Wake Forest University
School of Medicine

GOOD NEWS!

Wake Forest University School of Medicine Cardiovascular Sciences Center

Winter 2024

WHAT'S INSIDE

Drs. Dhanendra Tomar and Pooja Jadiya et al Awarded Multiple Grants

Tomar

Jadiya

Drs. Tomar and Jadiya and team were awarded several grants including:

- American Heart Association Innovative Project Award: "Mitochondrial Calcium Heterogeneity in Cerebrovascular System During Alzheimer's Disease", PI: **Jadiya**, Co-I: **Tomar**
- Two intramural CRBM Pilot Grants: "Serine Beta-lactamase-like Protein's Function in Mitochondrial Health and Alzheimer's Disease", PI: **Jadiya**, Co-Is: **Tomar**, Lee and "MAVS Mediated Interferon Signaling and Mitochondrial Function in the Skin of Dermatomyositis Patients: A Pilot Study" PI: Edminister, Co-Is: Hollis, **Tomar**
- Extramural Oklahoma Nathan Shock Center of Excellence in Aging Research Pilot Grant: "IMS proteases in Mitochondrial Proteostasis", PI: **Tomar**
- Two Alzheimer's Association Grants: "Mitochondrial Protein Quality Control and Ca2+ Flux in Alzheimer's Disease", PI- **Tomar**, Co-I- **Jadiya**, and "Microglia-Mediated Mitochondrial Calcium Signaling in Alzheimer's Disease", PI- **Jadiya**, Co-I- **Tomar**
- Postdoctoral Fellowship Award from the American Heart Association: **Ashlesha Kadam, PhD** (Postdoc in **Tomar** lab)
- Postdoctoral Fellowship Award from the American Heart Association: **Natasha Jaiswal, PhD** (Postdoc in **Jadiya** lab)
- Predoctoral Fellowship Award from the American Heart Association **Sarah Kaye** (Graduate Student in **Jadiya** lab)

Please join us in congratulating Drs. Tomar, Jadiya, and their team for receiving several grant awards.

FUNDING

During the months of September to December, CVSC members were awarded 24 grants including 6 from federal agencies for a sum of ~ $12.9M and 18 from other sources for a sum of ~$3.5M. Below we highlight some of these awards.


Imielski


Chappell

Drs. Bartlomiej Imielski (PI), Mark Chappel, Ashish Khanna (Primary Co-Is), Ettore Crimi, Ted Kincaid, Spencer Tingey, Neal Kon, Adrian Lara and **Christopher Schaich (Co-Is)** were awarded a $40,000 grant from the Heineman-Robicsek Foundation for their project "RAPCAV: The role of RAAS in Post-Cardiopulmonary Bypass Associated Vasoplegi" to continue work on vasoplegia after cardiopulmonary bypass. This study collects serum and blood samples from patients undergoing cardiopulmonary bypass, and analyzes the metabolite of renin aldosterone angiotensin system to characterize the normal response to cardiopulmonary bypass, as well as the changes underlying those patients who develop post-CPB vasoplegia.


Khanna


Soliman

Elsayed Z. Soliman, MD, MS, along with PIs from the University of Alabama-Birmingham, was awarded a NINDS RF1 grant for "Understanding Cohort Effects on Stroke, VCID, and Cognition After Major Epidemiologic Transitions" with a project period of 09/17/2024 to 08/31/2026.

Extramural Funding (Industry sponsored multicenter trial awards)

Each of these four trials were highly competitive for selection and continues the national and international recognition of the SHVI Structural Heart Program.

- **Jonathan Schwartz, MD (PI) and Michael Rinaldi, MD (Co-I)** received funding for the JOURNEY, CMC 2025. The Journey Trial will study an investigational TAVR platform for pure aortic insufficiency and CMC will be one of a select group of centers nationally invited to participate.
- **Michael Rinaldi, MD** is the Site PI for the following awards:
  - » SympLAAfy, Multicampus 2025: SympLAAfy is a multicenter randomized trial investigating different post implant anticoagulation regimens following left atrial appendage occlusion with Watchman technology.
  - » ATLAS 4C AltaValve Pivotal, CMC 2024: Atlas is a pivotal trial studying an investigation transcatheter mitral valve replacement technology. CMC was part of early feasibility and one of the first in the world to study this technology.
  - » LAMINAR, CMC 2024: Laminar is a pivotal trial studying a novel left atrial appendage closure technology where the LAA is closed with a twist and lock system instead of traditional plug technology.

AUSTIN'S DATA TIPS & TOOLS

Modeling Longitudinal Data with Random Effects

Longitudinal data is data that records outcomes of individuals/entities across multiple time points. This is also referred to as repeated measures data or panel data. A common example is readmissions data or a study where patients are exposed to a treatment and their response to it is measured at multiple time points post-exposure. With this type of data, the standard ways of modeling data such as linear or logistic regression may not be appropriate because the assumptions of these techniques are not met. Specifically, the assumption that observations are independent from each other. In the longitudinal data context, observations are often dependent with each other because they come from the same individual/entity which can cause observations to have correlated variances. Something that standard linear regression is not built to handle. It is important to consider if these subject effects need to be controlled for.

This brings us to the random effects regression modeling. It considers both between and in-group variations. The "group" could be the patients, subjects, etc. This grouping variable would be specified as a random effect. For example, you want to measure the effectiveness of drug "A" compared to a control "B" at multiple time points. The random effect would be the "subject", and the effect of the drug a fixed effect. Fixed effects are in the standard regression model (the effects of interest) but random effects are not.

This is a bird's eye view of a concept than can be tricky to grasp during application. However, there are plenty of online resources that dig into the details of random effects modeling. Most, if not all, statistical analysis software have this modeling capability. The SAS "PROC MIXED" procedure and the R package "lme4" provide random effects modeling.

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

Austin Seals, MSA
aseals@wakehealth.edu

AWARDS AND ACCOMPLISHMENTS

Tomar

Dhanendra Tomar, PhD received the "2024 - Biochimica et Biophysica Acta (BBA) Rising Star Award" in Biochemistry and Biophysics from BBA journals.

Ashlesha Kadam, PhD (Postdoc in Tomar lab) received the "Best Basic Science Poster Presentation Award" at the 2024 CVSC Ignite Conference.

Drs. Liliya Yamaleyeva, Ashlesha Kadam and Matthew Goldman

Schaich

Christopher Schaich, PhD was made a standing member of the AGCD-4 NIH Study Section (Career Development for Established Investigators and Conference Grants), for 2025-2029.

Christopher Schaich, PhD served on the RRD6-Chronic Medical Conditions and Aging grant review panel for the US Department of Veterans Affairs.

Dermot Phelan, MD, PhD, FASE is the Program Co-Chair of the 2025 American Society of Echocardiography (ASE) Scientific Sessions.

Gilbert

Dr. Olivia Gilbert was invited to Chair the ACC Anumana Work Group for ECG AI in Cardiology and will serve as the ACC Liason to the PROTEUS Consortium which is focused on advancing the use of patient-reported outcomes in cardiology clinical trials and clinical practice.

Dr. Esther Kim was invited to participate in a NASA Technical Interchange Meeting (TIM) as part of the Venous Thromboembolism (VTE) Working Group held on October 23-24, 2024, at Johnson Space Center in Houston, Texas.

Dr. Troy Leo was appointed as a member of the ACC Partners in Quality Committee.

Dr. Sherry Saxonhouse was on the writing committee of the 2024 ACC Expert Consensus Decision Pathway on Practical Approaches for Arrhythmia Monitoring After Stroke: A Report of the American College of Cardiology Solution Set Oversight Committee.

Dr. Jonathan Schwartz has two start-up companies (CorFlow: Dr. Killian McCarthy, Local PI and LifeLens Technologies: Dr. Michael Rinaldi, Local PI) and will be a part of some clinical trials investigating technology that his team has developed. He is heavily involved in the companies as a co-founder/co-inventor and the trials will be starting at CMC soon.

SELECTED INVITED PRESENTATIONS

South

Dr. Andrew South gave an invited talk at the Third Pediatric Renovascular Hypertension Symposium at Duke University on November 4, 2024. The title of the presentation was "The Physiology of Renovascular Hypertension: Renin Kinetics."

On November 16, 2024, **Dr. Andrew South** moderated the AHA Scientific Session "Pecha Kucha: Future is Now - What is the Best Way to Reduce Blood Pressure Among Patients with Uncontrolled Hypertension?"

Wilson

B. Hadley Wilson, MD, MACC presented a Key Talk at the ACC Washington Chapter Meeting on September 14, 2024, titled "The Present and Future of Cardiology."

Dr. B. Hadley Wilson presented "Embedding AI into Cardiovascular Care: From Discovery to Practice" at the NC & SC Chapters ACC 31st Annual Joint Meeting in September 2024.

Dr. Michale Rinaldi presented three invited lectures titled "Update on Trans-Catheter Mitral Valve Repair", "Indications for LAA Closure: Available Devices and Scientific Evidence" and "What you need to know about the Accurate TAVR Platform" at the SCAI Fellows Course in Miami, FL, December 2024.

Dr. Dermot Phelan presented the following:

- "Athletic Cardiac Remodeling in Elite Baseball Players" Major League Baseball Annual Meeting, Dallas, TX, December 14, 2024
- "Managing Athletes with Bicuspid Aortic Valve Disease and Aortopathy: A Sports Cardiologist's Perspective." Yale School of Medicine Grand Rounds, November 20, 2024
- "New Era in the Game: Pioneering Advances in Sports Cardiology" **Keynote Speaker CVSC Ignite Conference**, December 6, 2024

2024 CVSC Ignite Conference Speakers pictured left to right: Drs. Joseph McClung, Dermot Phelan, Matthew Goldman, Nicole Cyrille-Superville, Nick Ashburn and Xuewei Zhu

CAREER CORNER

ENVISION – Employing Novel Virtual and In-person Strategies to Increase Number and Diversity Of Students PursuiNg Healthcare and Biomedical Research Careers

Continuing our interests in promoting pathways into careers in the biomedical sciences and health professions, we are happy to report a new Duke Endowment grant with the goal of attracting more high school and early college students to consider careers in the biomedical workforce. The ENVISION team (Drs. Debra Diz, David Herrington, Indra Newman and Shea Gilliam-Davis) partners with Futurum, a publishing company specializing in profiling scientists, to produce a series of portfolios featuring some of our amazing colleagues as relatable role models from diverse backgrounds. The material is geared to the high school/early college level and provides resources for teachers to implement within their curriculum or share with their students, including Lesson Plan/Activity Sheets, Online Journal Articles, Brochures, Careers-focused PowerPoints, and Podcasts with a transcript and PowerPoint. Materials are produced in English and Spanish. A survey link is provided with all materials to gather feedback from those accessing the portfolios whatever source of access.

Dr. Tina Brinkley is the first faculty member featured. Access Tina's brochure, podcast, podcast transcript and podcast PowerPoint. More materials to come!

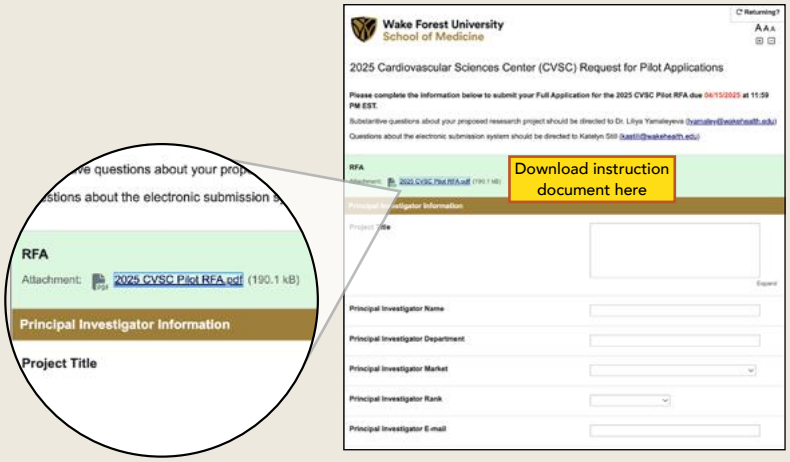
Please visit the ENVISION website to access materials published so far and feel free to share this information with your networks, particularly with high school and early college students, and science teachers (materials are free to download and use without copyright restraints). Also, if anyone wishes to participate as a featured individual or team or has suggestions for those to feature, please reach out to: sgilliam@wakehealth.edu

ANNOUNCEMENTS

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.

Here is how you get started!

Go to this link to access the application form and RFA instructions. https://redcap.wakehealth.edu/redcap/surveys/?s=YPXFLDXP7EAF3KCY



Completed applications are due April 15, 2025, with an award start date of June 15, 2025.

Please contact Dr. Liliya Yamaleyeva (lyamaley@wakehealth.edu) if you need further guidance.

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

PUBLICATIONS

Between the months of September-December, Cardiovascular Sciences Center members published **124** manuscripts. Of these, **9** were CVSC first author publications. Below we highlight several publications.

Chappell MC*, Schaich CL*, Busse LW, Martin GS, Sevransky JE, Hinson JK, **Khanna AK**; Vitamin C, Thiamine, Steroids in Sepsis (VICTAS) Investigators. Stronger association of intact angiotensinogen with mortality than lactate or renin in critical illness: post-hoc analysis from the VICTAS trial. Crit Care. 2024 Oct 14;28(1):333. doi: 10.1186/s13054-024-05120-w. PMID: 39402593; PMCID: PMC11472595. ***Shared first authorship**

Dvir D, Tchétché D, Leon MB, Généreux P, Seguy B, Makkar R, Pibarot P, Gada H, Nazif T, Hildick-Smith D, Kempfert J, Dumonteil N, Unbehaun A, Modine T, Whisenant B, Caussin C, Conradi L, Waggoner T, Mishell JM, Chetcuti SJ, Kar S, **Rinaldi MJ**, Szerlip M, Ramana RK, Blackman DJ, Ben-Dor I, Kornowski R, Waksman R, Gerckens U, Denti P, Kukucka M, Ternacle J, Skaf S, Kovac J, Jilaihawi H, Patel V, Jubeh R, Abdel-Wahab M, Kodali S. Leaflet modification before transcatheter aortic valve implantation in patients at risk for coronary obstruction: the ShortCut study. Eur Heart J. 2024 Sep 1;45(33):3031-3041. doi: 10.1093/eurheartj/ehae303. PMID: 38747561; PMCID: PMC11365606.

Ferris T, Yohannan E, Daniel K, **Richardson KM**. Comparing Echocardiographic Strain Imaging in Cardiac Amyloid and End-Stage Renal Disease Patients. Echocardiography. 2024 Oct;41(10):e15962. doi: 10.1111/echo.15962. PMID: 39403011.

Herrera CJ, Levenson BJ, Natcheva A, Lucca AC, Olsson K, Miki K, Fong A, Jollis JG, McCormick A, **Wilson BH**. Improving STEMI Management Internationally: Initial Report of the American College of Cardiology-Global Heart Attack Treatment Initiative. JACC Adv. 2024 Dec 10;4(1):101438. doi: 10.1016/j.jacadv.2024.101438. PMID: 39737139; PMCID: PMC11683228.

Kazibwe R, **Rikhi R**, Mirzai S, **Ashburn NP, Schaich CL, Shapiro M**. Do Statins Affect Cognitive Health? A Narrative Review and Critical Analysis of the Evidence. Curr Atheroscler Rep. 2024 Nov 9;27(1):2. doi: 10.1007/s11883-024-01255-x. PMID: 39520593; PMCID: PMC11550230.

Kim JH, Martinez MW, Guseh JS, Krishnan S, Gray B, Harmon KG, Papadakis M, **Phelan DM**, Stewart K, Levine BD, Baggish AL; American College of Cardiology Sports & Exercise Leadership Council. A contemporary review of sudden cardiac arrest and death in competitive and recreational athletes. Lancet. 2024 Nov 30;404(10468):2209-2222. doi: 10.1016/S0140-6736(24)02086-5. PMID: 39616000.

Kotani Y, **Khanna AK**. Angiotensin II and Thromboembolism-Reading the Fine Print. Crit Care Med. 2024 Dec 1;52(12):1981-1985. doi: 10.1097/CCM.0000000000006468. Epub 2024 Nov 14. PMID: 39637267.

Rai AK, Sanghvi S, Muthukumaran NS, Chandrasekera D, Kadam A, Kishore J, Kyriazis ID, **Tomar D**, Ponnalagu D, Shettigar V, Khan M, Singh H, Goukassian D, Katare R, Garikipati VNS. Role of mitochondrial ribosomal protein L7/L12 (MRPL12) in diabetic ischemic heart disease. Free Radic Biol Med. 2024 Sep;222:531-538. doi: 10.1016/j.freeradbiomed.2024.07.003. Epub 2024 Jul 6. PMID: 38977138.

Veasey CJ, Snavely AC, Kearns ZL, **Ashburn NP**, Hashemian T, **Mahler SA**. The High-Sensitivity HEART Pathway Safely Reduces Hospitalizations Regardless of Sex or Race in a Multisite Prospective US Cohort. Clin Cardiol. 2024 Oct;47(10):e70027. doi: 10.1002/clc.70027. PMID: 39417405; PMCID: PMC11483562.

Wake Forest University
School of Medicine

Medical Center Boulevard
Winston-Salem, NC 27157
WakeHealth.edu