



THE OHIO STATE UNIVERSITY

WEXNER MEDICAL CENTER

Dorothy M. Davis Heart and Lung Research Institute

Quarterly Newsletter

Summer
2024



*Students from the Mona El Refaey Lab
- Summer 2024*

A Message from the Director -



We are pleased to share with you another quarter of exciting work from the Dorothy M. Davis Heart and Lung Research Institute (DHLRI)! In May, the DHLRI was proud to represent the OSU Wexner Medical Center at the **Central Ohio American Heart Association's Go Red for STEM event**. This event focuses on STEM career awareness with interactive demonstrations for roughly 100 middle school girls from the Columbus area. DHLRI members and staff provided interactive and immersive experiences such as virtual reality tours of a clinical electrophysiology lab and computer simulations of cardiac arrhythmia to help educate but also inspire confidence in middle school girls.

The importance of such outreach cannot be overstated, as it addresses the critical issue of gender disparity in STEM careers. Despite progress over the years, women still represent a minority in the STEM workforce, holding approximately one-third of the positions according to the National Science Foundation's STEM Workforce Report. This gap is not due to a lack of aptitude, as evidenced by the performance of girls in high school math and science courses, where they earn as many credits as boys and often achieve slightly better grades. Instead, the disparity is largely attributed to cultural and societal factors that collectively send a message to girls that STEM is not for them. Research has identified a confidence gap that becomes apparent during middle school and persists through high school and college, with girls consistently reporting lower self-confidence in their math and science abilities compared to boys, despite similar academic achievements.



Programs like the AHA Go Red for STEM are crucial in bridging this confidence gap by empowering girls with the knowledge and inspiration to pursue STEM careers. These initiatives not only educate but also inspire confidence, setting young women on a path to success in fields where they are underrepresented. By highlighting the role of self-confidence in gaining experience and developing skills, DHLRI is contributing to a cultural shift that encourages more females to consider and thrive in STEM careers. A goal for the DHLRI going forward is to grow engagement with the community through events like Go Red for STEM to promote a more inclusive future for the next generation of scientists, engineers, and innovators. Now, let's celebrate our incredible members, staff and trainees!

Sincerely,

Thomas J. Hund, PhD
 Professor, Departments of Internal Medicine and Biomedical Engineering
 Director and William D. and Jacquelyn L. Wells Chair,
 Dorothy M. Davis Heart and Lung Research Institute



Kudos -

Conratulations to all recipients of new grants over the past few months!

Ana Mora, MD and **Mauricio Rojas, MD** [Pulmonary, Critical Care and Sleep Medicine (PCCS)] were awarded a new NIH R01 entitled "Regulation of Repair Responses in the Lung by Fatty Acid Oxidation."

Xun Ai, MD [Physiology & Cell Biology (PCB)] received a new NIH R01 "The JNK2-NLRP3 nexus in atrial fibrillation and its anti-AF therapeutic potentials."

Seth Weinberg, PhD [Biomedical Engineering (BME)] and collaborators were awarded a new NIH R01 for their project "Therapeutic targeting of voltage gated sodium channel autoregulation."

Joseph Bednash, PhD (PCCS) received an NIH K08 to study "Transfer RNAs as novel mediators in acute lung injury."



Kristine Orion, MD and Team



Congratulations to **Kristine Orion, MD** (Vascular Surgery) and team who were first in the world to treat a patient with an endovascular device for complex aneurysmal disease [(Gore Excluder thoracoabdominal branch endoprosthesis (TAMBE))!]

We were thrilled to see the many impactful papers published by our members from April through June!

John Hummel, MD was co-author on a study in *Nature Medicine* that was featured as a late-breaking abstract at the Heart Rhythm Society Annual Meeting in May. The randomized clinical trial compared pulsed field ablation using a lattice-tip dual-energy catheter to conventional radiofrequency ablation in persistent AF.

Doug Lewandowski, PhD (Internal Medicine), **Kristin Stanford, PhD** (Surgery) and team published exciting research in the *FASEB Journal* demonstrating a direct relationship between brown adipose tissue and protection from the harmful metabolic and structural changes observed in response to chronic pathological stress.

Kristy Townsend, PhD (Neurosurgery) was featured in *Molecular Therapy* for her work on gene therapy targeting adipocytes to treat obesity-induced neuropathy.



Doug Lewandowski, PhD

Lynn Fussner, MD (PCCS) was first author on a study published in the *American Journal of Respiratory and Critical Care Medicine* reporting findings from the PEXIVAS international randomized controlled trial.

OSU MSTP student **Charles Rabolli** (Federica Accornero lab) had a first author publication in *Circulation* using state-of-the-art RNA sequencing technology to define novel RNA modifications in heart cells.

Deqiang Li, PhD (Nationwide Children's Hospital) and **George Kyriazis, PhD** (Biological Chemistry & Pharmacology) both had publications in *Nature Communications*.



George Kyriazis, PhD



Finally, kudos to our members who were acknowledged with awards, invited talks, and other honors.

Sai Veeraraghavan, PhD (BME) and **Prez Radwanski, PhD** (Pharmacy) were inducted as Fellows of the Heart Rhythm Society at their annual meeting in May, also featuring presentations from over a dozen DHLRI members.

Lots of kudos to **Daniel Gallego-Perez, PhD** (BME/Surgery), who was awarded the Ohio State University 2024 Early Career Distinguished Scholar Award and was inducted into the American Institute for Medical and Biological Engineering's College of Fellows for "pioneering nanotechnology in gene delivery, tissue reprogramming, regenerative medicine, and cancer therapies."

Matt Exline, MD (PCCS) was inducted in the 2024 Mazzaferri-Ellison Society of Master Clinicians.

Ashley Greenlee (Sakima Smith Lab) was selected as a 2024 Scientist Mentoring & Diversity Program for Biotechnology Scholar.

Metro Early High School student and former Hund Lab intern, **Fatima Abdulkadir**, was awarded a \$40,000 scholarship from Amazon. She was one of 400 students from across the country that was chosen for this award. Fatima plans to use her scholarship at The Ohio State University and wants to pursue a career in computer design.

Many **DHLRI Faculty, Staff, and Trainees** presented and participated in the American Thoracic Society Annual Meeting. **Kymberly Gowdy, PhD** (PCCS) was awarded the Mid-Career Achievement Award. **Lorena Rosas, PhD** (Rojas / Mora Lab) was awarded the ATS Underrepresented Trainee Development Scholarship. **Sourabh Soni, PhD** (Yohannes Mebratu Lab) was awarded the Assembly on Respiratory Cell and Molecular Biology Abstract Scholarship.



Dr. Horowitz and other DHLRI staff / trainees at ATS



Sarah Morbitzer

Sarah Morbitzer, a DHLRI JB Cardiovascular Summer Fellow in Drs. Kym Gowdy and Matthew Gorr's labs, was awarded a Big 10 Outstanding Sportsmanship award for the 2023-24 academic year and featured by Ohio State News about her journey from open heart surgery, to walk on Volleyball try-outs for the Ohio State Buckeyes, to working in a research lab and pursuing medical school.

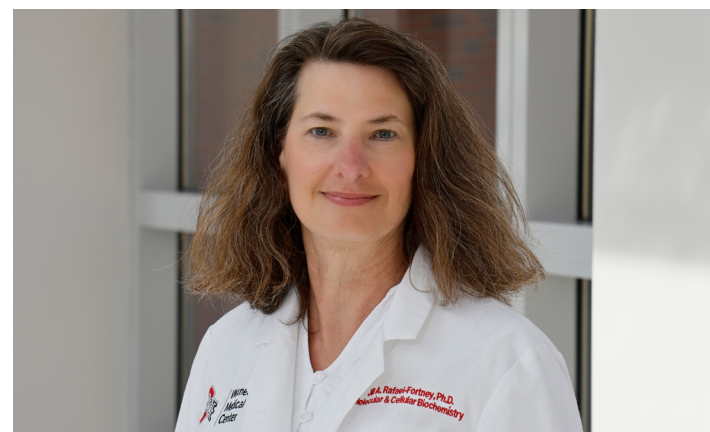
Transitions -

Congratulations to **Richard Gumina, MD, PhD** who was recently named Director of the Division of Cardiovascular Medicine! We look forward to working with him over the coming months/years to grow cardiovascular research at OSU.



Richard Gumina, PhD

Jill Rafael-Fortney, PhD (PCB) was named Director of Research Proposal Development for the College of Medicine.



Jill Rafael-Fortney, PhD

Finally, **Dennis Guess**, DHLRI Building Coordinator retired after 5 years with the institute – he will be sorely missed but we wish him the best in his retirement!

DHLRI Research in Progress concluded for the semester with talks from **Priya Umapathi, MD** (Johns Hopkins University), **Matthew Gorr, PhD** (OSU – Cardiac Surgery), and **Drew Nassal, PhD** (Physiology and Cell Biology). Research in Progress will return August 23.

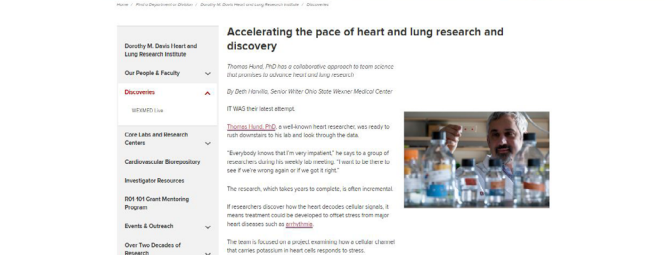
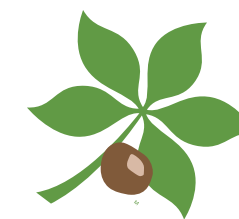
DHLRI hosted **Joy Lincoln, PhD** (Medical College of Wisconsin) for a special lecture discussing Aortic Stenosis in Bicuspid Aortic Valve Disease.

The **JB Cardiovascular Medicine Summer Research Fellowship** returned for its third summer with 18 undergraduate students from OSU and other Colleges across the country. Metro High School students wrapped up their capstone research projects in the **Rebecca Vanderpool, PhD** (CVM) and **Thomas Hund, PhD** (CVM) labs with their capstone symposium and poster presentation.

DHLRI also partnered with the Center for Preventative Health of Adipose Tissue to host the second Annual Preventative Health of Adipose Tissue (PHAT) Symposium. The Keynote address was given by **Jacqueline Stephens, PhD** from Pennington Biomedical Research Center at Louisiana State University.



JB Cardiovascular Summer Fellows



Updated featured stories and publications can be found on the “Discoveries” page of the DHLRI Website

A new DHLRI Annual Report will be released this November! You can view previous Annual Reports and Quarterly Newsletters at: <https://medicine.osu.edu/departments/davis-heart-lung-research-institute/our-people/message-from-the-director>

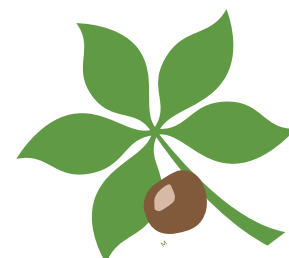
Please reach out to Izabelle Colvin, Editor, (Izabelle.Colvin@osumc.edu) with any submissions for next quarter’s newsletter. Photos to accompany your announcement are appreciated.

Happenings -

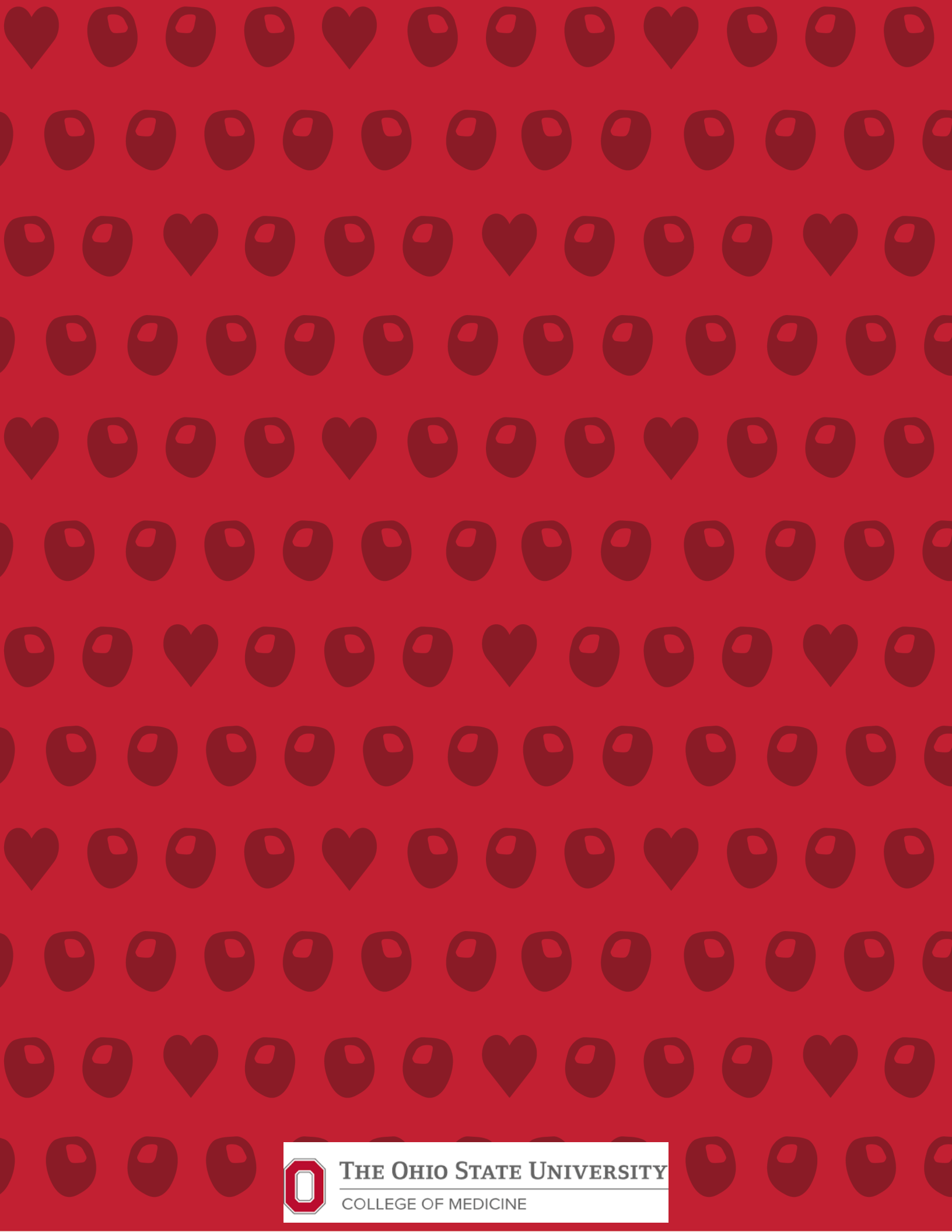
DHLRI was thrilled to host The Ohio State University President, **Walter “Ted” Carter** visited the DHLRI in April. He toured the Hund Lab, located in DHLRI, and met with staff and trainees to discuss the great work going on in the lab!



President Carter with Dean Bradford and members of the Hund Lab



Follow us on Twitter / X @ OhioStateDHLRI for real-time updates!



THE OHIO STATE UNIVERSITY
COLLEGE OF MEDICINE