

Children's Heart Research and Outcomes Center



HeRO Highlights and Happenings

October 2021



OVERVIEW:

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Director's Update

As we move to the next academic year, it is a good time to reflect on the impact that HeRO had over the past year. During the pandemic, we learned a lot about the resilience of our research teams and how to adapt to changing regulations. With laboratories operating at 25% capacity for months on end, our students and fellows were able to not only get their research done, but also investigate new avenues. Studies looking at the effects of Covid-19 on cardiac cells, making treatment strategies for multisystem inflammatory syndrome, and looking at long-term Covid-19 outcomes became a priority. We are proud of what HeRO accomplished in response to the pandemic, but also that research continued in our critical areas. We opened a new stem cell trial in children with hypoplastic left heart syndrome, and are now enrolling patients in phase 2. We received nearly \$10M in grant commitments over the past year, and saw our community support us with increased philanthropy to help bring life-changing research to CHD patients. As we enter the new academic year, we are set to hire 2 new faculty members, move in to an amazing new building, and really take the next step at becoming one of the premier academic pediatric cardiology programs in the country. We could not have accomplished this without our tremendous doctors and nurses, researchers, and community, and hope you are able to celebrate our accomplishments again next year.



Thank you,

Mike

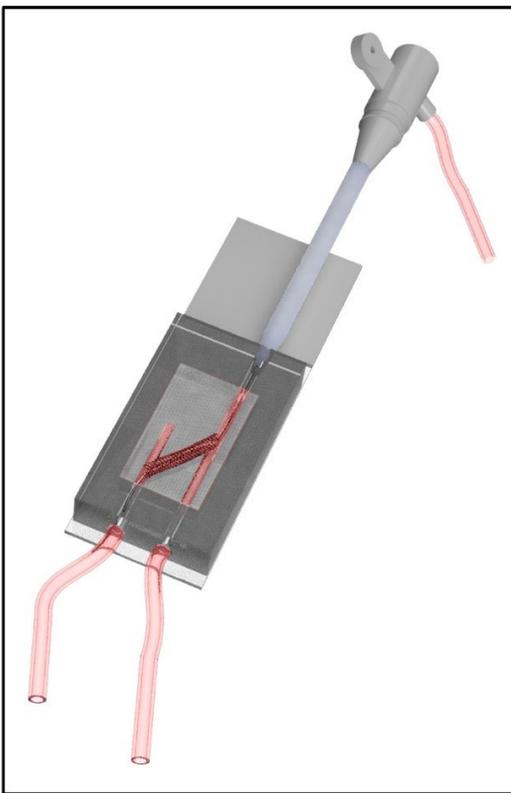
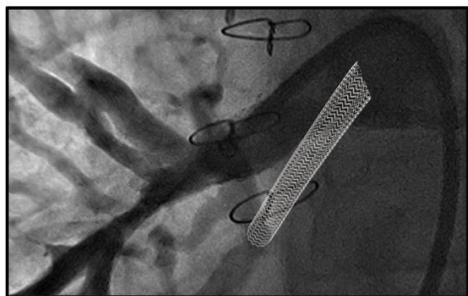
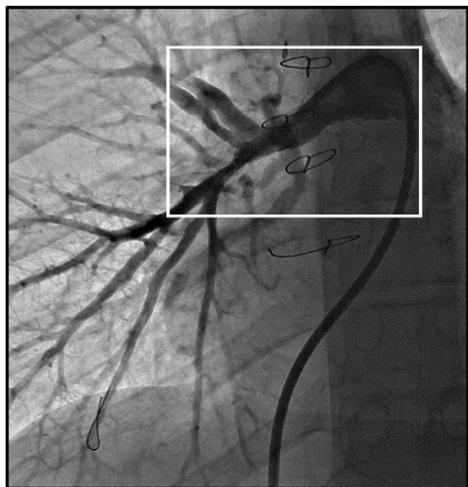
HeRO Researcher Spotlight

Dr. Holly Bauser-Heaton



As a pediatric interventional cardiologist and trained MD/PhD, I always thought wet lab research would be a part of my career. Through interventional training, I largely had to put my research on hold. In 2016, I was able to join the Heart Center as one of the interventional cardiologists and began seeking bench research opportunities. The HeRO group has been excellent and the support I've received from my close collaborator, Dr. Serpooshan, has allowed me to advance my research career to a true physician scientist. Being the co-director of the pulmonary artery program here at Children's Healthcare of Atlanta, I am tasked with taking care of complex pulmonary artery disease. This group of patients always present interesting scenarios for the most appropriate interventions and prevention of further stenosis. It is this work that has led to our 3D bioprinted bilayer models (see *Image 1*) that allow the study of cellular microenvironments and behavior. Our goal is to develop true personalized medicine applications for each of our pulmonary vascular patients in the Heart Center.

I was honored to have been awarded a K12 through the Atlanta Pediatric Scholars program under co-mentors, Drs. Mahle and Lam. This experience has been invaluable to get my research lab started and to grow quickly. We have been able to submit a R01 recently (fingers crossed!) and our lab was recently awarded a grant from Saving Tiny Hearts for our pulmonary vascular works. I also enjoy collaborations with Drs. Desai and Dasi at Georgia Tech investigating the role of steerable catheters and applications for transcatheter pulmonary valves.



In my spare time, I enjoy spending time with my four children and volunteering as a girl scout troop leader. I enjoy being outdoors and find my peace listening to all types of music. While balancing clinical and research can be difficult and time demanding during periods, the support from colleagues allows me to embark on this amazing journey.

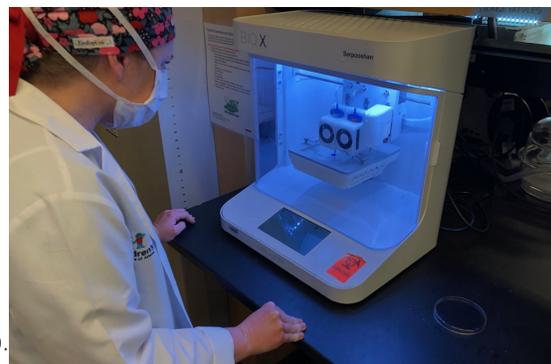


Image 1. 3D bioprinted model.

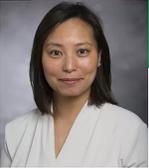
Image 2. Dr. Bauser-Heaton in lab.

HeRO Publications

Mitochondrial functional resilience after TFAM ablation in the adult heart

Nasab Ghazal, Jessica Peoples, Tahmina Mohiuddin, & Jennifer Kwong
(June, 2021)

Dr. Kwong's article was editorially selected by the American Physiological Society to be an American Physiological Society Select article!



Implementation of a Practice Plan for the Outpatient Cardiac Evaluation of Children after Acute SARS-CoV-2 Infection and a Report of Outcomes

Andrew Dailey-Schwartz, Jameson Dyal, William Mahle, & Matthew Oster
(July, 2021)



Patient-Specific 3D Bioprinted Models of Developing Human Heart

Alexander Cetnar, Martin Tomov, Liqun Ning, Bowen Jing, Andrea Theus,...Holly D. Bauser-Heaton, & Vahid Serpooshan
(December, 2020)



Loss of the mitochondrial phosphate carrier SLC25A3 induces remodeling of the cardiac mitochondrial protein acylome

Jessica Peoples, Nasab Ghazal, Duc Duong, Katherine Hardin, Janet Manning, Nicholas Seyfried, Victor Faundez, & Jennifer Kwong
(July, 2021)

Cyclin D2 Overexpression Enhances the Efficacy of Human Induced Pluripotent Stem Cell-Derived Cardiomyocytes for Myocardial Repair in a Swine Model of Myocardial Infarction

Meng Zhao, Yuji Nakada, Yuhua Wei, Weihua, Bian, Yuxin Chu, Anton Boroviagin, Min Xie, Wugiang Zhu, Thanh Ngyuen, Yang Zhou, Vahid Serpooshan, Gregory Walcott, & Jianyi Zhang
(May, 2021)



Cryopreservation and CO₂-independent culture of 3D cardiac progenitors for spaceflight experiments

Antonio Rampoldi, Rajneesh Jha, Jordan Fite, Gene Boland, & Chunhui Xu
(February, 2021)



Management of Pediatric Facial Fractures During COVID-19 Pandemic

Shelly Abramowicz, Dina Amin, Steven Goudy, Thomas Austin, Matthew Santore, Megan Milder, & Steven Roser
(May, 2021)



Racial and Ethnic Disparities in Multisystem Inflammatory Syndrome in Children in the United States, March 2020 to February 2021

Bryan Stierman, Joseph Abrams, Shana Godfred-Cato, Matthew Oster...& Ermias Belay
(August, 2021)



HeRO Funding & Grants

Dr. Vahid Serpooshan received an R01 from NIMH and an R01 from NHLBI!

Dr. Holly Bauser-Heaton received a grant from Saving Tiny Hearts!

Dr. Erin Buckley received an R01 from NHLBI and a grant from Global Blood Therapeutics!

Dr. Hee Cheol Cho received an R01 from NHLBI!

Dr. Chunhui Xu received an R01 from NIAAA!

Congratulations to the 32N80W Grant Awardees

Risk Stratification of Children with Congenital Heart Disease Undergoing Noncardiac Surgery: A Machine Learning-Generate Predictive Model and Internal Validation

Justin Long, MD (Emory University & CHOA), Michael Fiedorek, MD (Emory University & CHOA), & Rishi Kamaleswaran, PhD (Emory University & CHOA)

Characterization of Platelet Function in Neonates Undergoing Cardiac Surgery

Laura Downy, MD (Emory University & CHOA) & David Myers, PhD (Emory University & Georgia Tech)

Novel Growth Compliant Pediatric Surgical Polymeric Aortic Valve

Subhadra Shashidharan, MD (Emory University & CHOA) & Lakshmi Prasad Dasi, PhD (Georgia Tech)

Using Audio Characteristics of Systemic to Pulmonary Connections in Ductal Dependent Infants as a Non-invasive Measure of Pulmonary Blood-flow Parameters

Omer Inan, PhD (Georgia Tech), Zahidee Rodriguez, MD (Emory University & CHOA), & Kevin Maher, MD (Emory University & CHOA)

Announcements

A New Home for Research

In 2022, the Health Sciences Research Building (HSRB-II) building, that is currently under construction, will open! HeRO is grateful for the generous funding for this state-of-the-art building from the [Woodruff Foundation!](#)



HeRO Is Hiring!

HeRO invites applications for a faculty position at the Assistant Professor level in the broad area of Cardiovascular Biology (MD and/or PhD required). Areas of particular interest include: biology and electrophysiology of the cardiac conduction system; cardiovascular development; and single cell biology in the context of cardiac lineage commitment. Approaches that capitalize on stem cell biology, reprogramming, cell and tissue level electrophysiology are encouraged. In addition to the above research areas, we will also evaluate candidates with expertise in transplant, pulmonary hypertension, bioengineering, cardiac genetics, and cardiooncology. Click [here](#) to submit an application.



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