DRS. TANYA GWATHMEY & ANDREW SOUTH (MPIs) were awarded a R25 from the NICHD for “The Wake Forest University School of Medicine Training in Research Affecting Child-Health (TRAC) Program”, with a project period of Sept. 1, 2023, through June 30, 2028 to support 9-12 participants per year. This is the first child health research training grant in the history of WFUSM. It is an immersive eight-week pediatric-specific skills course over the summer with a longitudinal component over the following academic year that fosters peer-to-peer mentorship. This longitudinal program will empower learners at all levels (undergraduate, graduate, and medical students, residents, and fellows) to conceptualize, design, and implement a novel and innovative research project centered on an idea that they are passionate about and that addresses a critical knowledge gap in child health and development. Participants will be the Principal Investigators of their project, and faculty members will coach participants through their independent, mentored research project. Several faculty mentors are members of the Cardiovascular Sciences Center, and TRAC affords the opportunity to improve cardiovascular health in youth related to vascular development and hemodynamics of pregnancy and parturition, youth-onset hypertension and renal mechanisms of cardiovascular disease, and antenatal programming of adult cardiovascular and cardiometabolic diseases. TRAC will foster acquisition of lasting child health-related research skills with an emphasis on independence and critical thinking.
Correlation

Correlation analysis is one of the central analysis methods in statistics and is a simple idea that most novice analyst can grasp on to. Most correlation metrics return values between -1 and 1. The positive or negative value determines the direction of the relationship between the two variables. If you have a positive correlation, then the value of variable A increases when the value of variable B increases. The relationship is inverted when the correlation in negative (when A increases B decreases). Correlation is a foundational concept of many regression modeling concepts, especially linear regression. For example, the assumption that there is no auto-correlation (correlated samples/subjects) in linear regression. Correlation analysis is a great way to get know your data and is one the first things I consider doing when starting a new project. It should be noted that correlation analysis is best suited for numeric continuous data; however, there are alternative correlation methods that can handle data in other distributions (like binomial data).

One common product of this analysis is a correlation heat map. These heat maps visualize the relationships amongst different variables in your data usually with brighter colors representing positive correlations. Network maps can also be produced from correlation analyses. From visualizations like these, one can tell which variables will be important in subsequent analyses or which variable may be redundant or non-informative during outcome modeling. These will help summarize the overall complexity of your data.

Almost all statistical analysis software applications have a correlation analysis feature. If you’re using SAS, you can run PROC CORR. R users can use the cor() function which will produce a correlation matrix.

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
aseals@wakehealth.edu

ANNOUNCEMENTS

2024 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. We intend to fund 3 pilot awards at $20,000 each 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 will be due ~ Spring 2024. Please contact Dr. Liliya Yamaleyeva (lyamaley@wakehealth.edu) if you need further guidance.
**INVITED PRESENTATIONS**

**Dr. Rishi Rikhi** discussed the associations between lipoprotein(a), hypertension, and cardiovascular disease during the Yumlish with Shireen podcast.

[Image: Yumlish with Shireen podcast]

**Dr. Akbilgic** presented an invited talk at St. Jude Children’s Research Hospital, Memphis, TN on July 31, 2023, titled "Remote Delivery of ECG-AI Models for Disease Detection and Risk Prediction."

**Dr. Akbilgic** gave an invited talk at the University of Wisconsin Cardiology Grand Rounds, Madison, WI titled "Emerging Role of Electrocardiographic Artificial Intelligence Modes in Cardiovascular Outcome Prediction."

Dr. Liam Butler has been invited to present "Feasibility of Remote Monitoring for Fatal Coronary Heart Disease from Single Lead ECG" during the HRX Innovators at Heart Conference in Seattle, WA, September 21-23, 2023.

**FUNDING**

During the months of May to August, CVSC members were awarded 33 grants. Below we highlight a couple of these awards.

**Dr. Matthew Goldman** and Co-Is Dr. Matthew Edwards, Dr. David Herrington, Dr. William Downey, and Dr. Greg Stanley have been awarded a 2-year grant from Janssen Scientific Affairs. "Utilization of Optimal Medical Therapy to Prevent Cardiovascular Morbidity in Patients with Peripheral Vascular Disease" is a multi-institutional grant between Atrium Wake Forest Baptist and Sanger Heart and Vascular. The aims of this grant are to evaluate adherence rates to AHA Guideline-Directed Optimal medical therapy in patients with Peripheral Arterial Disease (PAD) based upon non-invasive vascular laboratory studies. It also evaluated cardiovascular outcomes in this PAD population.

**Dr. Haodong Xu**’s research program titled "Role of the ATP-dependent chromatin-remodeling enzyme Brg1 in the regulation of cardiac Na+ channel" has recently secured funding through an NHLBI R56 grant. In their pursuit, Dr. Xu’s team employs cutting-edge techniques, including state-of-the-art methods for molecular signaling and electrophysiological investigations. Their ultimate goal is to furnish direct evidence that Brg1’s suppression of Nav1.5 expression constitutes one of the pivotal mechanisms driving VT/VF development in IHD, leveraging transgenic mouse models to achieve this insight.
2023 Summer Research Programs to Increase Diversity in Biomedical Science Careers:

The Cardiovascular Sciences Center and Sticht Center for Healthy Aging and Alzheimer’s Prevention host two summer research programs: the Excellence in Cardiovascular Sciences (EICS) program in the 31st year and the Enhancing UNderGraduate Education and Research in AGing to Eliminate Health Disparities (ENGAGED – joint program with WSSU and WFU) in its 4th year.

The following trainees and mentors participated in the programs for 2023:

<table>
<thead>
<tr>
<th>EICS STUDENT</th>
<th>UNDERGRADUATE INSTITUTION</th>
<th>MENTOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Joshua Abrams</td>
<td>Wake Forest University</td>
<td>Katherine Cook — Surgery Hypertension</td>
</tr>
<tr>
<td>Blessed Asare</td>
<td>University of Colorado Denver</td>
<td>Andrew South — Pediatrics- Nephrology</td>
</tr>
<tr>
<td>Ternya Gibson</td>
<td>Fort Valley State University</td>
<td>Leah Solberg Woods — Internal Medicine-Molecular Medicine /Mackenzie Fitzpartrick (PhD Graduate Student)</td>
</tr>
<tr>
<td>Autumn Huskey</td>
<td>Lander University</td>
<td>David Soto Pantoja — Surgery Hypertension</td>
</tr>
<tr>
<td>Nicole Morales</td>
<td>University of Puerto Rico - Cayey</td>
<td>Christina Hugenschmidt — Internal Medicine-Gerontology &amp; Geriatric Medicine</td>
</tr>
<tr>
<td>Bella Parker</td>
<td>Stetson University</td>
<td>Xuewei Zhu — Internal Medicine-Molecular Medicine</td>
</tr>
<tr>
<td>Ajay Roy</td>
<td>Wake Forest University</td>
<td>Liliya Yamaleyeva — Surgery Hypertension</td>
</tr>
<tr>
<td>Shayla Sanders</td>
<td>East Carolina University</td>
<td>TanYa Gwathmey — Surgery Hypertension / /Patricia Smyre — Maya Angelou Center for Health Equity</td>
</tr>
<tr>
<td>Daniel Sartin</td>
<td>North Carolina State University</td>
<td>Justin Moore — Implementation Science</td>
</tr>
<tr>
<td>Leilani Whyte</td>
<td>North Carolina A&amp;T State University</td>
<td>Dhanendra Tomar — Internal Medicine-Cardiovascular Medicine</td>
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</tbody>
</table>
As evidence of the success of these programs, a recent review of the first 4 years of the ENGAGED program documents early program outcomes: 1) 119 paid undergraduate research opportunities via in-person or virtual programming for 61 unique individuals during academic year and summer sessions, with 49% participating in >1 session (academic year Research Club, academic year Research Internship, Summer Internship); 2) New formal and informal aging-related activities created or revamped/updated for trainees across the three partner sites (Research Club, lectures/seminars, didactic courses, discussion sessions focused on aging); 3) Short-term scholarly achievements include 31% trainee attendance/presentations at scientific meetings and 20% published an abstract of the ENGAGED research; 4) While 26 remain in undergraduate training, 34 of 35 obtained a BS/BA (100% in medicine, science, technology, engineering and math [MSTEM] and 29% aging-related degrees). Longer-term career outcomes at this early stage in the program indicate success of graduates overall: ~80% are currently in the BMS workforce and/or advanced degree programs, with ~27% returning to WFUSM as trainees or in research staff positions; 59% plan a future career in BMS research, with 56% of those interested in aging/health disparities research; 35% entered MSTEM advanced degree programs (MD, PhD, MS, health professional programs; 4 MS degrees already attained) with 9 more applying. Thus, ENGAGED is well-positioned to advance our objectives from a solid foundation of promoting interest in, and exposure to, research experiences in aging/health disparities for diverse undergraduate trainees.
Between the months of May-August, Cardiovascular Sciences Center members published 114 manuscripts. Of these, 10 were CVSC first author publications. Below we highlight publications from the CVSC and SHVI.


