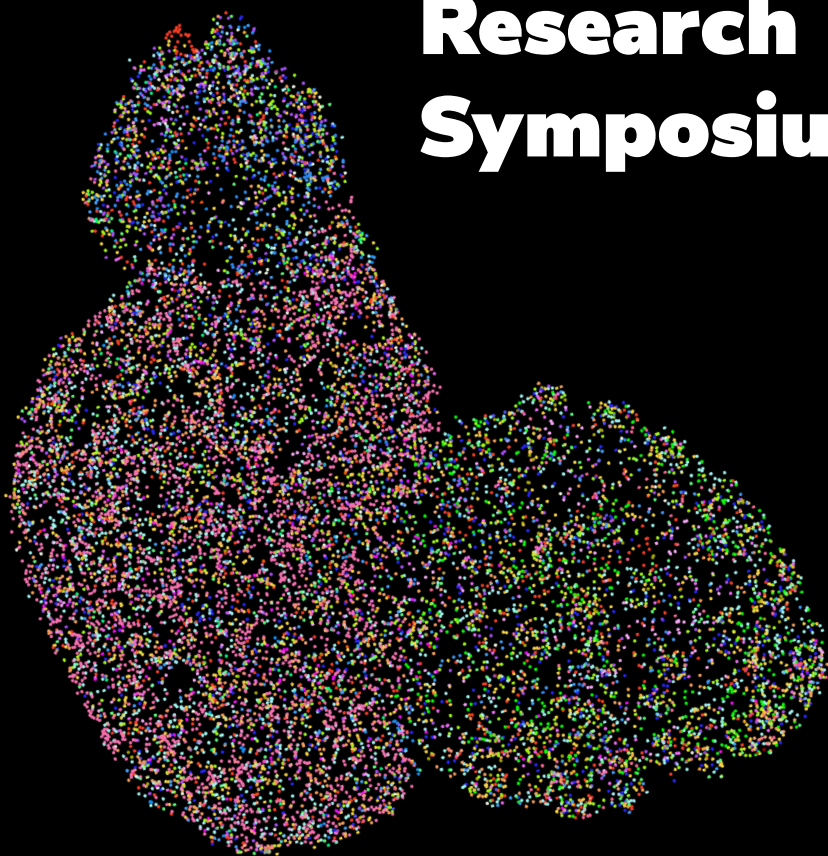


Dorothy M. Davis
Heart and Lung Research Institute

2026
Research
Symposium



October 7, 2026 |
Energy Advancement & Innovation Center

Table of Contents

3 | Agenda

4 | Welcome from the DHLRI Director

5 | DHLRI Research Day - Thursday, October 8

6 | Presenters by Session

Session 1 | *Genetic Basis of Inherited Heart and Lung Diseases* 6

Session 2 | *Genetic Basis & Therapeutic Targets of Acquired Heart and Lung Diseases* 12

Panel | *Genetics-Based Drug Discovery: What’s Next?* 18

Session 3 | *From Genome to Function: Population Genetics of Heart and Lung Diseases* 25

Dorothy M. Davis
Heart and Lung Research Institute
The Ohio State University
473 W 12th Avenue
Columbus, OH 43210

go.osu.edu/DHLRI
@OhioStateDHLRI



Cover art courtesy of the Wandi Zhu, PhD Lab

Agenda

10:00am - 10:10am | Welcome and Opening Remarks

10:10am - 11:10am | Session 1

Genetic Basis of Inherited Heart and Lung Diseases
Moderator: Ray Hershberger, MD

11:10am - 11:30am | Coffee Break

11:30am - 12:30pm | Session 2

Genetic Basis & Therapeutic Targets of Acquired Heart and Lung Diseases
Moderator: Amy Sturm, CGC

12:30pm - 1:05pm | Lunch

1:05pm - 1:50pm | Panel

Genetics-Based Drug Discovery: What's Next?
Moderator: Wandu Zhu, PhD

1:50pm - 2:50pm | Session 3

From Genome to Function: Population Genetics of Heart and Lung Diseases
Moderator: Sakima Smith, MD, MPH

2:50pm-3:00pm | Closing Remarks

Dear Colleagues and Guests,

Welcome to the inaugural DHLRI Research Symposium. We are pleased to launch this new event on the day before our annual Research Day, creating dedicated time for a deeper exploration of a scientific theme with broad relevance across the Institute. This year's symposium focuses on the genetic basis of heart and lung diseases and brings together investigators whose work spans inherited disorders, the complex genetics of acquired disease, genetics-based drug discovery, population genetics, and the path from genomic discovery to biological function.

As the program demonstrates, DHLRI has remarkable depth of expertise in this area. The day's talks and panel discussion are designed not only to highlight that strength, but also to create space for thoughtful discussion across disciplines. We hope this focused format will spark new ideas, reveal complementary capabilities, and lay the groundwork for collaborations that can grow into ambitious, interdisciplinary grant proposals.

Thank you for joining us and for bringing your questions, perspectives, and ideas to this first symposium. We are especially grateful to our special guest, Calum MacRae, MD, PhD, for sharing his expertise and engaging with our community. We also thank our speakers, moderators, and panelists for shaping the program, and the DHLRI staff whose planning and hard work made the day possible.

We hope you enjoy the symposium and leave with new connections and possibilities for collaboration.

Thomas J. Hund, PhD

Director, Dorothy M. Davis Heart and Lung
Research Institute
John H. and Mildred C. Lumley
Chair in Medicine
Professor, Department of Internal Medicine,
Division of Cardiovascular Medicine
Professor, Department of Biomedical Engineering

Mona El Refaey, PhD

Associate Professor,
Department of Surgery
Division of Cardiac Surgery
Chair, DHLRI Education Committee

Wandi Zhu, PhD

Assistant Professor,
Department of Molecular Medicine
and Therapeutics
Co-Chair, Research Symposium
Planning Committee

Onur Kanisicak, PhD

Associate Professor,
Department of Emergency Medicine
Co-Chair, Research Symposium
Planning Committee

Join Us Tomorrow for the 2026 DHLRI Research Day!

The Davis Heart and Lung Research Institute Annual Research Day will be held on **Thursday, October 8, 2026**.

The day will begin in the Biomedical Research Tower (BRT) Lobby with a poster session from 9:00am-11:00am, followed by short talks in BRT 115 from 11:00am-12:00pm.



The keynote lecture will begin at 1:20pm in Davis Heart and Lung Research Institute (DHLRI) 170. This year's keynote speaker is **Calum MacRae, MD, PhD**. Dr. MacRae is a Professor of Medicine at Harvard Medical School, the Director of One Brave Idea (a biomedical innovation program founded by Verily, the American Heart Association and AstraZeneca), Vice Chair for Scientific Innovation in the Department of Medicine at Brigham and Women's Hospital in Boston, a Principal Faculty Member at the Harvard Stem Cell Institute, and an Associate Member at the Broad Institute of Harvard and MIT.

The day will end with an awards ceremony in DHLRI 170, honoring our poster award winners, as well as the DHLRI Distinguished Awards recipients.

Please find more information, including a schedule for the day and a list of posters on the DHLRI website.



A fluorescence microscopy image showing two distinct cell clusters. The upper cluster is more rounded and dense, while the lower cluster is more elongated and spread out. Both clusters exhibit bright red fluorescence, likely indicating the presence of a specific protein or marker, and are counterstained with blue, which typically highlights the nuclei. The background is black, making the fluorescent structures stand out.

Session 1

Genetic Basis of Heart and Lung Diseases

Ray Hershberger, MD



**Professor,
Department of Internal Medicine,
Divisions of Cardiovascular Medicine
and Human Genetics
Section of Heart Failure and
Cardiac Transplantation,
Cardiovascular Division**

Session 1 Moderator

Ray E. Hershberger, MD, is a cardiologist specialized in advanced heart failure and cardiac transplantation and a Professor of Internal Medicine, Cardiovascular Medicine, and Human Genetics at the Ohio State University in Columbus, Ohio, USA. Prior to Ohio State University, Dr. Hershberger directed advanced heart failure and cardiac transplantation programs at the Oregon Health & Science University and the University of Miami. Dr. Hershberger completed training in cardiovascular disease and heart failure and cardiac transplantation at the University of Utah. Since moving to The Ohio State University, his clinical practice has been devoted mostly to cardiovascular genetic and genomic medicine. Dr. Hershberger's principal research focus has been to discover the genetic basis of dilated cardiomyopathy (DCM) and translate those findings into the practice of cardiovascular medicine. His work has been funded by the National Heart, Lung, and Blood Institute of the National Institutes of Health nearly continuously throughout his career and he has authored numerous scientific articles, reviews, and guideline statements for the field. In 2010 he developed the DCM Consortium, a multi-site investigative group, to conduct family-based genetic research in DCM. The DCM Consortium recently completed the DCM Precision Medicine Study that was designed to test the hypothesis that most of DCM has a genetic basis, which has contributed numerous publications to the field.

Isabelle Deschênes, PhD



**Professor and Chair,
Department of Physiology and
Cell Biology
Bernie Frick Research Chair in
Heart Failure and Arrhythmia**

*“Studying Incomplete Penetrance in
Congenital Arrhythmia”*

Dr. Deschênes obtained her PhD from Laval University in Quebec, Canada in 1999 where her thesis work focused on sodium channels. She then did postdoctoral training at Johns Hopkins University. In 2003 she was recruited to join the rank of faculty at Case Western Reserve University in the Heart and Vascular Research Center of the Metro Health Medical Center. In 2013, she was appointed as Director of the Heart and Vascular Research Center. In August of 2019, she moved to Ohio State University where she is Professor and Chair of the Department of Physiology and Cell Biology and the Bernie Frick Chair in Heart Failure and Arrhythmia. Dr. Deschênes' research has continued to focus on ion channels through the years and the link to congenital cardiac arrhythmias. Her work provides key insights into the fundamental basis of our understanding of the electrical function of the heart, which is critical for the much-needed design of novel cardiac therapies for cardiac arrhythmias. Results obtained from her translational research focus on incomplete penetrance in inherited arrhythmias have also been applied to a more basic focus allowing her to make fundamental findings on ion channels structure, assembly, trafficking and transcriptional regulation all of which contribute to the development of arrhythmias. Dr. Deschênes has authored or co-authored more than 100 original scientific manuscripts, chapters, reviews and abstracts.

Elizabeth Jordan, LCGC

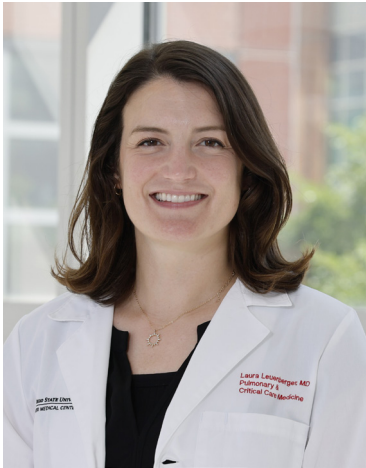


**Associate Professor - Clinical,
Department of Internal Medicine
Associate Director,
Division of Human Genetics**

“The Paradox of Progress in Dilated Cardiomyopathy Genetics: More Answers and More Questions”

Elizabeth Jordan is a Clinical Associate Professor of Internal Medicine and an Associate Director of the Division of Human Genetics. Her research focuses on the genetic architecture of inherited cardiomyopathy and channelopathies, spanning gene discovery, gene and variant curation, family-based studies, and health services aimed at translating discoveries into clinical practice. She has led scientific and clinical efforts within NIH-funded DCM Research Project, the Clinical Genome Resource, and Ohio State Genomic Health program.

Laura Leuenberger, MD



**Clinical Instructor,
Department of Internal Medicine,
Division of Pulmonary, Critical Care,
and Sleep Medicine**

*"Lipid Metabolism and Lung Disease:
Exploring Host Genetic Variability in
Acute Respiratory Distress Syndrome"*

Laura Leuenberger, MD completed medical school at Penn State University and Internal Medicine residency at the University of Michigan. She came to Ohio State for Pulmonary and Critical Care Fellowship, and hasn't left. Since fellowship, she has been a clinical instructor on the Pulmonary T32 on the Biology of Lung Aging, where she has been studying how lipid mediators, such as omega-3 and omega-6 polyunsaturated fatty acids and their metabolites, impact acute respiratory distress syndrome, and more generally the relationships between metabolic disease and lung disease.

A fluorescence microscopy image showing two distinct cell clusters. The upper cluster is more rounded and dense, while the lower cluster is more elongated and spread out. Both clusters exhibit bright red fluorescence, likely indicating the presence of a specific protein or marker, and are counterstained with blue, which typically highlights the nuclei. The background is black, making the fluorescent cells stand out.

Session 2
Genetic Basis and Therapeutic Targets of
Acquired Heart and Lung Diseases

Amy Sturm, MS, CGC



**Clinical Professor,
Department of Internal Medicine
Executive Director,
Ohio State Genomic Health**

Session 2 Moderator

Amy Sturm, MS, CGC, is a Clinical Professor of Internal Medicine and Genetic Counselor in the Division of Human Genetics at The Ohio State University Wexner Medical Center. She serves as Executive Director and Principal Investigator of the Ohio State Genomic Health initiative and leads OSUWMC's partnership with Helix as part of the Helix Research Network. A nationally recognized leader in population genomic screening, cardiovascular genetics, and familial hypercholesterolemia (FH), Amy has dedicated her career to advancing genetic medicine, genomic screening, and scaled approaches to genetic information towards the end goal of disease prevention. She served as Principal Investigator of the NIH-funded IMPACT-FH study, which evaluated novel approaches to identifying individuals with familial hypercholesterolemia and increasing cascade testing among at-risk relatives. Amy has authored more than 125 publications and has held leadership roles at Ohio State, Geisinger, and 23andMe, as well as national organizations including the National Society of Genetic Counselors, where she served as President.

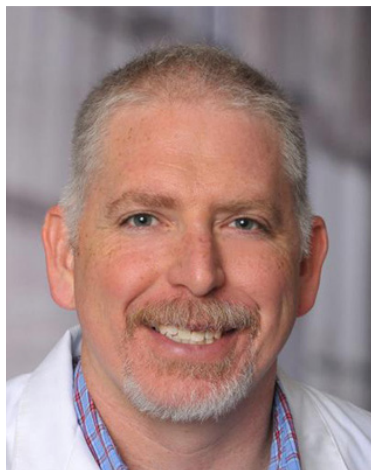


**Professor,
Department of Internal Medicine,
Division of Pulmonary, Critical Care,
and Sleep Medicine**

*“Molecular Phenotyping in
Granulomatous Lung Diseases”*

Maneesh Bhargava, MD, PhD, is a tenured professor and physician-scientist with board certification in pulmonary and critical care medicine. His collaborative translational research program investigates granulomatous inflammatory disorders and is supported by the National Heart, Lung, and Blood Institute (NHLBI), the National Institute of Environmental Health Sciences (NIEHS), the Ann Theodore Foundation, and the Foundation for Sarcoidosis Research. His primary focus is improving diagnostic tools and developing prognostic biomarkers for sarcoidosis and beryllium-induced lung disease.

Matthew Stratton, PhD



**Associate Professor,
Department of Physiology and
Cell Biology**

*“BRD4-Dependent Regulation of
Pathologic Cardiac Remodeling”*

Matthew Stratton, PhD, is an Associate Professor of Physiology and Cell Biology at The Ohio State University College of Medicine. His doctoral research examined neurodevelopment and the fetal antecedents of adult disease, focusing on how perinatal insults alter neuronal migration cues. He subsequently completed postdoctoral training at the University of Colorado Anschutz Medical Campus in molecular cardiology. The Stratton laboratory investigates the signaling and epigenetic mechanisms that control cardiac gene-expression programs during physiological and pathological stress. Current work examines the regulation of pro-inflammatory and pro-fibrotic signaling in cardiomyocytes and cardiac fibroblasts, the transcriptional control of myofibroblast activation, and the mechanisms underlying cardiac aging, inflammaging, and diastolic dysfunction. The laboratory integrates cell and animal models with omics approaches to identify therapeutic strategies that redirect maladaptive cardiac remodeling toward healthier responses to stress.



**Associate Professor,
Department of Emergency Medicine**

“The Incomplete Reset: Transcriptional Memory as a Therapeutic Target in Fibroblast Reactivation”

Onur Kanisicak, PhD, is a developmental biologist by training who now leads translational research on tissue repair and remodeling. His laboratory investigates the role of tissue-resident fibroblasts in fibrosis, reverse fibrosis, and tissue health, spanning cardiac, lung, and skeletal muscle disease. Using genetic lineage tracing, single-cell transcriptomics, and in vivo models, his work aims to identify therapeutic strategies that harness endogenous repair mechanisms.

The background of the slide features two distinct clusters of cells, likely cancer cells, stained with fluorescent dyes. One cluster is located in the upper right quadrant, appearing as a rounded mass with a mix of red and blue fluorescence. The other cluster is larger and more irregular, situated in the lower left and center, showing a similar red and blue color scheme. The overall image has a dark, almost black background, which makes the glowing cells stand out.

Panel
Genetics-Based Drug Discovery:
What's Next?



**Assistant Professor,
Department of Molecular Medicine
and Therapeutics**

Panel Moderator

Dr. Zhu earned her PhD in Biomedical Engineering from Washington University in St. Louis and completed her postdoctoral training at Brigham and Women's Hospital and Harvard Medical School. Her lab focuses on understanding how mechanoelectrical and electrical signaling regulate cardiac and blood lineages in cardiovascular disease. Her research integrates genetics, patient cell phenotyping, and clinical data sets with zebrafish models and microfluidic systems. She is also a co-founder of Tanaist, Inc., which combines human genetics and blood cell phenotyping for drug target discovery.

Amy Sturm, MS, CGC



**Clinical Professor,
Department of Internal Medicine
Executive Director,
Ohio State Genomic Health**

Panelist

Amy Sturm, MS, CGC, is a Clinical Professor of Internal Medicine and Genetic Counselor in the Division of Human Genetics at The Ohio State University Wexner Medical Center. She serves as Executive Director and Principal Investigator of the Ohio State Genomic Health initiative and leads OSUWMC's partnership with Helix as part of the Helix Research Network. A nationally recognized leader in population genomic screening, cardiovascular genetics, and familial hypercholesterolemia (FH), Amy has dedicated her career to advancing genetic medicine, genomic screening, and scaled approaches to genetic information towards the end goal of disease prevention. She served as Principal Investigator of the NIH-funded IMPACT-FH study, which evaluated novel approaches to identifying individuals with familial hypercholesterolemia and increasing cascade testing among at-risk relatives. Amy has authored more than 125 publications and has held leadership roles at Ohio State, Geisinger, and 23andMe, as well as national organizations including the National Society of Genetic Counselors, where she served as President.



**Director, One Brave Idea
PI, Apple Health Study
Professor of Medicine,
Harvard Medical School**

Panelist

Calum A. MacRae, MD, PhD, is a Professor of Medicine at Harvard Medical School, the Director of One Brave Idea (a biomedical innovation program founded by Verily, the American Heart Association and AstraZeneca), Vice Chair for Scientific Innovation in the Department of Medicine at Brigham and Women's Hospital in Boston, a Principal Faculty Member at the Harvard Stem Cell Institute, and an Associate Member at the Broad Institute of Harvard and MIT. He directs an NIH-funded basic science group and has developed systematic approaches at the tech::bio interface to uncover novel human disease mechanisms. He is the principal investigator of the Apple Health Study and works on the integration of digital health and genomics with multiple large technology companies. In his clinical work, he is a Cardiologist and Geneticist, co-directs the Genomic Medicine Program at Brigham and Women's Hospital and is a clinical lead in the Harvard Undiagnosed Diseases Center. He and his collaborators have created rigorous approaches to automating accessible components of biomedicine to enable transformation of care delivery and real-world discovery, while building a foundation for continuously learning biomedical systems.

Xia Ning, PhD

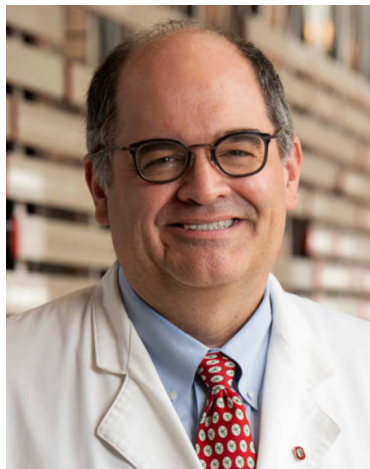


**Professor,
Department of Biomedical
Informatics
Department of Computer Science and
Engineering
AI for Health Lead, OSU AI^(x) Hub
Division Chief, AI in Digital Health**

Panelist

Xia Ning, PhD, MS, MS, MBA, FACMI, FAMIA is a Professor in the Biomedical Informatics Department, the Computer Science and Engineering Department, and the College of Pharmacy, The Ohio State University. She is the AI for Health lead at OSU AI(X) Hub. She received her Ph.D. in Computer Science and Engineering from the University of Minnesota, Twin Cities, in 2012. Ning's research is on Artificial Intelligence (AI) and Machine Learning, particularly on generative AI and agentic AI, with applications in drug discovery, biomedicine, healthcare, and e-commerce. Specific applications include drug discovery, drug repurposing, precision medicine, clinical decision support systems, EHR-based predictive analysis and phenotyping, bioimaging processing, and multimodal foundation models. Her research has received several recognitions, such as Sanofi iDEA-TECH Award, a 10-year Highest Impact Paper award, AWS Machine Learning Research Award, OSU President Research Excellence Award, and several Best Paper awards, etc. Ning is a Fellow of the American Medical Informatics Association (AMIA), a Fellow of the American College of Medical Informatics, and a Senior Member of the National Academy of Inventors.

Andrew Thomas, MD, MBA



**Wolfe Foundation Chief Clinical Officer,
The Ohio State University
Wexner Medical Center
Senior Associate Vice President for
Health Sciences
Professor - Clinical,
Department of Internal Medicine**

Panelist

Dr. Andrew Thomas serves as the Chief Clinical Officer and Senior Associate Vice President for Health Sciences at the Ohio State Wexner Medical Center. He provides oversight for patient care services and medical staff administration and was a key leader in the construction of OSUWMC's new \$2 billion, 830-bed inpatient tower that opened in February 2026. During the pandemic, Thomas co-chaired the OSUWMC COVID command center and coordinated activities for 64 hospitals and health systems across 36 counties in Ohio. As Chief Clinical Officer, he focuses on alignment across the organization as he collaborates with other medical center leaders on institution-wide initiatives related to clinical operations, quality, patient safety, patient experience, population health, clinical outreach, government relations, graduate medical education (GME), and clinical practice transformation. Thomas is also a Professor of Clinical Internal Medicine and sees patients as a primary care physician in Ohio State's Executive Health Program. Originally from northeast Ohio, Dr. Thomas earned his MD and MBA degrees from The Ohio State University and his bachelor's degree from Harvard University.

A fluorescence microscopy image showing two distinct cell clusters. The upper cluster is more rounded and dense, while the lower cluster is more elongated and spread out. Both clusters exhibit a mix of red and blue fluorescence, likely representing different cellular components or markers. The background is black.

Session 3
From Genome to Function:
Population Genetics of
Heart and Lung Diseases

Sakima Smith, MD, MPH



**Associate Professor with Tenure,
Department of Internal Medicine,
Division of Cardiovascular Medicine**

Session 3 Moderator

Dr. Smith is currently an Associate Professor of Medicine with tenure at The Ohio State University. He obtained his medical degree from Temple University School of Medicine in 2006. He completed his internal medicine residency at Barnes-Jewish Hospital/Washington University in 2009 and completed his general cardiology and heart failure/transplant fellowships at Ohio State. He also completed a research fellowship and a Master's in Public Health from Ohio State in 2014. He was awarded the James V. Warren Fellowship Research Award in 2014; in 2017, he received the Denman Distinguished Undergraduate Research Mentor Award; and in 2019, he was the Landacre Research Honor Society Distinguished Researcher of the Year. Dr. Smith established his independent research lab with funding from the Robert Wood Johnson Faculty Development Grant in 2015, an NIH K08 Grant in 2017, and an NIH R01 Grant in 2019. His research program spans basic cardiovascular research to population health, diversity, and health outcomes. His current research program is focused on the mechanisms underlying cardiotoxicity from anticancer drugs using novel and cutting-edge methods and technologies, including inducible pluripotent stem cell cardiomyocytes. In his lab, he trains undergraduate students, medical students, medical residents, graduate students, and postdoctoral students. Notably, 13 of his undergraduate students have matriculated into various medical schools over the past nine years, including two into MD-PhD programs. He also serves on several thesis committees, mentors cardiology fellows, and serves as an associate program director for the Medical Scientist Training Program. He also serves as a co-PI for the Translational Science T32 Predoctoral Training Program with a particular emphasis on mentorship. Finally, in 2022, he was selected to be a standing member of the NIH's Cardiovascular and Respiratory Disease Study Section for a 5-year term, and in 2023, he was selected to serve as an associate editor for the Journal of the American Heart Association.

Mykyta Artomov, PhD



**Assistant Professor,
Department of Pediatrics,
The Ohio State University
College of Medicine
Principal Investigator,
The Steve and Cindy Rasmussen
Institute for Genomic Medicine,
Nationwide Children's Hospital**

*"Predicting Polygenic Diseases Using Clinical
and Genetic Data"*

Mykyta Artomov, PhD is an assistant professor at the Institute for Genomic Medicine (IGM), where he works on developing the concept of systems genetics – the integration of multiple data sources (e.g. DNA sequencing, gene expression data) in statistical frameworks that aid interpretability of experimental outcomes and novel biological hypothesis generation. His primary research focus is on developing methods for genome and exome sequencing data analysis and sharing, building statistical models for health outcomes using clinical and genetic data.



**Assistant Professor,
Department of Internal Medicine,
Division of Pulmonary, Critical Care,
and Sleep Medicine**

*"From Genome to Function: BIK-ARIH2
Pathway Polymorphisms & Host
Therapeutics in Severe Influenza
Dissecting Genetic Susceptibility & Host-
Targeted AAV Gene Therapy in Respiratory
Virus Infections"*

Yohannes A. Mebratu, DVM, PhD, is an NIH-funded Assistant Professor in the Division of Pulmonary, Critical Care, and Sleep Medicine at The Ohio State University College of Medicine. Affiliated with the Davis Heart & Lung Research Institute and Infectious Disease Institute, Dr. Mebratu leads an independent translational research laboratory investigating host-pathogen interactions, targeted proteasomal degradation mechanisms (including ARIH2, BIK, and USP13), and viral immunity in lung disease. His research utilizes human air-liquid interface (ALI) cultures, precision-cut lung slices (PCLS), and transgenic models to identify novel therapeutic targets for viral-induced acute lung injury. He previously held faculty positions at Harvard Medical School and Brigham and Women's Hospital.

Megan Lancaster, MD, PhD



**Assistant Professor,
Department of Internal Medicine,
Division of Cardiovascular Medicine**

*“A Regulatory-First Approach to Noncoding
Variation in Cardiomyopathy”*

Dr. Lancaster completed her MD/PhD training in the MSTP program at the Icahn School of Medicine at Mount Sinai. She completed residency and Cardiology fellowship in the PSTP program at Vanderbilt University Medical Center and during that time was awarded a K08 career development award. She joined OSU in 2025 as a physician scientist on the tenure track. Her lab uses computational and epidemiological methods to study cardiovascular genetics, with a current focus on the role of noncoding variation in disease.



2026 DHLRI RESEARCH SYMPOSIUM

**Dorothy M. Davis
Heart and Lung Research Institute
October 7, 2026**



THE OHIO STATE UNIVERSITY

**DOROTHY M. DAVIS HEART AND
LUNG RESEARCH INSTITUTE**