



Acknowledgements

We wish to thank the mentors and their research teams for their outstanding contributions to the success of the summer training programs and the students for their participation.

Many thanks also go to the Hypertension & Vascular Research Center Staff for their outstanding support and contributions to the success of the summer training programs, in particular, Mrs. Lydia Durr and Dr. Claudia Olivier.



2024

Excellence in Cardiovascular Sciences (EICS)

**Enhancing Undergraduate Education And
Research in Aging to Eliminate Health
Disparities (ENGAGED)**

**Training in Research Affecting Child Health
(TRAC)**

**Microbiology Immunology and Infectious
Diseases Internship (MIIDI)**

SUMMER RESEARCH POSTER SYMPOSIUM

Thursday, July 25, 2024

9:00 am – 12:00 pm

**Biotech Place Atrium
575 N. Patterson Avenue
Winston-Salem, NC 27101**

The **EXCELLENCE IN CARDIOVASCULAR SCIENCES (EICS) SUMMER RESEARCH PROGRAM FOR DIVERSITY** is funded by an R25 training grant from the National Heart, Lung, and Blood Institute. Drs. Debra Diz and David Soto-Pantoja are the directors of the program, which has provided mentored summer research training in cardiovascular-related topics for ~350 undergraduate students from groups underrepresented in the biomedical sciences (BMS) over the past 32 years. As of 2022, 96% of former EICS participants received the BA/BS in Medicine, Science, Technology, Engineering and Mathematics (MSTEM) fields and ~34% obtained graduate degrees. Overall ~68% obtained/are in advanced degree programs and >83% remain in BMS and health professional careers. Forty-six earned PhDs; 14 earned a PhD from Wake Forest University (WFU) BMS Graduate Programs prior to 2022 and 3 more received PhDs in the past two years. Overall, ~16% of EICS trainees return to WFU School of Medicine in some capacity.



The **ENHANCING UNDERGRADUATE EDUCATION AND RESEARCH IN AGING TO ELIMINATE HEALTH DISPARITIES (ENGAGED)** program is funded by an R25 training grant from the National Institute on Aging. The program directors are Drs. Tina Brinkley, TanYa Gwathmey, Debra Diz, Jill Keith and Gary Miller. As of 2023, the grant supported 61 unique individuals with 73 research internships for WFU and Winston-Salem State University (WSSU) underrepresented undergraduate students participating in aging-related educational and mentored research activities during the academic year, and 46 summer internships for students from WSSU, WFU and other U.S. colleges/universities. The goal is to enhance the diversity of the biomedical, behavioral, and clinical research workforce related to aging. Of the program graduates (100% BA/BS in MSTEM), 35% are in BMS advanced degree programs and 26% are applying. Overall, 27% of ENGAGED trainees return to WFU School of Medicine as trainees or employees.



Program Support Partners for TRAC:

Wake Forest University School of Medicine

- Department of Pediatrics
- MSRP
- COACH Catalyst©

National Institutes of Health

National Institutes of Health: The Eunice Kennedy Shriver National Institute of Health and Human Development

- R25HD111367 (TRAC)

The new **TRAINING IN RESEARCH AFFECTING CHILD HEALTH (TRAC) Program** provides a novel child health and development research training opportunity across the spectrum of educational levels (undergraduate, graduate, and medical students, residents, and fellows). Drs. TanYa Gwathmey and Andrew South are directors of TRAC. TRAC is funded by an R25 training grant from the Eunice Kennedy Shriver National Institute of Child Health and Human Development. TRAC fosters the acquisition of lasting child health-related research aptitudes with an emphasis on autonomy and critical and creative thinking. TRAC supports novel, innovative horizontal near-peer coach-mentorship through an eight-week pediatric-specific immersive research experience over the summer. It empowers participants to develop, implement, and complete collaborative research projects under a Learner-PI© model with guidance from faculty coach-mentors that continues throughout the following academic year asynchronously for participants to bring their project to completion. Participation culminates in first-authored abstract submissions, e.g., to the Pediatric Academic Societies Annual Meeting the following spring, and submission of a first-authored manuscript to a high-impact, peer-reviewed journal.

ENGAGED PARTICIPANTS

Chloe Bryant (Winston-Salem State University)

Mentor: Tina Brinkley, PhD
Gerontology & Geriatric Medicine
"Association Between Area Deprivation Index Scores and Primary Care Physician Visits Among Rural Older Adults"

Kayari Harris (Winston-Salem State University)

Mentor: Daniel Kim-Shapiro, PhD
Physics
"Reaction of Catalase, Azide, and Hydrogen Peroxide"

Abigail Hilsman (St. Olaf College)

Mentor: Gagan Deep, PhD
Gerontology & Geriatric Medicine
"Mitochondrial Signatures in Small Extracellular Vesicles to Predict Age-Related Muscle Dysfunction"

Niyah Lindsay (Western Carolina University)

Mentor: William Booth, PhD
Clinical Laboratory Science, WSSU
"Initiation of Structural Determination Experiments for Nicotinamide Adenine Dinucleotide Dehydrogenase Subunit-6"

Leah Osei (Howard University)

Mentor: Sarah Adjei-Fremah, PhD
Biological Sciences, WSSU
"PFAS-Induced Mitochondrial Dysfunction and Aging in Neuroblastoma Cells (N18)"

Luis Perez Dieppa (University of Puerto Rico at Cayey)

Mentor: Rachel Zimmer, DNP, NP
Implementation Science
"Evaluation of Food Landscape in Winston Salem: A City-Academic Partnership"

Program Support Partners for EICS & ENGAGED:

Wake Forest University School of Medicine

- Surgery-Hypertension
- Hypertension & Vascular Research Center
- Cardiovascular Sciences Center
- Sticht Center for Healthy Aging and Alzheimer's Prevention

Wake Forest University

- Health & Exercise Science
- Graduate School of the Arts & Sciences

Winston-Salem State University

- Biomedical Research Institute
- Department of Life Sciences

National Institutes of Health

National Heart, Lung & Blood Institute (NHLBI)

- R25HL092618 (EICS)

National Institute on Aging (NIA)

- R25AG060912 (ENGAGED)

MIIDI PARTICIPANTS

Elizabeth Coe (Winston-Salem State University)

Mentor: Ammar Zafar, PhD

Microbiology & Immunology

“Effects of L-Fucose and Ethanolamine on Klebsiella Pneumoniae Biofilm Formation”

Shavone Hines (Winston-Salem State University)

Mentor: Sarah McDonald Esstman, PhD

Biology (Microbiology and Immunology adjunct)

“Optimizing RT-PCR to Detect Rotavirus + strand RNAs ”

Program Support for MIIDI:

Wake Forest University School of Medicine

- Department of Microbiology & Immunology
- Maya Angelou Center for Health Equity

The **Microbiology Immunology and Infectious Diseases Internship (MIIDI)** is a pilot summer internship program in its 2nd year, funded by internal funds. The goal is to enhance awareness and diversity of the biomedical workforce engaged in research or clinical careers in microbial pathogenesis, immunology and infectious disease. The MIIDI program is grateful for the opportunity to collaborate with the EICS, ENGAGED and TRAC programs to offer professional development support programming for its interns.

ENGAGED PARTICIPANTS

Gargi Rao (Cornell University)

Mentor: Caryn Gee Morse, MD, MPH

Infectious Diseases

“Targeting Frailty in Older Adults with HIV”

Bailey Reutinger (Elon University)

Mentor: Emilie Duchesneau, PhD

Epidemiology & Prevention

“The Association Between Frailty and Incident Cognitive Impairment in the National Health and Aging Trends Study”

Marcus Stamps (Cornell University)

Mentor: Tennille Presley, PhD

Physics, WSSU

“Exploring the Effects of Pure Tone Solfeggio Frequencies on Galvanic Skin Response and Cell Activity”

Diana Umpierre Diaz (University of Puerto Rico Rio Piedras Campus)

Mentor: Chris Schaich, PhD

Hypertension & Vascular Research

“The Association of Lipoprotein(a) with Atherosclerotic Cardiovascular Disease and Interactions by Body Mass Index”

Kayla Young (Mississippi State University)

Mentor: Ashley Weaver, PhD

Biomedical Engineering

“Computed Tomography to Assess Body Composition and Lung Volumes in Heart Failure Patients and Controls”

EICS PARTICIPANTS

Moesha Andze (MCPHS University)

Mentor: Patricia Smyre, PhD

Maya Angelou Center for Health Equity

"The Role of Health Ministries in Reducing Cardiovascular Health Disparities: Faith Leaders' Perspectives of Impact"

Ellie Cyrus (Winston-Salem State University)

Mentor: Katherine Cook, PhD

Cancer Biology

"Investigating the Effects of Oral Probiotics on Mitigating Cardiac Dysfunction Induced by Breast Cancer Therapies"

Mykyrah Davis (Delaware State University)

Mentor: Xuewei Zhu, PhD

Molecular Medicine

"Mamaki Tea Extract Modulation of Macrophage Polarization into Different Phenotypes Atherosclerosis using mBMDM"

Jalen Furqan (Morehouse College)

Mentor: Sophie Maiocchi, PhD

Biomedical Engineering

"Precision Control of Nanoparticle Size via Flash Nanoprecipitation"

Serenity Her (University of Wisconsin-Madison)

Mentor: Leslie Poole, PhD

Biochemistry

"TREX1 Regulates the Inflammation Response to Oxidatively Damaged Cytosolic DNA"

Alayna Lisbon (University of West Georgia)

Mentors: Jill Keith, PhD, Ryan Fitzgerald, PhD

Biochemistry, WSSU

"Chiral Synthesis of WSSU-5: A Diphenylpyraline Derivative for Cardiovascular Activity Analysis"

TRAC PARTICIPANTS

Daniel Lake (Queens University of Charlotte)

Mentor: Cara Janusz, PhD, MPH, MA

Implementation Science

"Implementation of HPV Vaccination in Retail Pharmacies: Foundational Survey"

Corinne Laws (University of North Carolina at Greensboro)

Mentor: Arezoo Movaghar, PhD

Pediatrics

"Co-Occurrence of Depression and Physiological Conditions in Patients with Down Syndrome"

Autumn Lynch-Coleman (University of North Carolina at Chapel Hill)

Mentor: Sarah Vess, PhD

Pediatrics- Developmental

"Evaluating the Efficacy of Parent-Child Interaction Therapy in Medically Complex Children Aged 3-8"

Jamie Means (Wake Forest University)

Mentor: Kristina Lewis, MD, MPH, SM

Epidemiology & Prevention

"Quantifying the Knowledge and Perceptions about the WIC Program in Pregnant Patients and OBGYN Staff Members"

Jeremy Odens (Wake Forest University)

Mentor: Jillian Urban, PhD, MPH

Biomedical Engineering

"Relationship Between Tackling Form and Head Acceleration Events in Youth Football Competition"

Sydney Warner (Wake Forest University)

Mentor: Callie Brown, MD, MPH

Pediatrics-General

"Effects of Family Intervention of Parental Diabetes Mellitus"

TRAC PARTICIPANTS

Aaliyah Alston (University of North Carolina at Greensboro)

Mentor: Elizabeth Jensen, PhD

Epidemiology & Prevention

"Blood Lead Level Testing Rate Among Different Demographics"

Riyan Deria (Wake Forest University)

Mentor: Asma Ahmed, PhD, MD

Epidemiology & Prevention

"Maternal Traumatic Injuries During Pregnancy: Validity of Diagnostic Code"

Adah Freeman (North Carolina State University)

Mentor: Giya Harry, MD, MPH, MSc

Pediatrics- Rheumatology

"Impact of Weight Status on Health-Related Quality of Life in Adolescents with Rheumatic Conditions: A Study of Spanish and English-Speaking Cohorts"

Sophia Garganta (Elon University)

Mentors: Thomas McLean, MD; Joanna Robles, MD

Pediatrics- Hematology & Oncology

"Association of Language and Healthcare Utilization Among Pediatric Cancer Patients"

Mary Graham (Wake Forest University)

Mentor: Sarah Cilvik, MD, PhD

Pediatrics - Neonatology

"The Effects of Maternal Age on Offspring Growth in a Non-Human Primate Mode "

Brittney Hoard (Wake Forest University)

Mentor: Carol Vincent, MD

Pediatrics - Nephrology

"Understanding Pediatrician Perspective and Practice Regarding Hydration in Youth"

EICS PARTICIPANTS

Nayelis Lorenzo Mendez (University of Puerto Rico - Aguadilla)

Mentor: Allison Caban-Holt, PhD

Maya Angelou Center for Health Equity

"Trust in Hispanics: The Relationship of Acculturation with Trust in Healthcare Researchers"

Kevin Rosa Dieppa (University of Puerto Rico at Cayey)

Mentor: Chia-Chi Key, PhD

Molecular Medicine

"Propofol Effects on Bioenergetics in Blood Cells (PEBBLE)"

Noah Sampson (East Carolina University)

Mentor: Megan Irby, PhD

Health & Exercise Science

"Perceptions of Pain and Pain Management Among Cancer Survivors Participating in an Online Pain Coping Skills Training Program"

Adah Stancil (University of North Carolina at Charlotte)

Mentor: Nicole Levi, PhD

Plastic & Reconstructive Surgery

"Disrupting Staphylococcus Aureus Biofilms Using Farnesol in Polyoctanediol Citrate Nanoparticles"

Ashley Szymonski (Wake Forest University)

Mentor: David Soto-Pantoja, PhD

Cancer Biology

"The Influence of Cancer in Chemotherapy-Related Cardiotoxicity"

Nicole Wu (Wake Forest University)

Mentor: Jeffrey Willey, PhD

Radiation Oncology

"The Additive Effects of Diabetes and a Sedentary Lifestyle Decreases Joint Health"

