CARDIOVASCULAR RESEARCH INSTITUTE
SPRING 2026 NEWSLETTER

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Highlights from the 13th Annual Cardiovascular Research Institute (CVRI) Symposium

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On April 8, 2026, over 160 scientists and clinicians from Baylor College of Medicine (BCM), affiliated hospitals, and other Texas Medical Center (TMC) institutions participated in the 13th Annual Cardiovascular Research Institute (CVRI) Symposium. Chaired by Dr. Xander Wehrens, Director of the CVRI, Dr. Biykem Bozkurt, Associate Director of the CVRI and Dr. Lilei Zhang, Chair of the Symposium Program Committee, the event facilitated a full day of scientific exchange in cutting-edge basic, translational, and clinical research.

This year, we were honored to host two keynote speakers, James F. Martin, MD, PhD from BCM, and Alfred L. George, Jr., MD from Northwestern University.

Keynote spotlight: Dr. James F. Martin, MD, PhD – "Hippo Signaling in Heart Regeneration"

Dr. Martin is the Vivian L. Smith Chair in Regenerative Medicine in the BCM Department of Integrative Physiology and the Director of the Cardiomyocyte Renewal Laboratory at BCM. He has earned international recognition for his contributions to development, disease, and regeneration. In particular, his research includes landmark studies on the Hippo signaling pathway's role in cardiac regeneration and heart failure. Dr. Martin also aims to translate his findings into treatments: he is a founder of Medley Therapeutics, which has launched clinical trials investigating gene therapy for cardiomyocyte renewal after a myocardial infarction.

Dr. Martin's keynote lecture, "Hippo Signaling in Heart Regeneration," explored how the Hippo signaling pathway, long known for regulating organ size, can be leveraged to address heart muscle regeneration in patients with ischemic heart failure (HF). In the United States alone, nearly 1 million myocardial infarctions (MI) occur annually. Due to the nonregenerative nature of cardiomyocytes, post-MI hearts are weakened, often resulting in ischemic HF. Dr. Martin's presentation focused on two main questions: (1) Are there signaling pathways that inhibit cardiomyocyte renewal? And (2) can inhibitory pathways be manipulated to regulate cardiomyocyte renewal? He highlighted evidence that Hippo pathway activity has not only been shown to control organ size, including heart size, but is also increased in human HF. Furthermore, in mouse models, a Hippo pathway deletion reversed HF.

Two key proteins, YAP and Salvador (SAV; WW45 in humans), were emphasized in the lecture. When Yap5SA, an active form of YAP, was given to adult mouse cardiomyocytes, the cells emerged from quiescence and reentered the cell cycle. In post-MI pig hearts, knocking down SAV improved heart function and was accompanied by reduced fibrosis. Left ventricular ejection fraction increased by as much as 10%. These findings have led to a clinical trial in collaboration with the Texas Heart Institute and Medley Therapeutics. In this study, investigators are directly targeting the Hippo pathway to stimulate cardiomyocyte renewal – via transendocardial injection during a cardiac catheterization procedure, small amounts of AAV9 capsids containing SAV-shRNA are delivered to the infarct border zone, allowing the approach to maximize efficacy while minimizing exposure.

While cardiomyocyte renewal plays a large role in recovering heart function, more recent work from Dr. Martin's group has also indicated important changes in cell metabolism and the surrounding microenvironment. All together, Dr. Martin described the concept of a "regenerative niche" that is needed for a pro-renewal environment. These findings, combined with the ongoing clinical trial, highlight the complexity of cardiac tissue regeneration and point toward promising therapeutic avenues for treating ischemic heart failure.

Keynote speaker: James Martin, MD, PhD
Moderator: Diwakar Turaga, MD, PhD

Keynote spotlight: Dr. Alfred L. George, Jr., MD – "Calmodulinopathy: A Genetic Trilogy"

Dr. George is the A.N. Richards Professor and Chair of the Department of Pharmacology at the Northwestern University Feinberg School of Medicine. Widely recognized as a pioneer in research on the genetics and pathogenesis of channelopathies, he has received numerous awards for his contributions to the field. Dr. George's work has tied hundreds of ion channel mutations to functional consequences that affect tissue such as the heart, muscle and brain, which manifest as conditions that include cardiac arrhythmias, abnormal muscle contraction, epilepsy, and neurodevelopmental disorders.

In his lecture titled "Calmodulinopathy: A Genetic Trilogy," Dr. George focused on Calmodulin (CaM), a highly conserved intracellular Ca^{2+} receptor that serves as the primary mediator of Ca^{2+}-dependent signaling. CaM plays a critical role in numerous cellular functions, and in humans, is encoded by three distinct genes: CALM1, CALM2, and CALM3. Mutations in these genes result in calmodulinopathy, a channelopathy that primarily affects children. According to the International Calmodulinopathy Registry, the average age of a first cardiac event for a child with calmodulinopathy is 4 years old. The two most common clinical phenotypes are Long QT Syndrome (CALM-LQTS) (53%) and Catecholaminergic Polymorphic Ventricular Tachycardia (CALM-CPVT) (26%), while 7% of patients exhibit an overlapping LQTS/CPVT phenotype. Dr. George explained that CaM mutations have dominant negative effects. In CALM-LQTS, the Ca^{2+}-dependent inactivation of plasma membrane Ca^{2+} channels is impaired. In CALM-CPVT, there is enhanced Ca^{2+} release by the ryanodine receptor in the cardiac sarcoplasmic reticulum. In both cases, CaM no longer acts as a "brake" on Ca^{2+} signaling.

While more than 150 missense variants have been documented, Dr. George emphasized the N98S mutation, as it is the most recurrent, causes both LQTS and CPVT phenotypes, and has been identified in both CALM1 and CALM2. Mouse models with N98S mutations in each of these genes have exhibited a variety of arrhythmia phenotypes. Additionally, in cardiomyocytes from mouse models as well as human induced pluripotent stem cell (iPSC) models of CaM mutations, abnormal Ca^{2+} dynamics were observed. For example, human iPSC-cardiomyocytes transfected with CaM variants showed wider Ca^{2+} wave durations. More recently, studies are being done to investigate the possibility of treating this abnormal Ca^{2+} handling – via genetic correction or the use of calcium channel blockers. Initial results have shown varying degrees of effectiveness and additional studies can further explore these possible treatments.

Finally, not all cases of calmodulinopathy follow expected patterns. Dr. George presented a perplexing example: a patient with a CaM mutation who showed none of the typical arrhythmogenic features. He suggested that an unknown factor may be protecting this individual's heart from the usual abnormalities seen with CaM mutations. Cases like this highlight the complexity and the remaining mysteries of calmodulinopathy.

Keynote speaker: Alfred George Jr., MD
Moderator: Xander Wehrens, MD, PhD

Dr. Martin's and Dr. George's lectures were significant highlights of the symposium, offering valuable insights into cardiovascular tissue regeneration and channelopathy.

Additionally, the symposium featured eight invited speakers from the Texas Medical Center who covered a variety of topics, including cardiovascular genetics, heart failure, pulmonary disease and transplant, metabolism, calcium handling, inflammation, and bioengineering.

Michael Bround, PhD

Mark Herman, MD

Gabriel Loor, MD

Bradley McConnell, PhD

Francesca Polverino, MD, PhD

Christina Tringides, PhD

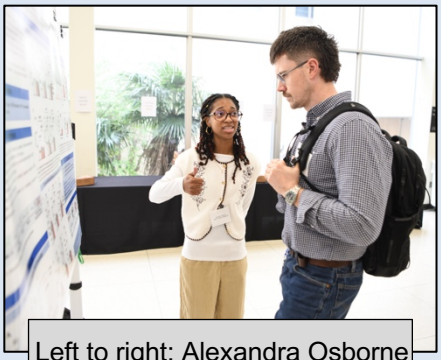
Huaizhu Wu, MD

Bing Yu, PhD

The symposium also displayed over 70 poster presentations by research trainees and junior faculty. These exciting oral and poster presentations provided an important platform for researchers at all stages of their career to share their work, and showcased the remarkable TMC environment for cardiovascular research and medicine.

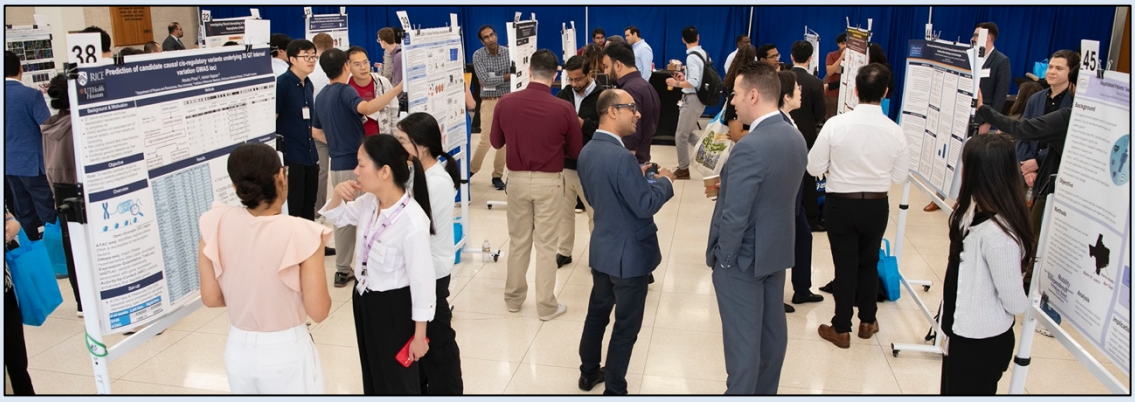
Left to right: Dr. Alfred George and Anna Shinohara

Cong Luo, MD, PhD



Left to right: Alexandra Osborne and Dr. Callum Quinn

Poster presenter: Dr. Chang-Ru Tsai



To recognize outstanding research contributions, the CVRI presented “Best Poster Awards” to 6 poster presenters. These awards were announced in categories by Dr. Lilei Zhang, Chair of the Symposium Program Committee. Congratulations to the recipients!

Best Poster Awards

Student Category (Non-Graduate) Category Winner:

Nathan Giang

Mentor: James Martin, MD, PhD
Poster title: “Notch Inhibition with IMR-1 Improves Cardiac Regenerative Potential”

Student Category (Graduate) Category Winner:

Ta’Aliyah Jones

Mentor: Michael Bround, PhD
Poster title: “LETM1 Deficiency in Heart is Lethal Due to Reduced Mitochondrial Ca^{2+} Efflux”

Post-Doctoral Research Trainee Category Winner:

Lin Liu, MD, PhD

Mentor: James Martin, MD, PhD
Poster title: “YAP Creates a Distinct Metabolic State to Regenerate the Heart”

Junior Faculty Category Winner:

Nitesh Katta, PhD

Mentor: Thomas Milner, PhD
Poster title: “Burst Wave Laser Lithotripsy of Calcified Heart Valves”

Clinical Resident/Fellow Category Winner:

Alexandra Dennee, MD

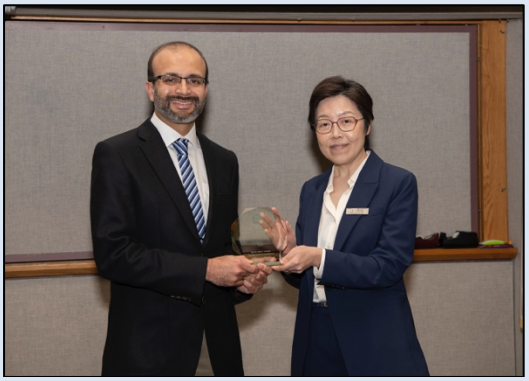
Mentor: Tam Doan, MD
Poster title: “Midwall Late Gadolinium Enhancement Predicts Adverse Outcomes in Pediatric Myocarditis”

Clinical Outcomes/Research Category Winner:

Shelby Walcott, MD

Mentor: Shaine Morris, MD, MPH
Poster title: “Frequency and Diagnostic Yield of Genetic Testing in Patients with Ebstein Anomaly”

Furthermore, the annual Dr. Mark L. Entman Award for Excellence in Cardiovascular Education was presented during the symposium. Established in 2021 by the CVRI to recognize faculty members for outstanding teaching and service in the graduate school curriculum in honor of Dr. Entman’s extensive contribution. This year’s winners are Drs. M. Umair Khalid and David Durgan



M.Umair Khalid, MD

Mark L. Entman **Teaching Award** for Excellence in Cardiovascular Education

David Durgan, PhD

Mark L. Entman **Service Award** for Excellence in Cardiovascular Education

Congratulations!

Thank you to all participants, presenters, and organizers whose contributions ensured the success of this year's symposium. We sincerely appreciate your help in continuing to advance cardiovascular research and education at BCM and across the TMC.

T32 Training Program in Cardiovascular Research and Drug Discovery

The Baylor College of Medicine Research Training Program in Cardiovascular Research and Drug Development is designed to prepare PhD students for a research career in cardiovascular research in academia or the pharmaceutical industry. Our innovative program includes interactive didactic courses, individualized training plans, formal training of research mentors, mentor training of the trainees, and an exceptional research infrastructure within the largest medical center in the world. The program emphasizes the highest standards of rigor and reproducibility, equity, and ethics, while incorporating strong translational and clinical components to allow our trainees to bridge critically important gaps in basic and translational cardiovascular research to develop future therapeutic interventions.

Funded by a T32 grant from the National Heart, Lung and Blood Institute (NHLBI), our program is led by program directors Xander Wehrens, MD, PhD Director of the Cardiovascular Research Institute, and Damian Young, PhD, Director of the Center for Drug Development.

Zaniqua Bullock, Graduate Student
Mentor: William Decker, PhD
Graduate Program: Chemical, Physical & Structural Biology

Jorie Fleischmann, Graduate Student
Mentor: Christine Beeton, PhD
Graduate Program: Development, Disease Models & Therapeutics

Inioluwa Ojediran, Graduate Student
Mentor: Jane Grande-Allen, PhD
Graduate Program: Rice Bioengineering

Marque Villareal, Graduate Student
Mentor: Jason Karch, PhD
Graduate Program: Development, Disease Models & Therapeutics

Jessica Wang, Graduate Student, MSTP
Mentor: Jane Grande-Allen, PhD
Graduate Program: Rice Bioengineering

Dr. Biykem Bozkurt Receives the 2026 Laura Lynch ELAM/ELAH Community Impact Award

The 2026 Laura Lynch Executive Leadership in Academic Medicine/Executive Leadership in Healthcare Community Impact Award was presented on April 29, 2026, during ELAM's annual Leaders Forum. Recipients demonstrate professionalism, commitment, and unwavering dedication to supporting fellows, ELUMs, faculty, staff and other community members. They inspire others to use their talents and energy to strengthen the ELAM/ELH network and foster the continued growth and success of ELUMs in their leadership journeys.

Dr. Biykem Bozkurt, a graduate of the ELAM class of 2023, is the Senior Dean of Faculty at Baylor College of Medicine, and an internationally recognized leader in cardiology with a distinguished record of scholarship, clinical excellence and leadership. A Clarivate Highly Cited Researcher with an H-index of 100, she has shaped national and international cardiovascular guidelines, served as president of the Heart Failure Society of America and currently leads as Editor-in-Chief of JACC: Heart Failure.

Dr. Bozkurt has made a sustained and significant impact on the ELAM/ELH community by broadening ELAM's reach, relevance and visibility through the successful establishment of the annual South-Central regional ELAM and ELH symposia in 2024. Dr. Bozkurt has been a steadfast champion of faculty development and mentorship. Through her leadership and engagement with ELAM, she has supported and elevated countless women leaders, modeling the very values this award was created to honor. Her commitment to mentorship, her advocacy for equity, and her ability to inspire others has had a profound and lasting impact on this community.

Congratulations to Dr. Bozkurt on such an amazing honor!

Credit: ELAM/ELH Awards & Honors

Exciting News!

Heart Rhythm 26
Bringing the world of EP together.
April 23-26, 2026 • Chicago, IL

Heart Rhythm Society

Drs. Mihail Chelu, Na Li, and Xander Wehrens attended the 2nd Annual Heart Rhythm Gala and brought together **more than 850 members** of our community and raised **over $900,000** to support research, education, advocacy, and patient-centered initiatives in heart rhythm care.

Dr. Oliver Moore's article, "Structure Activity Optimization of Ryanodine Receptor Modulators for the Treatment of Catecholaminergic Polymorphic Ventricular Tachycardia," was published in the July 2025 issue of Heart Rhythm. He is this year's recipient of the Heart Rhythm Journal Outstanding Publication Award for Young Electrophysiologists in the area of experimental research.

Read Dr. Moore's article here: https://bit.ly/4t4Sapz

More Exciting News!

Congratulations to Dr. Christie Ballantyne recipient of the 2026 W. Virgil Brown Distinguished Achievement Award.

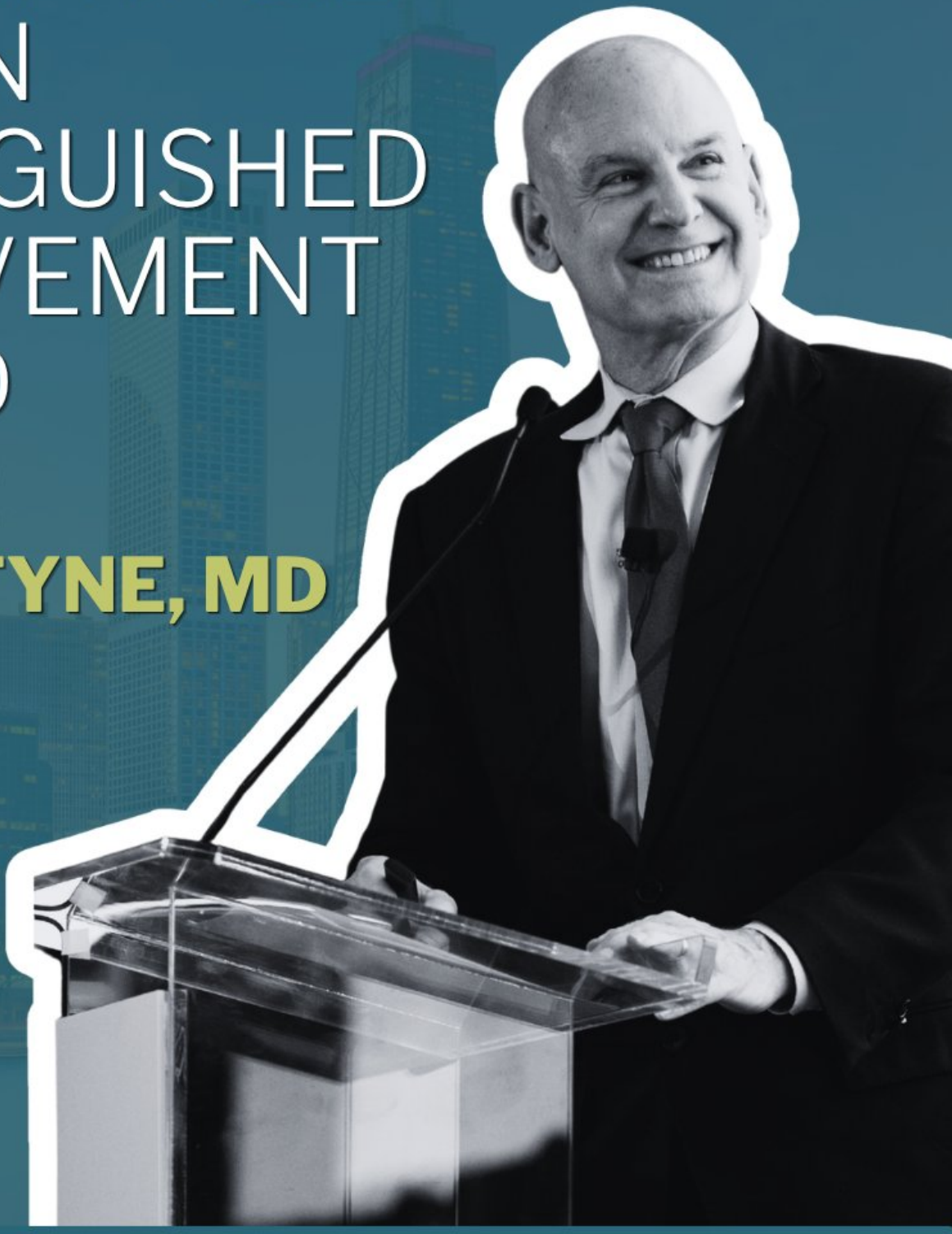
The highest honor conferred by the NLA, this award recognizes outstanding contributions to the diagnosis and treatment of lipid disorders. Dr. Ballantyne's decades of leadership in cardiology, cardiometabolic disease prevention, and lipid science make him a truly deserving recipient.

Don't miss his Award Lectureship on June 12 at #NLASessions: "My Journey as a Researcher, Clinician, and Patient in the Field of Lipids and Atherosclerosis: Setbacks, Advances, and Opportunities."

Written by the National Lipid Association

2026 W. VIRGIL BROWN DISTINGUISHED ACHIEVEMENT AWARD

CHRISTIE BALLANTYNE, MD



NATIONAL LIPID ASSOCIATION

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SCIENTIFIC SESSIONS

June 11 – 14

2026

CHICAGO

American Heart Association
Funding Opportunities

Opportunity	Proposal Deadline	Award Start Date
AHA Predoctoral Fellowship Enhances the training of promising students in pre-doctoral or clinical health professional degree training programs and who intend careers as scientists, physician-scientists or other clinician-scientists, or related careers aimed at improving global health and wellbeing.	8/4/26	1/1/27
AHA Postdoctoral Fellowship Enhances the training of postdoctoral applicants who are not yet independent. The applicant must be embedded in an appropriate investigative group with the mentorship, support, and relevant scientific guidance of a research mentor.	8/5/26	1/1/27
Institutional Award for Undergraduate Student Training This award is made to qualified institutions that can offer a meaningful research experience that supports the AHA mission that encourages undergraduate college students from all disciplines to consider research careers.	9/9/26	1/1/27
AHA Institutional Research Enhancement Award (AIREA) Stimulates research at educational institutions that provide baccalaureate or advanced degrees related to scientific research training. Eligible institutions may not have been major recipients of NIH support. Awards provide funding for small-scale research projects related to cardiovascular diseases and brain health, enhancing the research environment at eligible institutions, and exposing students to research opportunities.	9/10/26	1/1/27
Career Development Award Supports highly promising healthcare and academic professionals in the early years of first professional appointment to assure the applicant's future success as a research scientist in the field of cardiovascular and/or cerebrovascular disease research.	12/1/26	4/1/27

See more funding opportunities through the American Heart Association, HERE.

American Heart Association.

Additional Funding Opportunities

Opportunity - Thoracic Surgery Foundation	Application open date	Deadline
Southern Thoracic Surgical Association (STSA) Resident Research Award Through the generosity of the Southern Thoracic Surgical Association (STSA), this award provides up to $40,000 per year for up to two years to support the research fellowship of a resident who has not yet completed cardiothoracic surgical training. During the fellowship, the resident will work in a cardiothoracic surgical clinical or laboratory research program and must be working or training in the STSA Membership region. STSA membership is not required, but applicants must meet STSA membership eligibility requirements.	7/1/26	9/15/26
TSF Resident Research Fellowship Award This award provides up to $60,000 per year for up to two years to support the research fellowship of a resident who has not yet completed cardiothoracic surgical training. During the fellowship, the resident will work in a cardiothoracic surgical clinical or laboratory research program.	7/1/26	9/15/26
STS Research Award This award provides operational support of original research efforts by cardiothoracic surgeons who have completed their formal training, and who are seeking initial support and recognition for the research program. Awards of up to $90,000 per year for up to two years are granted to support the work of an early-career cardiothoracic surgeon (within seven years of first faculty appointment at time of application deadline). The STS Research Award designation is given to the highest-ranking TSF Research Award application.	7/1/26	9/15/26
TSF Research Award This award provides operational support of original research efforts by cardiothoracic surgeons who have completed their formal training, and who are seeking initial support and recognition for the research program. Awards of up to $85,000 per year for up to two years are granted to support the work of an early-career cardiothoracic surgeon (within seven years of first faculty appointment at time of application deadline).	7/1/26	9/15/26
STS Database Clinical Research Fellowship Award The STS Research and Analytic Center (RAC) is the home for database harvest analytics and clinical research efforts leveraging the family of cardiothoracic surgery registries within the STS National Database. The transition of database and research analytics in-house to the STS RAC presents an opportunity for clinical fellows to deeply engage in STS clinical outcomes research activities working closely with the in-house database and analytics staff, gaining fundamental knowledge in statistical modeling and research based on the STS Database. In collaboration with the Thoracic Surgery Foundation, the STS Research and Analytic Center will support one research fellow for a one-year period with a grant of $80,000. This award is open to those in active residency training in an approved ACGME or equivalent training program, or within the first two years of practice.	7/1/26	9/15/26

Thoracic Surgery Foundation

Select Publications

Share your work! Increase your impact!
Email cvri@bcm.edu with your latest publications and we will share it with our CV community on social media.

Nguyen A, Shafii A, Loor G, Chatterjee S, Civitello A, Frazier OH, Liao K. Does Gastrointestinal Bleeding Increase the Risk of Thromboembolic Events in Patients Supported With CF-LVADs? Artif Organs. 2026 Jan 21.

Shah V, Ferrino L, Reaves-O'Neal D, Doan TT, Sachdeva S, Rusin CG, Lior D, Puelz C, Masand PM, Molossi S. A computational approach for intramural length estimation in anomalous aortic origin of a coronary artery. Front Cardiovasc Med. 2026 Feb 2;12:1721523.

Kiener AJ, Croft J, Harris KN, Banerjee A, Sanchez AA, Wehrens XHT, Parthiban A, Gao X, Doan TT, Nguyen MB. Three-dimensional Versus Two-Dimensional Echocardiographic Assessment of Left Atrial Volume and Deformation in Children. Pediatr Cardiol. 2026 Feb 11.

Zhang AJ, Chelu MG, Taing K, Birnbaum Y. P-wave peak time: An emerging electrocardiographic marker of atrial stress and ischemic burden-review. J Electrocardiol. 2026 Mar-Apr;95:154211. doi: 10.1016/j.jelectrocard.2026.154211. Epub 2026 Feb 15.

O'Sullivan D, Mayourian J, Anjewierden S, Liu K, Attia ZI, Lopez-Jimenez F, Friedman PA, Doan T, Patterson L, Dugan J, Johnson JN, Valdes S, Penny DJ, Triedman JK, Kim JJ, Niaz T, Morris SA, Madhavan M. Multicenter validation of AI-enabled ECG for pediatric biological sex prediction. NPJ Digit Med. 2026 Feb 26;9(1):291.

Miles TJ, Guinn MT, Tan X, Qi H, Orozco-Sevilla V, Moon MR, Coselli JS, Rosengart TK, Li M, Chatterjee S, Ghanta RK. Tissue perfusion pressure: A novel hemodynamic measure to assess risk of acute kidney injury after cardiac surgery. J Thorac Cardiovasc Surg. 2026 Feb;171(2):455-462.e3.

Norton DM, Chavez AI, Pignatelli RH, Patterson LW, Miyake CY, Doan TT. Diagnosing Mitral Annular Disjunction in Patients ≤21 Years in a Large Pediatric and Congenital Echocardiographic Laboratory. J Am Soc Echocardiogr. 2026 Feb;39(2):225-228.

Savorgnan F, Acosta S, Prabhu J, Pilla P, Shah V, Flores S, Loomba RS. The Agreement Between Pulse Oximetry and Measured Arterial Oxygen Saturations in Postoperative Functionally Univentricular Patients. Children (Basel). 2026 Mar 18;13(3):415.

Lynch PT, Xiao EY, Baqai FM, Draeger DA, Lewis AM, Razavi M, Mathuria N, Cheng J, Seger J, Rasekh A, Saeed M, Chelu MG. Success Rates, Complications, and Mortality with Laser Lead Extraction of Cardiovascular Implantable Electronic Devices. Cardiovasc Drugs Ther. 2026 Mar 20.

Hamid A, Sewell T, Bhatt S, Spencer S, Hostin D, Metcalf GA, Gibbs RA, Nambi V, Abushamat LA, Ballantyne CM. The impact of genetic testing on physician practice in specialized cardiovascular clinics. J Clin Lipidol. 2026 Mar;20(3):677-681.

Lapite A, Burk VA, DeCuir J, Ishigami J, Saadatagah S, Natarajan P, Ballantyne CM, Platz EA, King KY. Association of infection frequency and incident clonal hematopoiesis of indeterminant potential. Exp Hematol. 2026 Mar 23;158:105420.

Bishop RS, Doan TT, Lara C, Eilers LF, Tunuguntla HP, Spinner JA, Pignatelli RH, Parthiban A, Wilkinson JC. Echo-Derived Right Ventricular Strain Identifies Pulmonary Hypertension in Pediatric Ventricular Assist Device Patients. ASAIO J. 2026 Apr 1;72(4):348-353.

Imanishi M, Samanthapudi VSK, Le NT, Rivera LA, Kim JH, Lee J, Mejia GF, Hoang O, Deswal A, Schadler KL, Hildebrandt MAT, Yusuf SW, Wang G, Burks JK, Nurieva RI, Palaskas NL, Nead KT, Amir ED, Koutroumpakis E, Lin SH, Abe JI, Kotla S. Ionizing radiation expands a p90RSK-activated patrolling monocyte subset: modulation by colchicine. Front Cardiovasc Med. 2026 Apr 15;13:1763490.

Pickett JK, Hirsch JR, Tan MCC, Rasekh A, Molina-Razavi JE, Razavi M, Chelu MG, Safavi-Naeini P, Saeed M. Characterization of AV Nodal Left Inferior Extension by Use of High-Density Mapping and Voltage-Time Relationship. J Cardiovasc Electrophysiol. 2026 May;37(5):925-929.

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