

CARDIOVASCULAR RESEARCH INSTITUTE

FROM THE DIRECTOR

NEWSLETTER SUMMER 2021

CVRI has many things to celebrate as we settle into the summer months! Throughout the last year, we have administered three **graduate school courses** focusing on cardiovascular education in which faculty received top rankings for their teaching by the students, hosted a successful **8th Annual Symposium** virtually, headed an outstanding **seminar series**, and CVRI members have had a myriad of achievements.

An achievement to note is the collaboration between CVRI and the Human Genome Sequencing Center (HGSC) on **HeartCare: A Cardiovascular Genomics Study**. Recently, a paper titled "Genetic testing in ambulatory cardiology clinics reveals high rate of findings with clinical management implications" was accepted to Genetics in Medicine. Several CVRI members collaborated on the study and authored the publication. The HeartCare study has been ongoing for a few years and has been instrumental in genetic testing for cardiovascular disease and related conditions.

Please join me in congratulating everyone on a successful year!



Xander Wehrens, MD, PhD

The Texas Children's Heart Center is recognized across the globe as a leader in pediatric congenital heart surgery. US News & World Reports recently ranked Texas Children's Hospital as the #1 hospital for pediatric cardiology and heart surgery in the nation. Physicians, surgeons, and research faculty are world-renowned leaders in pediatric cardiology, congenital heart surgery, cardiovascular anesthesiology, and cardiac intensive care. Congratulations for maintaining this #1 spot for 5 years in a row!

**#1
in the
Nation**
by U.S. News
and World
Report



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FACULTY SPOTLIGHT

Dr. Ravi K. Birla - The Center for Congenital Cardiac Research

The Center for Congenital Cardiac Research within the Texas Children's Heart Center was founded November 16, 2020 to support, basic, clinical and translational research to solve complex problems in pediatric heart surgery. The vision of C3R is to improve the quality of care for pediatric heart patients by developing new surgical tools based on the molecular mechanisms underlying congenital heart disorders.

Under the leadership of *Ravi K. Birla, PhD* and Lauren Goldie, PhD, CCRP the Center for Congenital Cardiac Research is tackling congenital heart disease (CHD) research by integrating clinical and basic science and working on therapeutic innovations from the bench to bedside. Dr. Ravi Birla is an Associate Professor, and Dr. Birla joined the faculty at BCM in November 2020 and is primarily overseeing the research operations for the Center for Congenital Cardiac Research at the Texas Children's Hospital's Heart Center. Dr. Birla earned a PhD in biomedical engineering from the University of Michigan, Ann Arbor and was the first person in the world to bioengineer self-organized heart muscles. Dr. Lauren Goldie is an Assistant Professor of Surgery, and Director of Clinical Research at the Center for Congenital Cardiac Research. She joined the faculty in November 2019 and primarily oversees clinical operations for the Center. Dr. Goldie earned her PhD in biochemistry and molecular biology for the University of Western Australia and completed a postdoctoral fellowship training with Karen Hirschi, PhD in developmental vascular biology at Baylor College of Medicine. She served as a Staff Scientist at Regeneron Pharmaceuticals, Inc. before returning to BCM to establish an independent basic research program in vascular/endothelial cell niche biology at the USDA/ARS Children's Nutrition Research Center (CNRC).

Dr. Birla is currently working on regenerative medicine initiatives for advanced heart failure in pediatric patients. One of the priority projects is hypoplastic left heart syndrome (HLHS), which is a congenital defect that can be diagnosed in utero as early as at 30 weeks of gestation. Patients with this condition often have a surgery called the Norwood procedure within the first two weeks after birth. Birla's team takes heart biopsies and blood samples during this surgery and studies the myocardial properties to see if they can differentiate between the patients who do and do not thrive following this complex operation. The team is working to identify as early as possible which patients will need further therapies in the interim while they are awaiting heart transplant. In a separate collaboration with Dr. Xander Wehrens' laboratory at Baylor College of Medicine, samples from the Birla lab at TCH are converted to induced pluripotent stem cells (iPSCs) followed by conversion to cardiomyocytes. Birla's team then studies pathophysiology and functional deficiencies of these cardiomyocytes with proteomics, RNA sequencing, and functional studies such as contractility measurements. Dr. Birla's research relies on samples from the Texas Children's Cardiac Surgery Biobank. This is a biorepository that was developed over a decade ago and currently houses over 20,000 samples from over 11,000 patients. He is also currently working with the Fetal Center to partner on stem cell research for therapeutic purposes related to the treatment of congenital disorders of the heart. Dr. Goldie's team focuses on clinical management and outcomes associated with CHD. Goldie's role as a liaison between clinicians and scientists bolsters Dr. Birla's ongoing research. In addition, Dr. Goldie has access to several clinical data registries that support congenital heart surgery (CHS) clinical outcomes research. These registries house data collected from patients with CHD at both local and national levels.



Ravi K. Birla, PhD

Associate Professor

Pediatric Surgery
Congenital Heart Surgery Division
Baylor College of Medicine

Director

Basic and Translational Research
The Center for Congenital Cardiac
Research
Texas Children's Heart Center

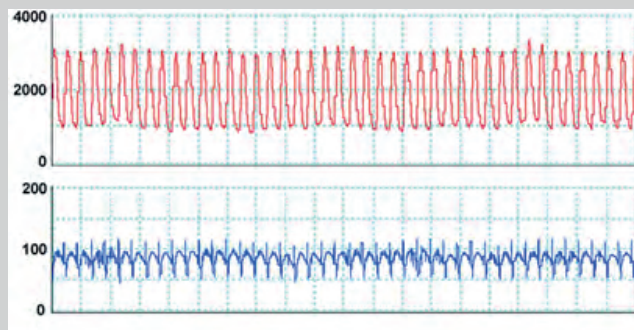
rxbirla@texaschildrens.org

According to Dr. Christopher Caldarone, MD, Chief, Congenital Heart Surgery at TCH, “both Dr. Birla and Dr. Goldie’s leadership is critically important in orchestrating the clinical, and basic and translational research mission of the Division of Congenital Heart Surgery at Texas Children’s Hospital. We have an enormous potential to attack clinical important problems and under their leadership we anticipate that we will begin to have real impact in the world of congenital heart disease”.

According to Dr. Sundeep G. Keswani, MD, Surgical Director of Basic Science Research at TCH, “We are thrilled to launch the Center for Congenital Cardiac Research and are thrilled that Dr. Birla has assumed a leadership role in championing this effort and remain confident of the success and growth of this program”.

Current goals for the Center for Congenital Cardiac Research are to use various tools and -omics approaches to decipher the molecular mechanisms underlying congenital disorders and to develop therapeutic strategies to improve patient outcomes. In addition to working on HLHS, Dr. Birla will continue to collaborate with clinicians who see patients with left ventricular assist devices (LVAD) to develop therapies for patients who continue to decline while supported by the LVAD. He will also work with cardiovascular surgeons to obtain biopsy samples from transplant patients after surgery and analyze the endothelial cells to better understand Ischemia Reperfusion Injury (IRI). Dr. Birla is actively establishing collaborations with clinicians who see patients and have an interest in cardiovascular research. Programs for the Heart Center will be built around the research questions posed by physicians and basic scientists, and the ability to collect data in real time from surgeons will be a significant contributor to the growth of the Center.

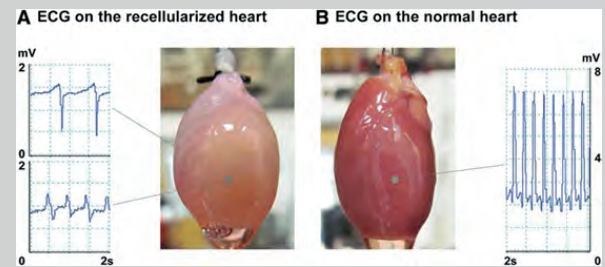
By Amber Eakin



Bioengineered Heart Muscle

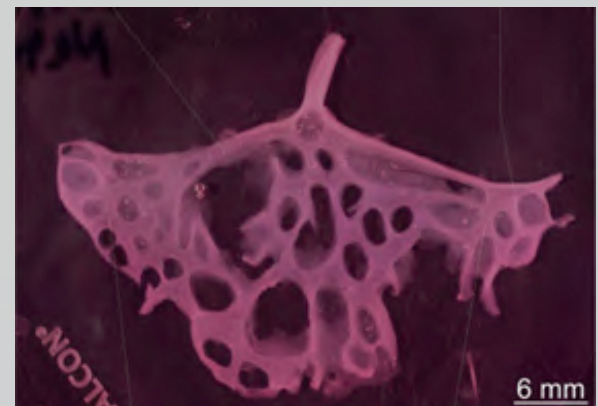
Primary cardiomyocytes were seeded within a 3D fibrin gel, supporting the formation of heart muscle tissue. Twitch force of contraction (upper tracing, red) and electrical currents (lower tracing, blue) were used to demonstrate function of the bioengineered heart muscle tissue.

From the Birla Lab



Bioengineered Hearts

Rodent hearts were decellularized using a detergent based process. Primary cardiomyocytes were populated within acellular rodent heart scaffolds. Electrical currents in the recellularized hearts were used to assess functional performance.



Bioengineered Purkinje Network

Human adipogenic mesenchymal stem cells were converted to Purkinje cells, combined with a type I collagen scaffold and used to bioprint Purkinje Networks.

Novel Gene Therapy For Heart Failure Closer To The Clinic

By Graciela Gutierrez

Research at Baylor College of Medicine, the Texas Heart Institute and collaborating institutions is moving a novel promising gene therapy to treat heart failure closer to the clinic.

Published in *Science Translational Medicine*, the study showed that knocking down the Hippo signaling pathway in cardiomyocytes in the hearts of pigs after they had a heart attack, resulted in heart tissue renewal and improved function when compared with pig hearts in which the Hippo signaling pathway was not modified. Given that the pig's heart is considered a valuable model to study the human heart, the findings suggest that this gene therapy may be useful in treating human heart failure.

Heart failure remains the leading cause of mortality in the western world, causing more deaths than all cancers combined. The best current treatment for heart failure is a heart transplant, but the number of hearts available for transplant is limited, underscoring the need for alternative treatments.

"One of the interests of my lab is to develop ways to heal heart muscle by studying pathways involved in heart development and regeneration," said corresponding author Dr. James Martin, professor and Vivian L. Smith Chair in Regenerative Medicine at Baylor and director of the Cardiomyocyte Renewal Lab at the Texas Heart Institute.

Previous work has shown that when patients are in heart failure there is an increase in the activity of the Hippo signaling pathway, which acts to inhibit heart repair. Earlier work from the Martin lab revealed that turning the Hippo signaling pathway off in a mouse model that mimics advanced human heart failure resulted in the murine hearts recovering their pumping function.

"Encouraged by these results, we took the next step by testing whether turning the Hippo signaling pathway off in pig hearts would also help the injured hearts recover," said first author Dr. Shijie Liu, a postdoctoral associate in the Martin lab.

This study was supported by grants from the NIH (HL 127717, HL 130804, and HL 118761), the Vivian L. Smith Foundation and Brown Foundation and State of Texas funding. Additional funding was provided by the LeDucq Foundation's Transatlantic Networks of Excellence in Cardiovascular Research (14CVD01 to J.F.M.), the MacDonald Research Fund Award 16RDM00, a grant from the Saving Tiny Hearts Society and an American Heart Association Postdoctoral Fellowship (18POST34060186).

An essential first translational step before taking the gene therapy to humans.

In the current study the researchers modeled in the pig what happens in a human patient that has a heart attack and assessed the effect of gene therapy knockdown of the Hippo signaling pathway on heart recovery.

"Pigs with a heart attack present a condition that is similar to what you might find in a human patient who has a blockage in the main artery of the heart, which leads to myocardial infarction," Martin explained. "After myocardial infarction in the pigs, we administered the gene therapy, to turn off Hippo directly in heart of the pigs. Finally, we compared the effects of therapy or no therapy on heart function."

"We were excited by the results," Liu said. "Three months after we treated the pigs, those that received the gene therapy had improved their heart function, showed signs that their cardiomyocytes were regenerating, had less fibrosis or scarring and had evidence that new blood vessels had formed. The procedure was shown to be safe since the pigs tolerated the therapy very well."

"Our findings support our goal to move on to human clinical trials," Martin said. "This is a potentially transformational strategy to treat human heart failure. It taps into the healing capacity of the heart, promoting heart muscle self-repair and improved function, which can make a substantial difference in the lives of those who suffer a heart attack."

Other contributors to this work include Ke Li, Leonardo Wagner Florencio, Li Tang, Todd R. Heallen, John P. Leach, Yidan Wang, Francisco Grisanti, James T. Willerson, Emerson C. Perin and Sui Zhang. The authors are affiliated with one or more of the following institutions: Baylor College of Medicine, Texas Heart Institute and University of Pennsylvania Perelman School of Medicine.

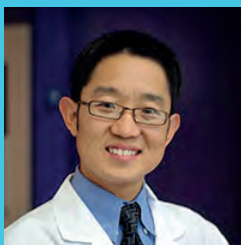
DAPI stained heart section

Image courtesy of **Mohit Hulsurkar, PhD** from the Xander Wehrens, MD, PhD Lab

Heart section stained with DAPI. Imaged at 10X with tiling using a Zeiss confocal microscope. Images stitched with Zen Black software

AWARDS

Norton Rose Fulbright Faculty Excellence Award for Full Professor



Jeffrey J. Kim, MD

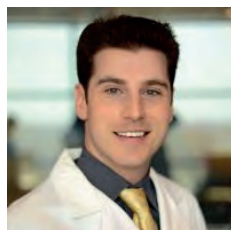
Norton Rose Fulbright Faculty Excellence Award for Development of Enduring Educational Materials



Arvind Chandrakantan, MD



Ravi K. Ghanta, MD



Joshua Kailin, MD



Vijay Nambi, MD

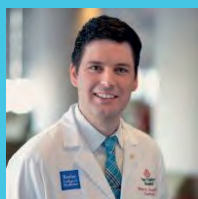
Norton Rose Fulbright Faculty Excellence Award for Teaching and Evaluation



Ritwick Agrawal, MD



Arvind Chandrakantan, MD



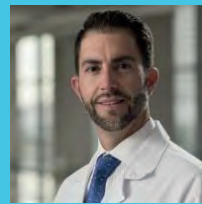
Peter R. Ermis, MD



Molly Horstman, MD



Parag N. Jain, MBBS



Javier J. Lasa, MD



Keila N. Lopez, MD



Ruth A. Luna, PhD



Athar M. Qureshi, MD



Alan F. Riley, MD



Poyyapakkam Srivaths, MD



Nathan Sundgren, MD

AWARDS

Master Clinician Award for Excellence in Patient Care



Carolyn A. Altman, MD



William J. Dreyer, MD

Star Faculty Award for Excellence in Patient Care



Leo Simpson, MD

Clark Faculty Service Award



Frederick A. Pereira, PhD

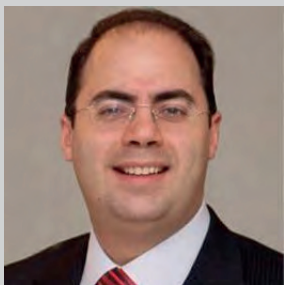


Yasmeen Quadri, MD



Salim S. Virani, MD, PhD

AWARDS



On May 19, 2021, **Dr. Hani Jneid** received the Gifted Educator award at the American College of Cardiology 2021 annual meeting. Congrats! Watch his acceptance speech [here](#).



Yuriana Aguilar-Torres, PhD received the AHA Postdoctoral Fellowship Award. Congratulations!



Congratulations to **Dr. Salim Virani** for his appointment as Chair of the American College of Cardiology Global Quality Solutions Workgroup.



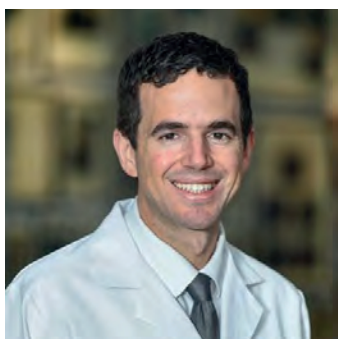
Dr. Raymond Stainback, has been named president of the American Society of Echocardiography. He previously served as VP, then president elect.



Dr. Joseph Mills was elected vice president of the Society for Vascular Surgery for 2021-22 at the society's annual business meeting, held virtually on June 16. Mills is professor and chief of the division of vascular surgery and endovascular therapy.



Jane Grande-Allen, PhD the Isabel C. Cameron Professor of Bioengineering at Rice's Brown School of Engineering, has been named one of 26 fellows of the International Academy of Medical and Biological Engineering (IAMBE) for 2021.



Rice ENRICH and Baylor's Interdisciplinary Surgical Technology and Innovation Center (INSTINCT) awarded \$60,000 in grants to Gabriel Loor, MD, FACC, Associate Professor of Surgery at Baylor and Meng Li, Noah Harding Assistant Professor in Statistics at Rice received the to study inflammation following lung transplantation and search for the cause of inflammatory responses that differ between men and women. The research may point to personalized treatment protocols for transplant patients. Also, the development of methods for identifying biomarkers from small samples with false discovery control will be broadly applicable in personalized medicine.

SAVE THE DATE

CARDIOVASCULAR RESEARCH INSTITUTE 9TH ANNUAL SYMPOSIUM

KEYNOTE SPEAKER

Wednesday
April 6, 2022

Cullen Auditorium



Gregg L. Semenza, M.D., Ph.D

Director: Vascular Program
Institute for Cell Engineering

Professor: Genetic Medicine, Biological Chemistry
Medicine, Oncology, Pediatrics, Radiation Oncology and
Molecular Radiation Sciences

Johns Hopkins University

[Bio Link](#)

The Nobel Prize in Physiology or Medicine 2019

CVRI EDUCATION

Graduate School of Biomedical Science Courses

The Cardiovascular Research Institute has been actively working to expand training programs in cardiovascular sciences. The CVRI will offer 3 graduate school courses to PhD students, postdocs, clinical trainees and all others interested in cardiovascular disease. Lectures are available on Zoom. Mid-term and Final Exams are provided via BlackBoard. For those interested in cardiovascular sciences who are not enrolled formally nor auditing the course, viewing of the scheduled zoom classes are available as well. Email CVRI@bcm.edu for zoom details. CVRI hopes to spark interest in cardiovascular sciences to support the next generation of innovative scientists.

TERM 3 **CARDIOVASCULAR DISEASES**

2 Credits

This course provides a general overview of the main, common cardiovascular diseases and their causes. Topics covered include atherosclerosis, hypertension, congenital heart disease, ischemic heart disease, cerebral stroke, cardiac arrhythmias, and the effects of aging on the cardiovascular system. TR | 1.3.2022 – 3.4.2022 | 10 AM- 11 AM

Course Director: Xander Wehrens, MD, PhD

Registration Term 3 : November 22, 2021- December 3, 2021 GS-DD-6210

TERM 4 **Advanced Topics in Cardiac Pathophysiology and Disease**

4 Credits

This course covers the fundamentals of cardiac development, and cardiac function in both physiological and pathological conditions. The course will also discuss the cutting-edge research approaches used in cardiovascular research.

MTWR | 3.14.2022 -5.13.2022 | 9 AM- 10 AM

Course Director: Na Li, PhD & Xander Wehrens, MD, PhD

Registration Term 4: February 14, 2022 - February 24, 2022 GS-DD-6403

Term 5 **Advanced Topics in Vascular Pathophysiology and Disease**

4 Credits

This course emphasizes cardiovascular disease pathology with a focus on vascular disorders and atherosclerosis. Lectures will cover all components of the normal system, inherited forms of disease, and the pathogenesis of acquired types of disease. Topics include vascular diseases, lipid disorders, atherosclerosis, hemostasis and bleeding disorders, microcirculation disorders, stroke, hypertension, and peripheral artery disease. The course will also discuss the cutting-edge research approaches used in cardiovascular research.

MTWR | 3.23.2022 - 7.22.2022 | 9 AM- 10 AM

Course Director: William Lagor, PhD & Xander Wehrens, MD, PhD

Registration Term 5: April 25, 2022 - May 6, 2022

GS-DD-6404

2021 Graduate School Bulletin

For further information , please contact [CVRI @bcm.edu](mailto:CVRI@bcm.edu) .



2021 FALL CVRI SEMINAR SERIES

Wednesdays 12-1 pm Virtual Zoom Seminar



August 25, 2021

Annet Kirabo, DVM, MSc, PhD, FAHA

Assistant Professor

Medicine, Molecular Physiology
& Biophysics

Division of Clinical Pharmacology

Vanderbilt University

October 13, 2021

Erin D. Michos, MD, MHS, FACC, FAHA

Associate Professor

Medicine & Epidemiology

Johns Hopkins University



September 1, 2021

Bernhard Kühn, MD

Associate Professor

Pediatrics and Cell Biology

University of Pittsburgh

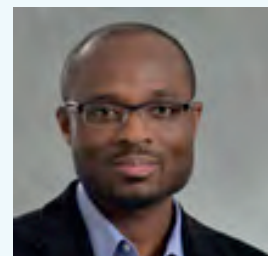
November 3, 2021

Patrick Osei-Owusu, PhD, FAHA

Associate Professor

Physiology & Biophysics

Case Western Reserve University



September 15, 2021

Sean M. Wu, MD, PhD, FACC

Associate Professor

Medicine (Cardiovascular
Medicine) & Pediatrics

Stanford University

December 8, 2021

Yibin Wang, PhD

Chair, Cardiovascular Theme

Professor, Anesthesiology David

Geffen School of Medicine

University of California

Los Angeles



Student Lead Seminar

BCM Alumni 1993



October 6, 2021

Kory J. Levine, MD, PhD

Associate Professor

Medicine

Center for Cardiovascular Research

Washington University

Select Wednesdays

12PM- 1PM

Zoom Virtual Seminar Series



Dr. Mark L. Entman Distinguished Lecture in Cardiovascular Research

Aarif Khakoo, MD

Head of Research and Development
Calico Life Sciences
South San Francisco, CA

November 17, 2021

12 PM- 1 PM CST

Email cvri@bcm.edu for a calendar invite and further details.



Baylor
College of
Medicine

CARDIOVASCULAR
RESEARCH INSTITUTE

SAVE THE DATE

2021-2022 Pilot Awards

CVRI will be accepting proposals in August 2021 for the 2021-2022 Pilot Awards.

Deadline for submission is **September 13, 2021.**

Funding of selected proposals will be available October 2021- June 2022.

Goal: To promote the writing of multi-PI grants in the area of cardiovascular research (clinical, translational or basic).

Details forthcoming.

FUNDING

OVERVIEW OF AHA RESEARCH AWARD OFFERINGS OPEN INVITATION WEBINARS

Each webinar will consist of a 20-minute overview of the AHA Research award offerings, plus a 10-minute Q & A session. These calls are a great opportunity for scientists, researchers, institutions, and grant officers to get application questions answered.

- Tuesday, August 10, 2021, at 10:00 am CT - [Click to join](#)
- Tuesday, October 26, 2021, at 10:00 am CT - [Click to join](#)
- Thursday, January 27, 2022, at 10:00 am CT - [Click to join](#)
- Tuesday, March 29, 2022, at 10:00 am CT - [Click to join](#)



**American
Heart
Association®**

2020-21 Application Deadlines

Program

Application Deadline

Award Start Date

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.

**Thursday,
September 9, 2021**

January 1, 2022

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.

**Tuesday,
September 14, 2021**

January 1, 2022

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.

**Wednesday,
September 15, 2021**

January 1, 2022

Career Development Award

Supports highly promising healthcare and academic professionals in the early years of first professional appointment, to explore innovative questions or pilot studies that will provide preliminary data and training to assure the applicant's future success as a research scientist in the field of cardiovascular and/or cerebrovascular disease research.

**Monday,
December 6, 2021**

April 1, 2022

FUNDING

AUGUST 2021

Ruth L. Kirschstein National Research Service Award (NRSA) Individual Postdoctoral Fellowship. (Parent F32) Deadline: August 8, 2021. PA-21-048.

Ruth L. Kirschstein National Research Service Award (NRSA) Individual Predoctoral Fellowship to Promote Diversity in Health Related Research. (Parent F31 - Diversity) Deadline: August 8, 2021. PA21-052.

NIH Director's New Innovator Award Program (DP2 Clinical Trial Optional) Deadline August 20, 2021. RFA-RM-21-016.

NIH Support for Conferences and Scientific Meetings. (Parent R13 – Clinical Trial Not Allowed), Deadline: August 12, 2021. PA-21-151.

SEPTEMBER 2021

NIH Directors Transformative Research Awards (R01 Clinical Trial Optional) Office of Strategic Coordination (Common Fund) Deadline: September 01, 2021 (RFA-RM-21-017.)

The Thoracic Surgery. Foundation Research Award. Up to \$40,000/ year for up to two years to support early-career cardiothoracic surgeon work. Deadline: September 15, 2021.

The Thoracic Surgery Foundation STS Research Award. Given to the highest-ranking TSF research application awarded by TSF based on merit. Deadline: September 15, 2021.

The Thoracic Surgery Foundation Nina Starr Braunwald Research Award. Up to \$40,000/year for 1-2 years to support the work of an early career woman cardiac surgeon. Deadline: September 15, 2021.

Available funding support for Resuscitation and Acute Critical Care research from ZOLL Foundation

The ZOLL Foundation is a 501 (c)(3) non-profit organization that provides grants to support research and educational methods designed to improve resuscitation practices, prevent patient deterioration associated with cardiac arrest, and enhance the care of acute patients to reduce mortality and morbidity. Its focus is on providing seed grants for new investigators starting on the path of resuscitation and acute critical care research. **The application deadline is September 30, 2021.**

For additional questions, please email Susan Schumacher, ZOLL Foundation Administrator sschumacher@zollfoundation.org.

The Thoracic Surgery Foundation Resident Research Fellowship Award. Up to \$30,000/year for 1-2 years supporting the research of a resident in cardiothoracic surgical training. Deadline: September 15, 2021.

The Thoracic Surgery Foundation Nina Starr Braunwald Research Fellowship. Up to \$30,000/year 1-2 years to support the research of a resident in cardiothoracic surgical training. Deadline: September 15, 2021.

OCTOBER 2021

NIH Research Project Grant. (Parent R01 Clinical Trial Not Allowed). New application Deadline: October 5, 2021. PA-20-185.

NIH Research Project Grant. (Parent R01 Clinical Trial Required). New application Deadline: October 5, 2021. PA-20-183.

NIH Research Project Grant. (Parent R01 – Basic Experimental Studies with Humans Required). New Application Deadline: October 5, 2021. PA20-184.

NIH - R01 Improving Outcomes in Cancer Treatment Related Cardiotoxicity. Deadline: October 5, 2021. PA-19-112.

NIH - R01 The Mechanistic Role of the Microbiome in the Pathobiology of Heart, Lung, Blood, and Sleep Diseases. Deadline: October 5, 2021. PA-18-784.

NHLBI- R01 Understanding and Reducing Cardiovascular Disease in Type 1 Diabetes Mellitus (R01 Clinical Trial Optional) Deadline: October 15, 2021. RFA-HL-21-014.

Click below to apply!

**The ZOLL
Foundation**

Supporting Resuscitation and
Acute Critical Care Research

SELECT PUBLICATIONS 2021

Myocarditis and inflammatory cardiomyopathy: current evidence and future directions. Tschöpe C, Ammirati E, **Bozkurt B**, Caforio ALP, Cooper LT, Felix SB, Hare JM, Heidecker B, Heymans S, Hübner N, Kelle S, Klingel K, Maatz H, Parwani AS, Spillmann F, Starling RC, Tsutsui H, Seferovic P, Van Linthout S. *Nat Rev Cardiol.* 2021 Mar;18(3):169-193.

COVID-19 in Adults With Congenital Heart Disease. Broberg CS, Kovacs AH, Sadeghi S, Rosenbaum MS, Lewis MJ, Carazo MR, Rodriguez FH 3rd, Halpern DG, Feinberg J, Galilea FA, Baraona F, Cedars AM, Ko JM, Porayette P, Maldonado J, Sarubbi B, Fusco F, Frogoudaki AA, Nir A, Chaudhry A, John AS, Karbassi A, Hoskoppal AK, Frischhertz BP, Hendrickson B, Bouma BJ, Rodriguez-Monserrate CP, **Broda CR**, Tobler D, Gregg D, Martinez-Quintana E, Yeung E, Krieger EV, Ruperti-Repilado FJ, Giannakoulas G, Lui GK, Ephrem G, Singh HS, Almeneisi HM, Bartlett HL, Lindsay I, Grewal J, Nicolarsen J, Araujo JJ, Cramer JW, Bouchardy J, Al Najashi K, Ryan K, Alshawabkeh L, Andrade L, Ladouceur M, Schwerzmann M, Greutmann M, Meras P, Ferrero P, Dehghani P, Tung PP, Garcia-Orta R, Tompkins RO, Gendi SM, Cohen S, Klewer S, Hascoet S, Mohammadzadeh S, Upadhyay S, Fisher SD, Cook S, Cotts TB, Aboulhosn JA. *J Am Coll Cardiol.* 2021 Apr 6;77(13):1644-1655.

HDAC Inhibition Reverses Preexisting Diastolic Dysfunction and Blocks Covert Extracellular Matrix Remodeling. Travers JG, Wennersten SA, Peña B, Bagchi RA, **Smith HE**, **Hirsch RA**, Vanderlinden LA, Lin YH, Dobrinskikh E, Demos-Davies KM, Cavaasin MA, Mestroni L, Steinkühler C, Lin CY, Houser SR, Woulfe KC, Lam MPY, McKinsey TA. *Circulation.* 2021 May 11;143(19):1874-1890.

Oral Antiplatelet Therapy After Acute Coronary Syndrome: A Review. Kamran, H; Jneid, H; Kayani, WT; Virani, SS; Levine, GN; Nambi, V; Khalid, U. *JAMA.* 2021 Apr 20;325(15):1545-1555.

Gene replacement of α -globin with β -globin restores hemoglobin balance in β -thalassemia-derived hematopoietic stem and progenitor cells. Cromer MK, Camarena J, Martin RM, Lesch BJ, Vakulskas CA, Bode NM, Kurgan G, Collingwood MA, Rettig GR, Behlke MA, Lemgart VT, **Zhang Y**, **Goyal A**, Zhao F, Ponce E, Srifa W, Bak RO, Uchida N, Majeti R, **Sheehan VA**, Tisdale JF, Dever DP, Porteus MH. *Nat Med.* 2021 Apr;27(4):677-687.

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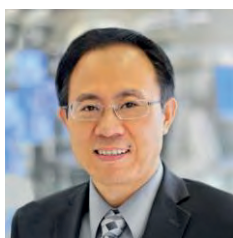
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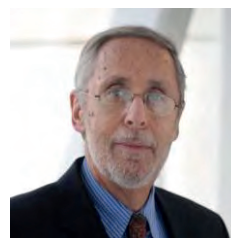
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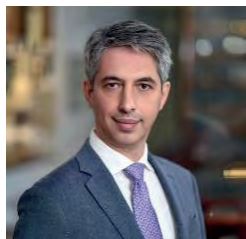
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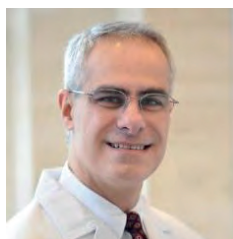
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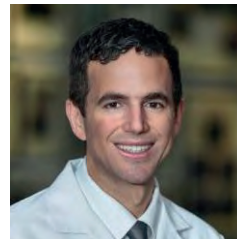
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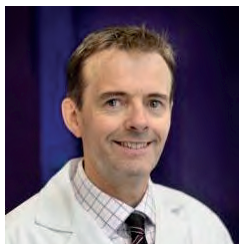
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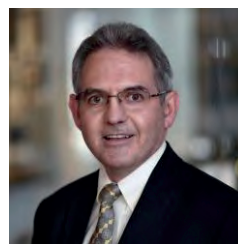
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