



### Acknowledgements

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



**2023**  
**Excellence in Cardiovascular Sciences**  
**(EICS)**  
**&**  
**Enhancing Undergraduate Education**  
**And Research in Aging to Eliminate**  
**Health Disparities (ENGAGED)**

**SUMMER RESEARCH**  
**POSTER SYMPOSIUM**

**Friday, July 28, 2023**  
**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 summer research training in cardiovascular-related topics for ~340 undergraduate students from groups underrepresented in the biomedical sciences over the past thirty-one years. Of our former EICS participants, 96% received the BA/BS in Medicine, Science, Technology, Engineering and Mathematics (MSTEM) fields, ~34% obtained graduate degrees or ~68% obtained or are in advanced degree programs and >83% remain in biomedical sciences and health professional careers. Forty-six earned PhDs, with 14 earning a PhD from Wake Forest University BMS Graduate Programs. Overall, 15% of EICS trainees return to Wake Forest University School of Medicine in some capacity.

The **ENHANCING UNDERGRADUATE EDUCATION AND RESEARCH IN AGING TO ELIMINATE HEALTH DISPARITIES (ENGAGED)** is funded by an R25 training grant from the National Institute on Aging. Drs. Tina Brinkley, Debra Diz, TanYa Gwathmey, Jill Keith and Gary Miller are the directors of the program. Over the past four years, the grant supported 61 unique individuals with 73 research internships for Wake Forest University and Winston Salem State University underrepresented undergraduate students participating in aging-related educational and 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 34 graduates (100% BA/BS in MSTEM), 35% are in BMS advanced degree programs and 26% are applying. Overall, 27% of ENGAGED trainees return to Wake Forest University School of Medicine as trainees or employees.

### **Program Support:**

#### **Wake Forest School of Medicine**

- Surgery-Hypertension
- Hypertension & Vascular Research Center
- Cardiovascular Sciences Center
- Sticht Center

#### **Wake Forest University**

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

#### **Winston-Salem State University**

#### **National Heart, Lung & Blood Institute (NHLBI)**

- R25HL092618 (EICS)

#### **Research Initiative for Scientific Enhancement National Institute on Aging (NIA)**

- R25AG060912 (ENGAGED)

## ENGAGED PARTICIPANTS

### **Sami Atassi (North Carolina State University)**

Mentor: Rachel Zimmer, DNP, NP  
Internal Medicine-Gerontology & Geriatric Medicine  
*"An Evaluation of a Fresh Food RX Delivery Program on the Health and Wellbeing of Participants"*

### **Mia Barnes (Wake Forest University)**

Mentor: Ken Kishida, PhD  
Physiology & Pharmacology  
*"Increased Dementia Risk but Decreased Depression Symptoms are Associated with Deep Brain Stimulation in Patients with Parkinson's Disease"*

### **Natnael Belay (Hope College)**

Mentor: Pooja Jadiya, PhD  
Internal Medicine-Gerontology & Geriatric Medicine  
*"Modulating Mitochondrial Calcium Uniporter Beta (MCUB) for Preserving Bioenergetics in Alzheimer's Disease"*

### **Alice Chong (Wake Forest University)**

Mentor: Miranda Orr, PhD  
Internal Medicine-Gerontology & Geriatric Medicine  
*"Head-to-Head Comparison of Senolytic Monotherapy versus Combination Therapy in Advanced Age Tauopathy Mice"*

### **Kathryn Espinosa-Ponce (Greensboro College)**

Mentor: Ashley Weaver, PhD  
Biomedical Engineering  
*"Investigating Regional, Compartmental Volumetric Bone Mineral Density in Older Adults-Somma Observational Study"*

## EICS PARTICIPANTS

### **Joshua Abrams (Wake Forest University)**

Mentor: Katherine Cook, PhD  
Surgery Hypertension  
*"Investigating the Impact of Near Complete Estrogen Deprivation on Cardiovascular Health"*

### **Blessed Asare (University of Colorado Denver)**

Mentor: Andrew South, MD, PhD  
Pediatrics-Nephrology  
*"Attitudes towards Genetic Counseling for Cardiovascular and Reproductive Decision Making in Sickle Cell Disease/Sickle Cell Trait"*

### **Ternya Gibson (Fort Valley State University)**

Mentor: Leah Solberg Woods, PhD / Mackenzie Fitzpatrick, PhD Student  
Internal Medicine- Molecular Medicine  
*"Evaluating Ucp1 Gene Expression in the White Adipose Tissue of Rats with a Knockout of Adcy3"*

### **Autumn Huskey (Lander University)**

Mentor: David Soto-Pantoja, PhD  
Surgery Hypertension  
*"Implications of CD47 Blockade on Cardiac Inflammation Associated with Chemotherapy"*

### **Nicole Morales (University of Puerto Rico Cayey)**

Mentor: Christina Hugenschmidt, PhD  
Internal Medicine-Gerontology & Geriatric Medicine  
*"Memory Correlated with Concern about Memory in Older Adults with Subjective Cognitive Decline"*

## EICS PARTICIPANTS

### **Bella Parker (Stetson University)**

Mentor: Xuewei Zhu, PhD  
Internal Medicine- Molecular Medicine  
*"Selective Disruption of Mitochondrial Thiol Redox Homeostasis by MitoCDNB Exaggerates Macrophage NLRP3 Inflammasome Activation"*

### **Ajay Roy (Wake Forest University)**

Mentor: Liliya Yamaleyeva, MD, MS  
Surgery Hypertension  
*"Apelin Downregulates Interleukin-6 Signaling in Trophoblastic HTR-8/SVneo Cells Exposed to Hypoxia"*

### **Shayla Sanders (East Carolina University)**

Mentor: TanYa Gwathmey-Williams, PhD / Patricia Smyre, PhD  
Surgery Hypertension / Maya Angelou Center for Health Equity  
*"Evaluation of Cardiovascular Health Literacy Following a Health Promotion Curriculum in Vulnerable Faith-Based Communities"*

### **Daniel Sartin (North Carolina State University)**

Mentor: Justin Moore, PhD  
Implementation Science  
*"Plant-Based Diet Indices and Cognitive Performance in Older Adults: A Systemic Review"*

### **Leilani Whyte (North Carolina A & T State University)**

Mentor: Dhanendra Tomar, PhD  
Internal Medicine-Cardiovascular Medicine  
*"Exploring Mitochondrial Chaperonin CLPB's Role in Bioenergetics and Mitochondrial Biogenesis"*

## ENGAGED PARTICIPANTS

### **Ivy Greene (Wake Forest University)**

Mentor: Dhanendra Tomar, PhD  
Internal Medicine- Cardiovascular Medicine  
*"TRIM25-Mediated NF- $\kappa$ B Regulation: Unraveling the Inflammatory Pathways in Alzheimer's Disease"*

### **Quinecia Hayes (Winston Salem State University)**

Mentor: Jill Keith, PhD  
Biological Sciences & Chemistry, WSSU  
*"Investigation of Dopamine Transporter Inhibitors to Enhance the Aging Brain"*

### **Christian Johnson (Virginia Commonwealth University)**

Mentor: Jeff Williams, PhD / Michelle Mielke, PhD  
Internal Medicine-Gerontology & Geriatric Medicine / Epidemiology & Prevention  
*"Social Determinants of Health and Neuropsychiatric Severity in Persons Living with Dementia"*

### **Grace Kiwanuka-Woernle (Emory University)**

Mentor: Allison Caban-Holt, PhD  
Maya Angelou Center for Health Equity  
*"Increasing Brain Donations for Aging Research in Black Communities: Implications of Adding a Brain Donation Option to the Driver License"*

### **Luis Perez Dieppa (University of Puerto Rico Cayey)**

Mentor: Ashley Weaver, PhD  
Biomedical Engineering  
*"Investigating Age and Other Factors Contributing to Injury Presence and Severity in Motor Vehicle Collisions: A Vicis Study"*

### **Keysha Resto Bravo (University of Puerto Rico Mayaguez)**

Mentor: Daniel Kim-Shapiro, MD  
Physics  
*"Formation of NO-Ferroheme Catalyzed by Cysteinyglycine to Promote Intravascular Nitric Oxide Signaling"*

## **ADDITIONAL PARTICIPANTS**

**Aaliyah Clough (North Carolina A & T State University)**

Mentor: Martha Alexander-Miller, PhD

Microbiology & Immunology

*"H1-ss-NP Elicits Cross-Reactive Antibodies Against Influenza A Viruses in Infants"*

**Christian Mobley (North Carolina A & T State University)**

Mentor: David Ornelles, PhD

Microbiology & Immunology

*"Development of Methods to Quantify Bacteriophage Phi6 as a Model for Aerosolized Respiratory Virus "*

### **Microbiology/Immunology Program Support:**

#### **Wake Forest School of Medicine**

- Microbiology & Immunology
- Funded by the Wake Forest University Health Sciences Dean's Office