



GOOD NEWS!

Wake Forest University School of Medicine Cardiovascular Sciences Center

Spring 2024



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NICKLAUS ASHBURN, MD, MS, AWARDED DEPARTMENT OF EMERGENCY MEDICINE'S FIRST-EVER NIH K23 GRANT



Ashburn

Nicklaus Ashburn, MD, MS, Assistant Professor of Emergency Medicine, received a K23 grant from the NIH/NHLBI for his study titled Emergency Medicine Cardiovascular Risk Assessment for Lipid Disorders (EMERALD), which is a 5-year randomized control trial focused on providing preventive cardiovascular care for at-risk patients in the Emergency Department.

This novel, protocolized intervention is the first of its kind in the country and will address a critical gap in knowledge by determining the efficacy of an Emergency Department-driven cardiovascular disease prevention program that aims to identify and treat patients with high cholesterol. EMERALD is highly significant and innovative and could also be applicable to other cardiovascular disease risk factors among Emergency Department patients.

This outstanding achievement is even more noteworthy since it is the first time anyone in the Department of Emergency Medicine has earned this honor from the NIH. Dr. Ashburn and his team of experts in emergency medicine, cardiology, social sciences, and biostatistics helped design this patient-centered intervention that aims to improve the health of our community and advance cardiovascular disease prevention and treatment.

The K23 award offers support for an intensive, mentored research career development experience for individuals with a clinical doctoral degree who have made a commitment to conduct patient-oriented research. Dr. Ashburn's mentoring team includes Drs. Herrington, Shapiro, Mahler, Snavely, Reboussin, and Gesell.

Congratulations to Dr. Ashburn and his team for their unprecedented accomplishment!

FUNDING

During the months of January to April, CVSC members were awarded 29 grants. Below we highlight awards from the CVSC and SHVI.



Kavanagh

Dr. Kavanagh's T35OD010946 training grant "Summer Veterinary Student Research Fellows at Wake Forest University" received a good score of 16 and will be funded.



Tomar



Jadiya

Drs. Tomar (PI) and Jadiya (Co-I) received an American Heart Association Innovative Project Award for their grant titled "TRIM-NHL Proteins and Mitochondria

Associated Biomolecular Condensates in Cardiac Aging" with a project period of 07/01/2024-06/30/2026 and total cost of \$199,998.52.



Maxwell

Drs. Tomar (PI), Maxwell (Co-I) and Jadiya (Co-I) were awarded a \$20,000 WFUSM Center for Redox Biology and Medicine (CRBM) Pilot Grant for their grant "Mitochondrial Inter-membrane Space Proteostasis in Myofibroblast Activation" with a

project period of 01/01/2024-12/31/2024.



Yamaleyeva

Dr. Yamaleyeva's NICHD R21 application titled "Apelin receptor axis and long-term consequences of preeclampsia" scored at the 5th percentile.



Schaich

Drs. Schaich, Khanna and Chappell (Co-PIs) were awarded a CTSI Pilot Award for their project "Precision-Based Renin Assessment in Septic Shock Outcomes."



Khanna



Chappell

Boston Scientific has provided funding through Medaxiom for Advocate Health to be the first healthcare system in the U.S. to report initial clinical experience and outcomes with the new FaraPulse Pulsed Field Ablation technology for atrial fibrillation ablations. This study will be a joint effort across the Charlotte area hospitals, Wake Forest, and St. Luke's Hospital in Wisconsin. This will be a unique opportunity to have an Advocate Enterprise-wide research study across the Southeast and Midwest hospitals. Congratulations to Drs. Powell and Whalen and the EP teams at SHVI and Wake Forest for negotiating this fantastic opportunity with Boston Scientific!

Congratulations to the 2024 CVSC Pilot Awardees:



Gallagher

Patricia Gallagher, PhD Hypertension & Vascular Research Center, \$20,000 for "Characterization of Orally-Active Angiotensin-(1-7) Analogs."



Cyrille-Superville

Nicole Cyrille-Superville, MD Internal Medicine-Cardiovascular Medicine/SHVI-Charlotte, \$20,000 for "The Influence of Social Support and Health Literacy on Outcomes in Older Patients Hospitalized for Decompensated Heart Failure with Preserved Ejection Fraction." Co-

Investigators — **Dalane Kitzman, MD, David Herrington, MD, MHS, Alain Bertoni, MD, MPH, Tiarney Ritchwood, PhD, MA**



Tomar

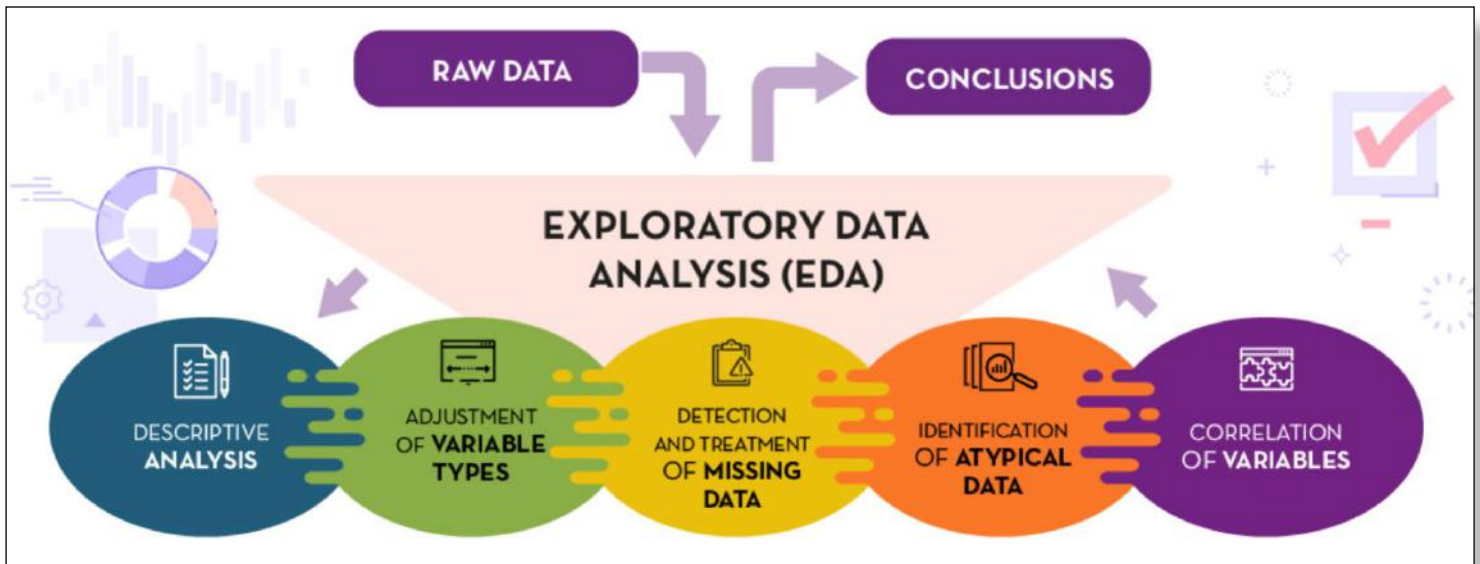
Dhanendra Tomar, PhD, MSc Internal Medicine-Cardiovascular Medicine, \$20,000 for "Mitochondria Derived Extracellular Vesicles as Early Indicators of Heart Failure." Co-Investigator — **Gagan Deep, PhD**

AUSTIN'S DATA, TIPS & TOOLS



The Importance of EDA

One of the most important yet overlooked steps in research is exploratory data analysis or EDA. We're often so excited to build that new predictive model on our brand new data that we forget that it's important to know your data at the most basic level. In many ways, EDA will shape your data analysis plan. When writing the proposal you had one analysis plan in mind but after collecting your data and doing some careful EDA you discover you need to make some changes or alter some of the proposed statistical methods. Good EDA will answer question like How many samples/variables are their? How many samples/variables have a lot of missing data? If you're studying a particular outcome, how prevalent is it to your data? More rigorous EDA may try to explore the correlation structure of the data as this often plays a key role in multivariate regression modeling.



Every statistical analysis software has some EDA functions to help the user investigate their data. In R, I like to use the package 'finalfit' as it offers functions that analyze missing data and functions that generate summary tables with descriptive statistics for every variable in your data. In SAS, one can use procedures like PROC CONTENTS, PROC MEANS, and PROC UNIVARIATE to explore the data.

EDA can shape the analysis plan but it can also help the analyst interpret and contextualize results of the analysis. For example, a regression model might show that a patient's blood pressure during hospitalization can help predict 30 day readmission but that model won't tell you that only 40% of the patients had their blood pressure recorded thus skewing the results. Knowing things like this is what takes you from a good analyst to a great analyst.

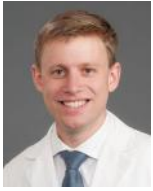
Thanks for reading this edition of data tools and tips. Don't hesitate to reach out to me if you have any questions or would like to talk more.

Austin Seals, MSA

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INVITED PRESENTATIONS

The Emergency Medicine Cardiovascular Research Team presented 17 abstracts at the 2024 Society for Academic Emergency Medicine conference in Phoenix, AZ.



Ashburn

On February 15, 2024, **Dr. Nicklaus Ashburn** presented "Emerging Technologies for ED Chest Pain Risk Stratification" at the 14th Annual J. Lee Garvey Chest Pain Network Summit.



Kavanagh

Kylie Kavanagh, VMS, MPH, presented "Healthy Fat" at the University of Massachusetts Medical School Department of Molecular Medicine on May 17, 2024.



Yamaleyeva

Liliya Yamaleyeva, MD, MS, FAHA, gave a talk titled "Preeclampsia Attenuates Middle Cerebral Artery Resistance Post-Pregnancy in the Setting of Sustained Hypertension" at the 71st Annual Meeting of the Society for Reproductive Investigation (SRI) in Vancouver, Canada.

Xuming Sun, MD, PhD, a Senior Research Associate in Dr. Yamaleyeva's lab, presented his studies as a poster titled "Apelin Downregulates Interleukin-6 Signaling in Trophoblastic HTR-8/SVneo Cells Exposed to Hypoxia" at the 71st Annual Meeting of the SRI in Vancouver, Canada.



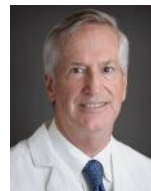
Tomar

Dhanendra Tomar, PhD presented an invited talk titled "Decoding Mitochondrial Calcium: Regulatory mechanisms and its impact on health" at the Kalinga Institute of Industrial Technology (KIIT) in India on January 17, 2024.

- Presented an invited talk titled "The Calcium Code: Unveiling Mitochondrial Calcium Regulation" at the International Conference on Biology Beyond Boundaries: Mitochondrial Insights, Computational Breakthroughs, and Clinical Transformations in India on January 30, 2024.

- Presented an invited talk titled "Beyond Calcium Uniporter: MICU1's Impact on Mitochondrial Cristae and Ultrastructure" at the Biophysical Society Annual Meeting in Philadelphia, PA on February 10, 2024.
- Served as a Panelist at the Society for South Asian Heart Research Mentoring Workshop/Panel Discussion on "Navigating The Academic Career; Fellow to Faculty Transition" on May 25, 2024.

Kevin Lobdell, MD gave a Late Breaking CTSNet Interview for the 60th Annual Meeting of the Society of Thoracic Surgeons (STS): "Remote Patient Monitoring in Cardiothoracic Surgery: An Interview With Kevin Lobdell"
<https://youtu.be/mcTFaWNvPZw?si=4pLrVGzdU6-csL-5>



Wilson

On February 9, 2024, **B. Hadley Wilson, MD, MACC**, presented the Virtual Keynote Lecture "The Cardiovascular Future and the New Frontiers" for the 14th Bangla Interventions Therapeutics (BIT) with Sri Lanka College of Cardiology on the CV Future and AI.

- On February 23, 2024, participated in the HVC Leadership Summit panel discussions.
- Presented "STEMI Around the World and the ACC Global Heart Attack Treatment Program" on March 8, 2024, during the 88th Annual Scientific Meeting of the Japanese Circulation Society.
- Presented the following sessions during the American College of Cardiology 2024 (ACC.24) in Atlanta, GA, April 6-8.
 - Opening Session
 - Session 402: Joint American College of Cardiology/Journal of the American College of Cardiology Late-Breaking Clinical Trial
 - Session 2002: Charting A New Frontier: Next Steps in Efforts to Create A New CV Board

CAREER CORNER

- Session 2006: ACC at 75: Honoring the Past, Envisioning Tomorrow
- Session 712: Joint Symposium of the American Heart Association and the American College of Cardiology
- Session 700: Joint Symposium II of the European Heart Journal and the American College of Cardiology
- Session 664: Joint Symposium of the European Society of Cardiology and the American College of Cardiology
- Immediate Past President of the ACC, was a guest on April 18, 2024 (Live at CV TRANSFORUM SPRING'24) | Synergizing Success – The Power of Dyad Leadership in Cardiology as part of the HeartTalk with Cathie Biga, MSN, FACC, current ACC President. The archive of HeartTalk with Cathie discussions can be accessed here: <http://www.acc.org/ACCPresident>
- Presented the following during the 2024 Africa STEMI Live April 24-27 in Nairobi, Kenya.
 - The Plenary Program-Hear of Africa: Acute Coronary Syndromes –What ACC considers a center of excellence in ACS management, Keynote Address: “The American College of Cardiology concept of a center of excellence in Acute Myocardial Infarction.”
 - Shock Case based discussion: “Drugs, revascularization, and gadgets. State-of-the art on management of shock.”
 - Cardiovascular Intervention Africa: “How the Ischemia trial has and has not affected my clinical practice – an interventionalist’s perspective.”
 - Cardiovascular Intervention Africa: “Complex high-risk intervention- with mechanical circulatory support.”

The Cardiovascular Sciences Center (CVSC), Sticht Center for Healthy Aging and Alzheimer’s Prevention and Hypertension and Vascular Research Center welcomed 29 undergraduate college students and 6 WFUSM medical students into 3 summer research programs on May 29, 2023: the Excellence in Cardiovascular Sciences (EICS) in the 32nd year (12), the Enhancing UNderGraduate Education and Research in AGing to Eliminate Health Disparities (ENGAGED – joint with WSSU and WFU) in its 6th year (11), and the Training in Research Affecting Child-Health (TRAC) in its first year (6 undergraduate and 6 medical students).

These programs are led by a collaborative team of **CVSC faculty** members committed to increasing diversity in the biomedical sciences (BMS), including Drs. Tina Brinkley, TanYa Gwathmey, Debra Diz, David Soto-Pantoja and Andrew South at WFUSM with Drs. Jill Keith (WSSU) and Gary Miller (WFU). The students are selected after a national call for applications and represent 9 different universities within North Carolina, 3 HBCUs and 3 different campuses of the University of Puerto Rico. Research topics address aging, cardiovascular function and disease, and child health broadly, within the overarching concept of health disparities that impact the lifespan.

We continue to partner for professional development and social activities with other summer programs sponsored by Biomedical Engineering, Microbiology & Immunology, WF Institute for Regenerative Medicine, Cancer Biology and Precision Medicine to provide networking and a sense of community. Many of the **CVSC members** serve as program faculty and as mentors. We are very appreciative of their continuing support and enthusiasm for these programs and the outstanding research experiences they provide for the students.

Please welcome these students as you encounter them during their summer activities.

AWARDS AND ACCOMPLISHMENTS



Tomar

Dhanendra Tomar, PhD, received the Early Career Faculty Travel Award at the 2024 annual meeting of the American Society for Biochemistry and Molecular Biology (ASBMB) in San Antonio, TX.

Shiridhar, PhD, a postdoctoral fellow in Dr. Tomar's lab, received the Best Basic Science Poster Presentation Award at the 2024 Department of Medicine Research Day, Wake Forest University School of Medicine.

The SHVI SH Team performed the first successful Trans-catheter Tricuspid Valve Repair with TriClip and first successful Trans-catheter tricuspid valve replacement in the Carolinas to follow their first for both of these as part of clinical trials since 2018 with Dr. Schwartz co-author of the Triluminate Clinical Trial of T-TEER with TriClip in the NEJM 2023.

Ashlesha Kadam, PhD, a postdoctoral fellow in Dr. Tomar's lab, received the Best Postdoctoral Poster Presentation Award at the 2024 Wake Forest University School of Medicine Research Day.

ANNOUNCEMENTS

Thank you to **David Soto-Pantoja, PhD, Christopher Schaich, PhD, Jasmine Malachi, MA and Lydia Durr** for organizing a successful 2024 Women & Cardiovascular Health Annual Event. Thank you to the American Heart Advocacy Representative being present as well. Please consider contacting and becoming an advocate- they do a great deal of work beyond heart awareness.

The **ENVISION Campaign**, the campaign to accelerate discovery, hope and health continues to raise the critical funding needed to support promising research efforts across the enterprise. Funds raised will enable us to invest in research throughout an individual's lifespan across key areas of focus including cardiovascular research.

To learn more about the **ENVISION Campaign**, visit: <https://giving.wakehealth.edu/find-your-cause/greatest-need/envision/cardiovascular>

Contact the Office of Philanthropy and Alumni Relations for more information. Philanthropy@wakehealth.edu or 336.716.4589



ANNOUNCEMENTS *continued*

The 2024 **Sanger Spontaneous Coronary Artery Dissection** (SCAD) Alliance Conference held on April 19th – 20th at the Sanger Heart & Vascular Institute (SHVI) in Charlotte, NC was a resounding success. Dr. Esther Kim, from SHVI, served as the course director for the second Sanger SCAD Symposium. Drawing attendees from various parts of the country, the conference showcased more than 30 faculty physicians who discussed their knowledge and insights on spontaneous coronary artery disease, presenting their research discoveries and suggestions. The 2024 Sanger SCAD Conference immersed attendees in a case-based learning environment focused on SCAD. Recent research findings on SCAD and updated recommendations for the care of patients with SCAD were discussed through the lens of the practicing physician caring for the patient who has experienced SCAD.

B. Hadley Wilson, MD, MACC, published the following Cardiology Magazine articles:

- [Feature | From Magic to Mission: ACC President Hadley Wilson Reflects on Past Year; March 29, 2024](#)
- [ACC.24 Opening Showcase Presidential Address; April 6, 2024](#)
- [ACC.24 Convocation Outgoing President's Address: B. Hadley Wilson, MD, MACC; April 8, 2024](#)

The Cardiovascular Sciences Center (CVSC) is seeking proposals for the 2025 Pilot Award Program. The projects should be those in need of support to promote new areas or technologies for cardiovascular research (basic, clinical, population), as well as to foster new collaborations, particularly across the Atrium Health System. The goal of the CVSC Pilot Program is to allow investigators (particularly early career researchers) to pursue novel and innovative ideas that will improve the likelihood of obtaining extramural funding for their research. We encourage research that uses Institutional Cores and other shared resource. The funding is also meant to allow investigators to perform critical experiments, access core facilities or improve analyses to address specific critiques raised by reviewers for already submitted and reviewed applications.

Completed applications are due Spring 2025. Please contact Dr. Liliya Yamaleyeva (lyamaley@wakehealth.edu) if you need further guidance.

PUBLICATIONS

Between the months of **January-April**, Cardiovascular Sciences Center members published **71 manuscripts**. Of these, **11** were CVSC first author publications. Below we highlight publications from the CVSC and SHVI.

Stopyra JS, Snively AC, **Ashburn NP**, Supples MW, Brown WM, **Miller CD**, **Mahler SA**. Rural STEMI Patients – Why the delay to PCI? Prehosp Emerg Care. 2024 Jan 18:1-8. doi: 10.1080/10903127.2024.2305967. Epub ahead of print. PMID: 38235978.

Mahler SA, **Ashburn NP**, Paradee BE, Stopyra JP, O'Neill JC, Snively AC. Safety and Effectiveness of the High-Sensitivity Cardiac Troponin HEART Pathway in Patients With Possible Acute Coronary Syndrome. Circ Cardiovasc Qual Outcomes. 2024 Mar;17(3):e010270. doi: 10.1161/CIRCOUTCOMES.123.010270. Epub 2024 Feb 8. PMID: 38328912.

El Husseini N, **Schaich CL**, Craft S, Rapp SR, Hayden KM, Sharrett R, Klein R, Klein B, Cotch MF, Wong TY, Luchsinger JA, Espeland MA, Baker L, **Bertoni AG**, Burke GL, **Hughes TM**. Retinal Vessel Caliber and Cognitive Performance: The Multi-Ethnic Study of Atherosclerosis (MESA). Sci Rep. 2024 Feb 19;14(1):4120. DOI: 10.1038/s41598-024-54412-2. PubMed PMID: 38374377. PubMed Central PMCID: PMC10876697.

Hamid N, Aman E, Bae R, Scherer M, Smith TWR, Schwartz J, Rinaldi M, Singh G, Sorajja P. 3D Navigation and Intraprocedural Intracardiac Echocardiography Imaging for Tricuspid Transcatheter Edge-to-Edge Repair. JACC Cardiovasc Imaging. 2024 Apr;17(4):441-447. doi: 10.1016/j.jcmg.2024.02.005. PMID: 38569794.

Biga C, Wilson B. Realizing Our Vision: ACC's Next 5-Year Strategic Plan. J Am Coll Cardiol. 2024 Apr, 83 (15) 1489–1491. <https://doi.org/10.1016/j.jacc.2024.03.366>

Congratulations to **Drs. Mahler, Ashburn** and team for their manuscript in JACC with an associated editorial.

Mahler SA, **Ashburn NP**, Supples MW, Hashemian T, Snively AC. Validation of the ACC Expert Consensus Decision Pathway for Patients With Chest Pain. J Am Coll Cardiol. 2024 Apr 2;83(13):1181-1190. doi: 10.1016/j.jacc.2024.02.004. Epub 2024 Mar 25. PMID: 38538196.

- Kontos MC, de Lemos JA. Chest Pain in the Emergency Department: Chasing Perfection. J Am Coll Cardiol. 2024 Apr 2;83(13):1191-1193. doi: 10.1016/j.jacc.2024.02.018. Epub 2024 Mar 25. PMID: 38538197.

Congratulations to the Wake Forest team which served as a field site for trials that produced the following publications in which **Dr. Dalane Kitzman** had a key leadership role.

Kosiborod MN, Petrie MC, Borlaug BA, Butler J, Davies MJ, Hovingh GK, **Kitzman DW**, Møller DV, Treppendahl MB, Verma S, Jensen TJ, Liisberg K, Lindegaard ML, Abhayaratna W, Ahmed FZ, Ben-Gal T, Chopra V, Ezekowitz JA, Fu M, Ito H, Lelonek M, Melenovský V, Merkely B, Núñez J, Perna E, Schou M, Senni M, Sharma K, van der Meer P, Von Lewinski D, Wolf D, Shah SJ; STEP-HFpEF DM Trial Committees and Investigators. Semaglutide in Patients with Obesity-Related Heart Failure and Type 2 Diabetes. N Engl J Med. 2024 Apr 18;390(15):1394-1407. doi: 10.1056/NEJMoa2313917. Epub 2024 Apr 6. PMID: 38587233.

Butler J, Shah SJ, Petrie MC, Borlaug BA, Abildstrøm SZ, Davies MJ, Hovingh GK, **Kitzman DW**, Møller DV, Verma S, Einfeldt MN, Lindegaard ML, Rasmussen S, Abhayaratna W, Ahmed FZ, Ben-Gal T, Chopra V, Ezekowitz JA, Fu M, Ito H, Lelonek M, Melenovský V, Merkely B, Núñez J, Perna E, Schou M, Senni M, Sharma K, van der Meer P, Von Lewinski D, Wolf D, Kosiborod MN; STEP-HFpEF Trial Committees and Investigators. Semaglutide versus placebo in people with obesity-related heart failure with preserved ejection fraction: a pooled analysis of the STEP-HFpEF and STEP-HFpEF DM randomised trials. Lancet. 2024 Apr 27;403(10437):1635-1648. doi: 10.1016/S0140-6736(24)00469-0. Epub 2024 Apr 7. PMID: 38599221.



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