams and then helps physicians frame those, work on them and get them done. It’s an incredible opportunity that’s really, really unique. And, we’re proud that we offer the whole spectrum of care to a patient from preventive cardiology all the way through cardiac transplantation. The research goes to that whole gamut as well. And we have incredible leaders in all aspects from prevention to cardiac transplantation and everywhere in between at the foundation level.

#### **How healthy is the partnership between MHIF and MHI®?**

**Dr. Katsiyiannis:** The partnership between the practice and the research foundation is incredibly important and incredibly healthy. It’s because of the appreciation that

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Creating a world without heart and vascular disease

the physicians in the practice have for research. And it's because the foundation has such an appreciation for the talents and the aspirations of the physicians. So they really feed on each other and it's a great synergy.

I pinch myself every day I come into work, I pinch myself looking at what the foundation has added to the world. They continue to advance science at a faster and faster pace every year. We've attracted such great researchers and they've done such great work to help patients. So every day in my practice I utilize things now taking care of patients that the foundation discovered and brought forward to me and others throughout the years.

I have a dear patient that I've been following for over a decade and he has hypertrophic cardiomyopathy, something the foundation has taught the world on how to take care of in a best way. Beyond that, he had a bad valve and he was in the ICU in a bad situation with no options until the research that Dr. Sorajja and the Valve Science Center team were doing. That research provided an option that got this patient out of the ICU where nothing else could have saved him at that point. I'm happy to report that he walked his daughter down the aisle.

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## Get to Know a Few of Our MHI® Physician Research Partners

### **Dr. Courtney Baechler**

Dr. Courtney Baechler attended the University of Minnesota, earning a bachelor's degree in mathematics, medical degree from the School of Medicine, and master's degree in epidemiology and public policy from the School of Public Health. She completed the National Institute of Health Physician Scientist track focused on prevention of chronic disease. She is a board certified internist and cardiologist who is passionate about a healthy state of wellbeing — body, mind, and spirit. Dr. Baechler will join MHIF in 2020 to serve as Program Director, Emerging Science Centers, in areas such as women's cardiovascular research, prevention and global outreach. She will also see patients in the MHI® clinic on a part-time basis.



Dr. Baechler

### **Dr. Victor Cheng**

Dr. Victor Cheng graduated from the Feinberg School of Medicine at Northwestern University in 2001 and specializes in cardiovascular disease and internal medicine. Prior to joining MHI® he worked at the Oklahoma Heart Institute in Tulsa. Dr. Cheng has experience and interest in the use of Cardiac Computed Tomography (CT) for diagnosis and treatment of cardiovascular disease.



Dr. Cheng

### **Dr. Santiago Garcia**

Dr. Santiago Garcia is an interventional cardiologist. From 2015 to 2018, Dr. Garcia served as the medical director of the transcatheter valve program at the Minneapolis VA Medical Center and Associate Professor of Medicine at the University of Minnesota. He was also a fellow of the Emerging Leadership Mentorship Program sponsored by the Society for Cardiac Angiography and Interventions and the American College of Cardiology from 2017-2019. His areas of research interest include transcatheter therapies for the treatment of valvular heart disease and complex coronary artery disease.



Dr. Garcia

### **Dr. Manjunath Pai**

Dr. Manjunath Pai specializes in the diagnosis and treatment of heart rhythm abnormalities and is board certified in cardiac electrophysiology, cardiovascular disease and internal medicine. He graduated from Ohio State University College of Medicine with his medical degree in 2008 and did his residency at Boston University Medical Center, with fellowships at the Cleveland Clinic in cardiovascular medicine and electrophysiology. Dr. Pai's interest focuses on ablations and device therapy.



Dr. Pai

### **Dr. Robert "Bobby" Steffen**

Dr. Robert Steffen specializes in thoracic surgery and graduated from the University of Minnesota Medical School in 2011. He did his residency and fellowship at the Cleveland Clinic. While there, Bobby spent a year in transplant and advanced heart failure treatment and worked with surgical treatment of hypertrophic cardiomyopathy, assisting with more than 40 surgical myectomies. Dr. Steffen has research interests in bypass and valve surgery as well as treatment of patients with hypertrophic cardiomyopathy.



Dr. Steffen

# From Stem Cells to SCAD, Women's Research is Making an Impact

Throughout the year, MHIF staff have been working passionately to help increase awareness about inequities in women's heart health research and care and lay the foundation for MHIF's new Women's Cardiovascular Science Center. On the research side, MHIF research physicians continue their groundbreaking work in studying various heart conditions that often disproportionately affect women, or only affect women. A few highlights include:

**Dr. Betty Grey and Dr. Scott Sharkey** recently completed a study on treatment for Spontaneous Coronary Artery Dissection (SCAD) with a publication featured in the September issue of the *Journal of the American College of Cardiology*. SCAD is different from a typical heart attack and is caused by a spontaneous tear in a coronary artery that is previously healthy without evidence of cholesterol buildup (atherosclerosis).

"Our research findings have significant implications for improving treatment and saving lives for patients who present with SCAD and experience ST-segment elevation myocardial infarctions, which is a particularly dangerous type of heart attack often resulting in major heart muscle damage," said Dr. Sharkey. "Most of these patients are females who are young, healthy and active at the time; in fact, SCAD is afflicting a growing number of women in their 40s and 50s."

**Dr. Jay Traverse** wrapped up a sponsored clinical trial on stem cell injections in cancer survivors earlier this year (results are pending). Anthracycline drugs are often used in chemotherapy and there is the potential for patients to develop left ventricular dysfunction secondary to anthracycline-induced cardiomyopathy. The syndrome can often be incurable and often fatal. The study examined the safety and feasibility of delivering stem cells via injection to treat cancer survivors with the syndrome.

There are currently **five investigator-initiated research (IIR) projects** in progress addressing several conditions:

- Spontaneous Coronary Artery Dissection (two studies): Dr. Betty Grey; Dr. Scott Sharkey and Dr. Christina Thaler
- Stress Cardiomyopathy: Dr. Scott Sharkey
- Recurrent Takotsubo Syndrome (Broken Heart Syndrome): Dr. Scott Sharkey
- Pregnancy and Cardiac Disease: Dr. Bill Wagner

Many additional exciting research studies are on the horizon for women. The proceeds from MHIF's 2019 Heartbeat Gala benefitting the MHIF Women's Cardiovascular Science Center will play a vital role in moving this critical research forward. Together, we can build upon MHIF's proven track record in conducting innovative, evidence-based research and then translating that evidence to improve knowledge and enhance patient care.



Dr. Saxena with Missy Lavintman

## BROACH Provider Trainings

Since the spring, Minneapolis Heart Institute® Cardiologist Dr. Retu Saxena has provided training to ob-gyn and women's care practitioners across the Twin Cities to help them better manage risk among their patients. The trainings are the third phase of MHIF's BROACH initiative (Broadening the Role of Ob-Gyns in Assessing Cardiovascular Health), which is designed to improve the rate of heart disease screening for women. Following the most recent training at the 2019 Maternal & Obstetrical Complications Conference in October, more than 170 practitioners have now been trained, far surpassing MHIF's goal of 50.

In particular, the trainings focused on the many pregnancy-induced conditions that increase a woman's health risks immediately following delivery of a baby and for many years to come, including gestational diabetes, preeclampsia and pregnancy-induced hypertension. In fact, pregnancy is often thought of as a woman's first "stress test" that can unmask underlying heart and vascular problems and future risk. Attendees are provided with a patient education piece and provider-focused guidance tool to facilitate critical conversations about heart disease and risk factors. The MHIF Women's Heart Health Team created the materials based on results of a survey of ob-gyn practitioners throughout Minnesota to better understand the gaps they face in addressing their patients' cardiovascular-related needs.

# Foreign Scholars Helping Further Coronary Artery Disease Research

Coronary artery disease (CAD) is the leading cause of death in the developed world and MHIF is proud to have built a reputation as one of the world's most distinguished champions in the fight against it. To help move groundbreaking CAD research forward, MHIF's Center for Coronary Artery Disease (CCAD) has engaged international physicians to help with the research through the MHIF Foreign Scholar program, which brings practicing physicians from countries around the world to MHIF for a two-year commitment to advance research.

"The Foreign Scholar program has been instrumental in the success of MHIF's Center for Coronary Artery Disease," said Dr. Emmanouil Brilakis, chairman of MHIF's CCAD. "They bring a wealth of knowledge, but also tremendous drive and motivation that is critical in moving often challenging projects forward. The research work of the foreign scholars has been published at the top interventional journals and has helped advance the contemporary practice of interventional cardiology."

In two years as an MHIF scholar, Dr. Peter Tajti published 39 manuscripts, presented a late-breaking trial at the Society of Cardiovascular Angiography and Interventions 2018 and won the 2018 Transcatheter Cardiovascular Therapeutics meeting international challenging case competition. Dr. Iosif Xenogiannis has been with MHIF for a little over a year and has published 26 manuscripts and won best poster award at the SCAI 2018 meeting.

This year, MHIF welcomed back Dr. Evangelia Vemmou and Dr. Ilias Nikolakopoulos, both from Greece, as full-time research scholars. Drs. Vemmou and Nikolakopoulos previously completed three-month clinical and research observerships this past winter. Working closely with Dr. Brilakis, they are focusing on projects involving chronic total occlusions, saphenous vein graft disease, radiation and radial vs. femoral access strategies for cardiac catheterization.



Dr. Vemmou



Dr. Nikolakopoulos

At TCT 2019 in late September, Dr. Vemmou participated in a moderated poster session to share findings from a MHIF research study on a treatment for chronic total occlusions (CTOs). A CTO is an artery that is completely blocked for more than three months and it can cause chest pain, pressure or tightness (angina) and shortness of breath. Historically, treatment of these blockages has been extremely challenging. Today, interventional cardiologists are using innovative percutaneous techniques (performed through an artery in the leg or arm) and are able to steer special guide wires and catheters across the blockages, which are then opened using small metal coils, called stents.

Led by Dr. Brilakis as the primary investigator, the PROGRESS-CTO study is an ongoing contemporary, multi-center global registry of more than 6,000 CTO percutaneous coronary interventions (CTO PCIs). The goal is to provide novel insights into the optimal percutaneous management of coronary CTOs through rigorous study of techniques and outcomes.

"Success rates (both technical and procedural) have remained stable, whereas major complications have decreased," said Dr. Vemmou. "These findings highlight the importance of CTO-PCI, when performed at centers of excellence, as a treatment option for many patients who are experiencing symptoms related to their CTO."



## About the Foreign Scholar Program

The Foreign Scholar program brings practicing physicians from countries around the world to work directly with MHI® physicians and advance their investigator-initiated cardiovascular research at MHIF. The program is part of MHIF's commitment to educating the next generation of health professionals and brings global exposure to the MHIF research team. To date, the Foreign Scholar program has welcomed scholars from China, Japan, Brazil, Hungary and Greece.

In 2019, three foreign scholars are working with Dr. Paul Sorajja, Roger L. and Lynn C. Headrick Family Chair for Valve Science Research, and Dr. João Cavalcante on research to advance the work of the MHIF Valve Science Center.



# Selected MHIF Research Highlights

## 2019 SUMMER INTERN HIGHLIGHTS

MHIF welcomed 10 interns to the Summer 2019 Research Internship Program, who learned and explored cardiovascular medicine through 15 research projects. Working alongside MHIF research physician mentors, these interns contributed to research studies and publications. In addition to research work, interns spent 100 hours on shadowing, observations and other field trips. Interns shared:

"When I first came, I didn't fully know what a tremendous opportunity this would be. The research and educational experiences were outstanding. Then to join my physician with a patient and see how my research was connected was well beyond my expectations."

"I was really struck by the collaboration not only at MHIF but at MHI® as evidenced in the case conferences. There was so much respect across the specialties; together, they found the right solution for the patient. This is truly a special and exceptional place."

For more information on the interns and their research project contributions, visit [mplsheart.org/2019interns](http://mplsheart.org/2019interns).

## FALL RESEARCH HIGHLIGHTS

**Repairing cardiac tissue in heart failure patients after a heart attack:** MHIF was the leading enroller in the first-in-human, FDA-approved Phase 1 clinical trial of an injectable hydrogel, VentiGel, that was evaluated for safety and feasibility in repairing damage and restoring cardiac function in heart failure patients who previously suffered a heart attack. The trial is the first-of-its-kind to test this novel hydrogel derived from pig hearts designed to repair cardiac tissue. It is also the first hydrogel made from the natural scaffolding of cardiac muscle tissue, also known as extracellular matrix, or ECM. Jay Traverse, MD, cardiologist at MHI® and MHIF director of research, was the lead investigator in the trial. Dr. Traverse is also the lead author of the published findings from the study in the September 11 issue of the *Journal of the American College of Cardiology*.

**New treatment option for patients with leaky tricuspid heart valve:** On Sept. 5, MHIF successfully enrolled the first patient in a pivotal clinical trial that is evaluating a new treatment option for patients with severe tricuspid regurgitation (leaky tricuspid heart valve). The TRILUMINATE Pivotal clinical trial is the first pivotal Investigational Device Exemption (IDE) trial in the U.S. to evaluate a catheter-based, non-surgical treatment for patients with severe tricuspid regurgitation.

## Cardiologists practice what they preach by using treadmills in the echocardiography laboratory:

MHIF researcher and MHI® cardiologist Dr. Kevin Harris and colleagues published a paper in the *European Heart Journal* on the use of a treadmill workstation (TW) in the echocardiography laboratory. The first-of-its-kind study was a collaborative effort with a team of MHIF staff and physicians. The innovative study looked at combating sedentary time in the echocardiography laboratory. Currently, cardiologists fall short of American Heart Association (AHA) goals for daily steps and with long work days, time for additional physical activity beyond work hours may be limited. This study explored the experience of a TW in the laboratory so physicians could spend part of sedentary time at a low level of exertion. They found accuracy was not compromised and physicians felt more energized and had an increased attention level.



Dr. Harris

"It is counterintuitive that cardiologists, who should be stewards of AHA recommendations for healthy lifestyle, spend the majority of their work hours doing sedentary work. In order to best advise patients on their health and well-being, cardiologists should strive to avoid hours of sedentary work as commonly seen in an echocardiography laboratory, potentially by the use of a TW, while reading echocardiograms at least for a portion of their workday." — Dr. Harris

**Sharing the latest knowledge and research in interventional cardiology:** At the 2019 Transcatheter Cardiovascular Therapeutics (TCT) conference in late September, MHIF research was well represented with MHI® physicians and MHIF staff taking part in 56 presentations including 9 podium talks, 33 poster or moderated abstracts, and 14 sessions where one or more physicians were a moderator, panelist or discussant. Additionally, Dr. Manos Brilakis and Dr. Paul Sorajja performed two live cases that were streamed at TCT.

## 2018 ANNUAL REPORT NOW ONLINE



MHIF's 2018 Annual Report is available online at [mplsheart.org/2018annualreport](http://mplsheart.org/2018annualreport). We invite you to learn about our 2018 research and education highlights and milestones.

## New Imaging Lab Will Optimize the Latest Technological Advances

In recent years, there has been rapid development and technologic advances in the field of cardiovascular imaging. These advances are giving cardiologists more options to inform diagnoses and treatment and making less-invasive procedures more accessible for patients. This opens options for older, more fragile patients who would not have had treatment options even a few years ago. To optimize patient care, it's critical for cardiologists to understand the strengths and weaknesses of these various imaging modalities to know which is ideal for any given clinical situation.

Recognizing the demand for dedicated clinical focus and expertise in medical imaging analysis and interpretation, MHIF recently launched the Cardiovascular Imaging Research Center. The center is a state-of-the-art academic cardiac magnetic resonance imaging (MRI) and computerized tomography (CT) imaging laboratory led by Dr. João Cavalcante, a multi-modality trained imaging cardiologist. Multi-modality imaging is an approach that uses each imaging modality to its best advantage, while promoting efficient integration to improve the diagnosis and treatment of cardiovascular disease.

Dr. Cavalcante and his team bring a depth of expertise in medical imaging analysis and interpretation in the rapidly expanding field of structural heart and valve disease. Physicians come to Minneapolis Heart Institute® from around the world to learn techniques because of the excellence of the imaging team.

### Dr. João Cavalcante

Dr. João Cavalcante is a multi-modality trained imaging cardiologist who is leading MHIF's new Cardiovascular Imaging Research Center. Prior to joining MHIF and MHI® in 2018, Dr. Cavalcante held positions as a senior faculty member at the University of Pittsburgh Heart and Vascular Institute helping to lead their structural imaging initiative, and as an advanced cardiovascular imaging fellow at the Cleveland Clinic. Dr. Cavalcante earned his medical degree from the Federal University of Ceará, Brazil and did his residency in internal medicine and a cardiovascular fellowship at Henry Ford Hospital in Detroit.



Dr. Cavalcante



## Founders Event

Thank you to everyone who joined us for our annual Founders Event on June 11 at The Minikahda Club. It was a wonderful opportunity to honor the generosity of MHIF Founders and their families, meet the new research interns, and hear Missy Lavintman share her story of experiencing Spontaneous Coronary Artery Dissection and her treatment journey.



## On the Pulse Meetings

Over the summer, MHIF Chief Medical Officer and President Dr. Scott Sharkey and MHIF CEO Kris Fortman hosted a series of *On the Pulse* meetings with donors at the Minneapolis Club featuring insightful conversations with several of our Minneapolis Heart Institute® partner physicians on timely topics in heart health. We are grateful to these physicians for sharing their time, knowledge and passion for both the highest quality patient care and industry-leading research.

- On May 9, Dr. Michael Miedema shared the latest developments in preventive cardiology.
- On July 12, Dr. Elizabeth Grey helped demystify women's heart health and highlighted the need for more research.
- On September 10, Dr. Peter Eckman discussed exciting advancements in heart failure research.