WSSU Biomedical Research Infrastructure Center

BRIC Bulletin

Spring 2026

Student Research in the Spotlight

This season, our students took their work beyond the lab, presenting research at conferences, showcases, and community events. These experiences highlighted their creativity while helping them build confidence, communicate complex ideas, and engage with professionals. We're proud of how they represented our program and excited to see how these opportunities shape their future paths.

Dr. Adjei-Fremah, Michael McNeil, and WSSU students at Scholarship Day Poster Presentations

Spotlight (cont.)

Ashley Gaines evaluated whether xeno-free (animal-free) culture systems can support the growth and viability of liver cell spheroids as effectively as traditional serum-containing media. By tracking spheroid size and metabolic activity over time, she found no meaningful differences between conditions. These results suggest that xeno-free systems can reliably support 3D liver models while offering advantages in reproducibility and translational relevance.

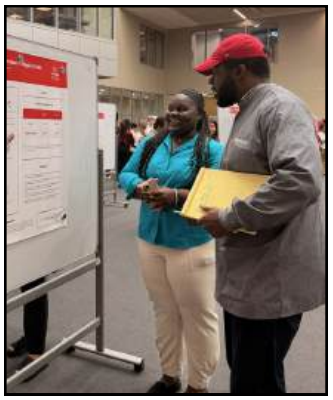
Ashley Gaines

Neveah Whitehurst

Nevaeh Whitehurst participated in a structured training pathway to improve how undergraduate researchers learn cell culture techniques. Her training pathway, used as a case study of this model, moves students progressively from foundational skills to more advanced experimental work, while emphasizing independence, documentation, and problem-solving. The framework improved technical competency and workflow efficiency, demonstrating the value of a deliberate, scalable approach to laboratory training.

Congratulations Neveah Whitehurst, Michael McNeil, Sarah Adjei-Fremah, and Jill Keith for winning **First Place** at the Scholarship Day Poster Competition!

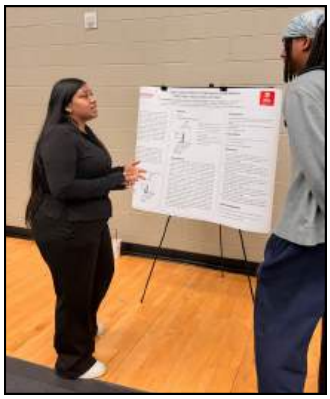
Margaret Boakye investigated how GenX exposure affects RNA yield in HepG2 liver cells as a proxy for cellular health and transcriptional activity. She observed a time-dependent decrease in RNA concentration, particularly after prolonged exposure, suggesting increased cellular stress or impaired gene expression. This work supports further analysis of mitophagy-related genes and contributes to understanding how PFAS compounds may disrupt mitochondrial quality control mechanisms.



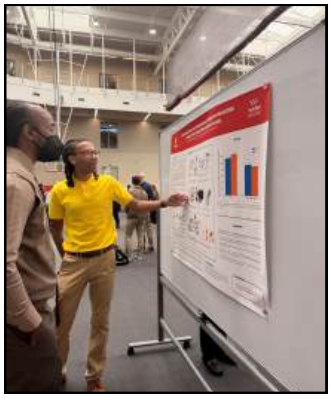
Margaret Boakye

Spotlight (cont.)

Jaquelin Dominguez-Perez investigated the effects of a heterocyclic small molecule on the viability of murine neuronal cells under xeno-free culture conditions. By treating cells with increasing concentrations of the compound and measuring metabolic activity over time, she observed a dose- and time-dependent response, where lower concentrations modestly supported short-term viability, but prolonged exposure led to significant reductions in cell health. Higher concentrations were consistently more cytotoxic, particularly at later time points. Her work highlights the importance of optimizing concentration, exposure duration, and compound stability when evaluating small molecules for use in neuronal cell systems.



Jaquelin Dominguez-Perez



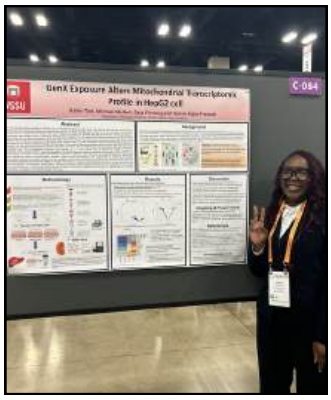
Jacobie Adams

Jacobie Adams examined the impact of GenX on mitochondrial DNA (mtDNA) using Raman spectroscopy, a technique that enables molecular-level analysis without extensive sample modification. His results showed reduced mtDNA concentration following exposure, consistent with mitochondrial damage and oxidative stress. The study highlights both the biological effects of GenX and the utility of Raman-based approaches for detecting subtle structural changes in biomolecules.

Nina Harley explored how PFAS compounds (including PFOA, PFOS, and GenX) influence the expression of PPAR genes, which regulate lipid metabolism in liver cells. Her findings showed compound-specific changes in gene expression, indicating that different PFAS may disrupt metabolic pathways in distinct ways. This work supports the use of PPAR signaling as a molecular indicator of PFAS-related metabolic dysfunction.

Nina Harley

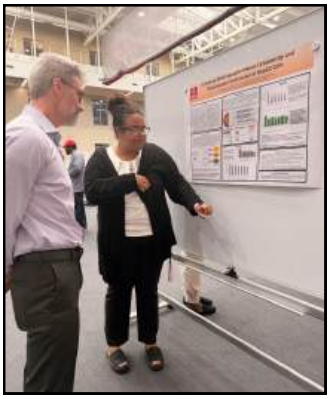
Spotlight (cont.)



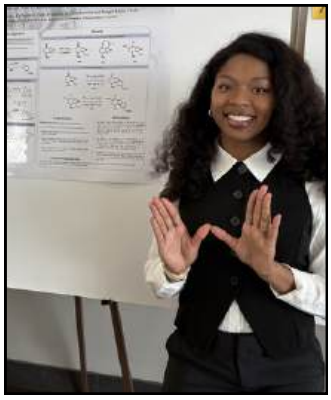
Kailin Tart

Kailin Tart conducted a transcriptomic analysis to characterize how GenX exposure alters gene expression in HepG2 cells, with a focus on mitochondrial function. She participated in identifying over 200 differentially expressed genes, with enrichment in pathways related to oxidative phosphorylation, stress response, and apoptosis. These results provide a systems-level view of how GenX perturbs cellular energy metabolism and mitochondrial integrity.

Deja Fleming investigated the combined effects of multiple PFAS compounds on cellular health and mitochondrial function. Her results showed that co-exposure led to greater cytotoxicity, reduced ATP production, and increased oxidative stress compared to individual compounds. This work underscores the importance of studying chemical mixtures and suggests that combined exposures may produce additive or synergistic biological effects.



Deja Fleming



Ka'laysia Fulp

Aisha Yakubu

As undergraduate researchers in the Department of Chemistry, Ka'Laysia Fulp and Aisha Yakubu investigated the synthesis and biological potential of novel indolizine compounds as prospective anticancer agents. Their research focused on designing and characterizing structurally modified indolizines to evaluate how chemical substitutions may influence biological activity and therapeutic potential. This work contributes to the growing field of medicinal chemistry by supporting the development of more effective small-molecule treatments and expanding understanding of structure–activity relationships in heterocyclic drug design.

BRIC Researchers Continue to Succeed with Grant Aquisitions

Dr. Wang has recently been awarded two pilot grants: the WSSU Catalyst Grant ($8,000) and the SPLENDOR-NC Pilot grant ($50,000) from the UNC Nutrition and Obesity Research Center. These awards support his research on mitochondrial-nuclear communication in metabolic inflammation and epigenetic regulation. Dr. Wang also has four more grants submitted to support his research efforts with BRIC.

Winston-Salem State University is a subaward recipient in a statewide health equity initiative led by North Carolina A&T State University through the HBCU Health Equity Data Consortium. The consortium received a total amount of $1.86 million. Supported by this funding, WSSU is advancing community-engaged research, strengthening data capacity, and supporting public health efforts across North Carolina. The work is led by Dr. Jill Keith, Dr. Tennille Presley, and Dr. Cynthia Williams-Brown and focuses on improving health outcomes in underserved communities through collaboration, data-informed strategies, and expanded partnerships.

WSSU BRIC Researchers

Presenting BRIC Accomplishments at Legislative Day

Jill Keith with WSSU Students and Senator Batch

At this year's Legislative Day, Winston-Salem State University was proudly represented at the North Carolina Legislative Building, where university leadership and students engaged directly with state lawmakers. Rather than formal research presentations, the visit focused on meaningful dialogue—providing an opportunity to share student experiences, discuss academic interests, and highlight the university's priorities with members of the General Assembly. The delegation met with legislators and participated in guided discussions about higher education and future goals. As part of these conversations, Dr. Jill Keith represented the accomplishments of BRIC, helping to elevate the impact of its programs and initiatives at the state level. The visit reflects WSSU's continued commitment to advocacy, visibility, and building strong relationships with policymakers.

Chancellor Brown Visits BRIC

This spring, the BRIC team was proud to host a visit from Dr. Bonita Brown to our labs. During the visit, several of our researchers were implementing a Advanced Cell Techniques for Regenerative Medicine Workshop, where students learned basic techniques in the cell culture rooms and learned about opportunities from BRIC faculty.
Dr. Brown listened to talks about current research, spoke with students about their experience and future plans, and participated in some of the cell culture techniques being demonstrated in the workshop.

Dr. Brown participates in cell culture practices at BRIC

Resarch Platform for HBCUs

HBCU RaCE
Research and Collaboration Exchange

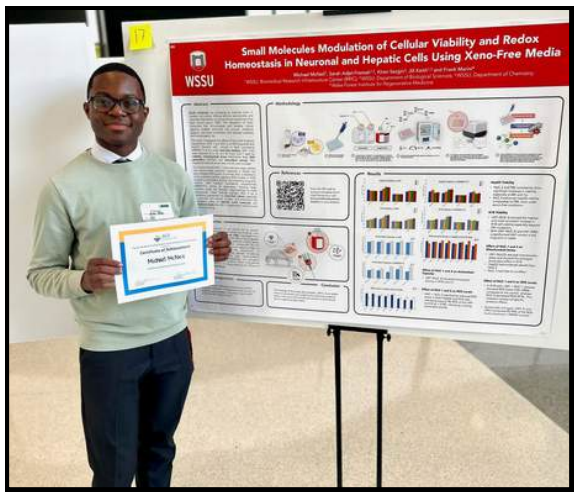
https://race.elsevierpure.com

The HBCU Research and Collaboration Exchange (RaCE) is officially active! This multi-use platform enables researchers to showcase their work, build meaningful connections, and strengthen opportunities for future research and funding. In addition to increasing visibility, RaCE can be leveraged to find co-authors, serve as a consultant, and connect with like-minded entrepreneurs working across disciplines and industries. Creating a profile is quick and seamless, with automatic updates available through accounts such as ORCID.

The Next Chapter

Michael McNeil has been an integral member of the WSSU Biomedical Research Infrastructure Center (BRIC), contributing not only as a skilled researcher but also as a mentor, communicator, and ambassador for student-driven science. During his time with BRIC, he supported and helped advance key biomedical research efforts focused on cell biology, protocol optimization, and public health–relevant investigations, including work exploring small-molecule alternatives to fetal bovine serum in cell culture systems.

Beyond his technical contributions in the lab, Michael played a visible role in strengthening BRIC's student research culture. He regularly assisted with lab training, demonstrated cell culture techniques for student researchers, and helped guide peers in developing scientific confidence and rigor. His presence at major research events, including ABRCMS, reflects his commitment to elevating student scholarship and representing WSSU's research excellence on national stages.



Michael also brought strong leadership and communication skills to BRIC, shaped by an early record of student leadership and service. At WSSU, he consistently engaged in collaborative research environments, contributed to outreach and lab tours for visiting scholars, and supported BRIC's broader mission of preparing the next generation of biomedical scientists. As he transitions into the M.D./Ph.D program at Albert Einstein College of Medicine, Michael leaves BRIC with a legacy of academic excellence, mentorship, and scientific curiosity. His contributions strengthened both the research output and the learning environment of the center, reflecting BRIC's mission of developing talented scholars who are prepared to lead in medicine, research, and service.