MICHAEL MCNEIL

Aspiring Physician-Scientist.

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CONTACT MICHAEL

ABOUT

Michael McNeil is a Jamaican cell biologist and multidisciplinary professional based in the North Carolina Triad. His research focus lies in cellular dysfunction and public health.

CURRENT POSITION

WSSU BIOMEDICAL RESEARCH INFRASTRUCTURE CENTER — WINSTON-SALEM, NC
Research Assistant — June 2024 - Present

EDUCATION

ARIZONA STATE UNIVERSITY — TEMPE, AZ
Bachelor of Science in Biological Sciences — May 2024
Concentration in Genetics, Cell, and Developmental Biology — Summa Cum Laude

CENTRAL CAROLINA COMMUNITY COLLEGE — SANFORD, NC
Associate in Science — August 2021

ACADEMIC HONORS & AWARDS

ARIZONA STATE UNIVERSITY — ACADEMIC AWARD
Dean's List — 2021 / 2022

CENTRAL CAROLINA COMMUNITY COLLEGE — ACADEMIC AWARD
Dean's List — 2021

RESEARCH EXPERIENCE

WINSTON-SALEM STATE UNIVERSITY / WAKE FOREST UNIVERSITY — WINSTON-SALEM, NC

Research Assistant — **September 2024 - Present**

Principal Investigator: Sarah Adjei-Fremah, PhD — Biomedical Research Infrastructure Center

Designed and conducted experiments to test serum-free growth media as an ethical and scientifically reproducible alternative to fetal bovine serum, a widely used culture supplement derived from livestock. Optimized growth conditions for diverse cell lines, including HepG2 (human hepatic), N18 (murine neuroblastoma), SH-SY5Y (human neuroblastoma), Kupffer (human hepatic), and human dermal fibroblast cells. Assessed the efficacy of small molecules to promote cell growth, proliferation, and differentiation under serum-free conditions.

WINSTON-SALEM STATE UNIVERSITY / WAKE FOREST UNIVERSITY — WINSTON-SALEM, NC

Research Assistant — **June 2024 - August 2024**

Principal Investigator: Sarah Adjei-Fremah, PhD — Biomedical Research Infrastructure Center

Contributed to an NSF-funded study exploring the effects of ammonium 2,3,3,3-tetrafluoro-2-(heptafluoropropoxy)-propanoate (GenX), a novel PFAS compound, on mitophagy in HepG2 (liver carcinoma), MCF7 (breast cancer), and N18 (neuronal) cell lines. Designed and performed cell culture experiments, exposing cells to varying concentrations of GenX, and analyzed mitophagy markers using CytoFLEX flow cytometry.

CLINICAL EXPERIENCE

OAK STREET HEALTH — COLUMBIA, SC

Clinical Informatics Specialist — **April 2023 - August 2023**

Physician: Tad Venn, MD

Practice Manager: Tosha Green

Documented patient encounters with meticulous attention to detail, capturing comprehensive medical histories and current conditions to support accurate diagnosis and treatment planning. Ensured precise coding of treatments and diagnoses while providing patients with clear, actionable after-visit summaries for continued care.

Streamlined clinic operations by managing medical records, coordinating specialist referrals, and ordering diagnostic tests.

Maintained up-to-date patient information to enhance care continuity and operational efficiency.

Collaborated closely with healthcare providers to deliver accurate, high-quality clinical documentation and optimize patient outcomes.

INSTRUCTIONAL EXPERIENCE

WINSTON-SALEM STATE UNIVERSITY / WAKE FOREST UNIVERSITY — WINSTON-SALEM, NC

Research Assistant — June 2024 - Present

Provided technical and conceptual cell biology tutorials to undergraduate students of Winston-Salem State and Wake Forest University. Trained and mentored undergraduate researchers, guiding through them each stage of the academic research process—from experimental design, assay selection, protocol preparation, and troubleshooting to data analysis and effective presentation.

Private STEM Instructor — January 2022 -Present

Developed personalized review sessions for middle school, high school, and college-level students in STEM subjects. Tailored each session to meet students' unique learning needs and academic goals, facilitating comprehension of complex concepts and enhancing academic performance. Provided supplemental resources and insightful feedback on key academic parameters.

ORANGEBURG COUNTY SCHOOL DISTRICT — ORANGEBURG, SC

Volunteer Classroom Aide — August 2022 - January 2023

Streamlined student, teacher, and administrator workflow at the Refocus Academy, a transformative specialized school for vulnerable students with documented academic or behavioral obstacles to success. Monitored student activity and progress. Assisted in the design, planning, and execution of various school programs.

SCHOOLHOUSE.WORLD — REMOTE

Certified Volunteer Tutor — April 2021 - March 2023

Introduced learners around the world to new perspectives in mathematics and science via the nonprofit platform Schoolhouse, a peer-to-peer tutoring service from the founder of the globally acclaimed learning resource Khan Academy. Established an international team of STEM tutors to address learners' most pressing needs.

HARNETT COUNTY SCHOOLS — DUNN, NC

Volunteer Academic Tutor — April 2021 - March 2023

Provided free tutoring in a variety of subjects and skills across all high school grade levels. Orchestrated a multifaceted schoolwide program for teacher-driven content remediation, group-driven clubs and community projects, and student-driven peer tutoring. Recruited and organized a robust network of peer tutors. Designed an interactive website to continue this program following a transition to distance learning.

■ RESEARCH HONORS & AWARDS

ANNUAL BIOMEDICAL RESEARCH CONFERENCE FOR MINORITIZED SCIENTISTS — SAN ANTONIO, TX

Postbaccalaureate Presentation Awardee — November 2025

CENTRAL NORTH CAROLINA SECTION OF THE AMERICAN CHEMICAL SOCIETY — GREENSBORO, NC

2nd Place - Undergraduate Poster Division — April 2025

■ SCIENTIFIC PRESENTATIONS

ANNUAL BIOMEDICAL RESEARCH CONFERENCE FOR MINORITIZED SCIENTISTS — SAN ANTONIO, TX

Xeno-Free Media Optimization of Hepatic and Neuronal Cell Culture Using Chemically Defined Small Molecules — November 2025

REGENERATIVE MEDICINE FOR ALL PUBLIC DAY — WINSTON-SALEM, NC

Regenerative Medicine and Bioengineering Programs at NC A&T / WSSU Professional Panel — June 2025

JOINT SCHOOL OF NANOSCIENCE & NANOENGINEERING POSTER VENDOR NIGHT — GREENSBORO, NC

Small Molecules Modulation of Cellular Viability and Redox Homeostasis in Neuronal and Hepatic Cells Using Xeno-Free Media — April 2025

ANNUAL BIOMEDICAL RESEARCH CONFERENCE FOR MINORITIZED SCIENTISTS — PITTSBURGH, PA

GenX-Induced Mitophagy and Mitochondrial Stress Responses in Hepatic, Breast, and Neuronal Cell Lines — November 2024

■ GUEST LECTURES & SEMINARS

WINSTON-SALEM STATE UNIVERSITY — WINSTON-SALEM, NC

From Bench to Bedside and Back: Navigating the Path to Medicine and Research — April 2026

WINSTON-SALEM STATE UNIVERSITY — WINSTON-SALEM, NC

From Bench to Bedside and Back: How Clinical Questions Become Research—and Why it Matters for Nurses — April 2026

GUEST LECTURES & SEMINARS, CONTD.

WINSTON-SALEM STATE UNIVERSITY — WINSTON-SALEM, NC

Spring 2026 Capstone Experience — **March 2026**

Supplementary Talk to Dr. Brenda Latham-Sadler

WSSU REGENERATIVE MEDICINE WORKSHOP - ADVANCED CELL CULTURE TECHNIQUES — WINSTON-SALEM, NC

Traditional Cell Culture Overview Seminar — **March 2025**

RESEARCH PUBLICATIONS

IN PREP — RESEARCH ARTICLE

Adjei-Fremah, S., McNeil, M., Pratt, T., Harge, D., Wooten, M., Keith, J., Kiren, S., & Marini, F. (TBD). Effect of commercial small molecule supplements on HepG2 and neuronal cell viability and functionality under xeno-free conditions.

IN PREP — REVIEW ARTICLE

Adjei-Fremah, S., McNeil, M., Keith, J., Presley, T., Kemmis, C., & Marini, F. (TBD). Cell culture media optimization: A focus on xeno-free components and growth-promoting small molecules.

IN PREP — RESEARCH ARTICLE

Adjei-Fremah, S. & McNeil, M. (TBD). GenX-induced mitophagy and mitochondrial stress responses in hepatic, breast, and neuronal cell lines.

IN PREP — RESEARCH ARTICLE

Hayes, Q., Keith, J., Adjei-Fremah, S., Fitzgerald, R., & McNeil, M. (TBD). Synthesis and investigation of antiaging properties of dopamine transporter inhibitor analog on D-galactose-induced SHSY-5Y neuroblastoma cells.

RESEARCH COLLABORATIONS

TRAINING + METHODOLOGY GUIDANCE — POSTER

Gaines, A., McNeil, M., Adjei-Fremah, S., & Keith, J. (2026). Assessing hepatic spheroid growth and viability in xeno-free and traditional media.

SECONDARY PROJECT POSTER

Boakye, M., McNeil, M., & Adjei-Fremah, S.. (2026). GenX effects on mitophagy gene expression in HepG2 cells.

SECONDARY PROJECT POSTER

Adams, J., McNeil, M., Zablon, F., Naeini, J., & Adjei-Fremah, S.. (2026). GenX induced structural alterations in mitochondrial DNA of HepG2 cells using Raman spectroscopy.

TRAINING + METHODOLOGY GUIDANCE POSTER

Whitehurst, N., McNeil, M., Adjei-Fremah, S., & Keith, J. (2026). Developing a streamlined cell culture training pathway for undergraduate researchers.

TRAINING + METHODOLOGY GUIDANCE POSTER

Manuel, M., McNeil, M., Adjei-Fremah, S., & Keith, J. (2026). Quantitative assessment of xeno-free media on cellular viability in small airway epithelial cells.

TRAINING + METHODOLOGY GUIDANCE POSTER

Alford, J., McNeil, M., & Adjei-Fremah, S. (2026). Workflow optimization for multi-platform analysis of GenX effects on mitochondrial and cellular morphology.

TRAINING + METHODOLOGY GUIDANCE POSTER

Miles, S., Adjei-Fremah, S., McNeil, M., & Keith, J. (2025). Dopamine transporter inhibitor analog compound modulates N18 neuronal cell viability under xeno-free conditions.

SECONDARY PROJECT POSTER

Harge, D., Adjei-Fremah, S., McNeil, M., & Keith, J. (2025). Effect of Fetuin-A and Noggin on cell growth and viability of SH-SY5Y neuronal cells under xeno-free conditions.

SECONDARY PROJECT POSTER

Wooten, M., Keith, J., & Adjei-Fremah, S. (2025). Effect of nicotinamide on dermal fibroblast cell growth and viability using xeno-free media.

SECONDARY PROJECT POSTER

Pratt, T., Adjei-Fremah, S., McNeil, M., & Keith, J. (2025). Optimizing serum-free media with dexamethasone for enhanced viability in HepG2 and SH-SY5Y cells.

TRAINING + PRESENTATION GUIDANCE — POSTER

Nowell, D., Byrne, S., & Presley, T. (2025). The effects of solfeggio frequencies on human aortic endothelial cells in commercial and universal media.

TRAINING + METHODOLOGY GUIDANCE — POSTER

Miles, S., Awkward, E., Fitzgerald, R., Adjei-Fremah, S., & Keith, J. (2025). Synthesis and testing of WSSU-4, a diphenylpyraline derivative.

TRAINING + METHODOLOGY GUIDANCE — POSTER

Awkward, E., Fitzgerald, R., Adjei-Fremah, S., & Keith, J. (2024-5). Synthesis and testing of WSSU-4, a diphenylpyraline derivative.

SECONDARY PROJECT — POSTER

Tart, K., McNeil, M., Fleming, D., & Adjei-Fremah, S. (2026). GenX exposure alters mitochondrial transcriptomic profile in HepG2 cells.

SECONDARY PROJECT — POSTER

Fleming, D., Victoria, G., Diab, M., & Adjei-Fremah, S. (2026). Combined PFAS exposure induces cytotoxicity and mitochondrial dysfunction in HepG2 cells.

SECONDARY PROJECT — POSTER

Hart, J. & Adjei-Fremah, S. (2024). Assessing mitochondrial DNA damage induced by GenX in HepG2 cells: A quantitative analysis using 8-OHdG.

SECONDARY PROJECT — POSTER

Osei, L. & Adjei-Fremah, S. (2024). PFAS-induced mitochondrial dysfunction and aging in N18 neuroblastoma cells.

SECONDARY PROJECT — POSTER

Fulp, K., Hart, K., McNeil, M., & Adjei-Fremah, S. (2024). GenX exposure induces mitophagy, mitochondrial dysfunction, and mitochondria DNA damage in HepG2 cells.

SECONDARY PROJECT — POSTER

Owusu, T. & Adjei-Fremah, S. (2024). Synergistic inflammatory and metabolic disruptions by PFAS chemicals and lipopolysaccharide exposure in HepaRG cells.

SELECTED PROFESSIONAL CONFERENCES, WORKSHOPS, & ASSEMBLIES

HENRY B. GONZÁLEZ CONVENTION CENTER — SAN ANTONIO, TX

Annual Biomedical Conference for Minoritized Scientists — November 2025

UNIVERSITY OF NORTH CAROLINA ADAMS SCHOOL OF DENTISTRY — CHAPEL HILL, NC

National Institute of Diabetes and Digestive and Kidney Diseases R25 2025 Symposium — July 2025

WAKE FOREST BIOTECH PLACE — WINSTON-SALEM, NC

Wake Forest Regenerative Medicine for All Public Day — June 2025

FORSYTH TECHNICAL COMMUNITY COLLEGE — WINSTON-SALEM, NC

National Science Foundation / NC Regenerative Medicine Engine Regenerative Medicine Essentials — April 2025

JOINT SCHOOL OF NANOSCIENCE AND NANOENGINEERING — GREENSBORO, NC

American Chemical Society Poster Vendor Night — April 2025

WSSU / WAKE FOREST INSTITUTE FOR REGENERATIIVE MEDICINE — WINSTON-SALEM, NC

WSSU Regenerative Medicine Workshop - Advanced Cell Culture Techniques — March 2025

DAVID L. LAWRENCE CONVENTION CENTER — PITTSBURGH, PA

Annual Biomedical Conference for Minoritized Scientists — November 2024

SELECTED COMMUNITY SERVICE EXPERIENCE

EDUCATION WINSTON-SALEM STATE UNIVERSITY — WINSTON-SALEM, NC

Instructional Volunteer — August 2025

Partnered with Winston-Salem State University and the Greensboro Seventh-Day Adventist Church to lead interactive biology sessions for young learners.

SELECTED COMMUNITY SERVICE EXPERIENCE, CONTD.

HEALTH PATHWAY TO HEALTH / AMEN CLINIC — GREENSBORO, NC

Patient Care Assistant — October 2024

Promoted the free dental, optical, dermatological, pediatric, obstetric, physiotherapeutic, mental, and general care services of the Mega Triad Clinic, a free pop-up health center, door-to-door in local underserved communities ahead of the event

Directly interfaced with patients during the event to guide them to appropriate channels of care.

EDUCATION GREENSBORO SDA SUMMER SCIENCE EXPO — GREENSBORO, NC

Instructional Volunteer — July 2024

Collaborated with science presenters to optimize compact, engaging, and developmentally appropriate learning experiences in chemistry and physical science.

Directed structured and interactive lessons to enhance science literacy and forge educational connections for elementary, middle, and high school-aged learners.

SOCIAL SERVICES HARNETT COUNTY ELDERLY NUTRITION PROGRAM — DUNN, NC

Food Distribution Volunteer — August 2019 - May 2020

Packaged and delivered hot meals to ill or invalided senior citizens. Learned how best to treat those in need of comfort or recognition, advocate for the needs of others, and provide care in team settings.

SENIOR CARE DUNN SENIOR ENRICHMENT CENTER — DUNN, NC

Senior Citizen Activity Assistant — August 2019 - May 2020

Facilitated enrichment sessions for senior citizens, including stimulating games and creative activities

POVERTY ALLEVIATION COMBINED UNIFIED COMMUNITY SERVICE — FAYETTEVILLE, NC

Food and Clothing Distribution Volunteer — July 2016 - December 2020

Aided with religious and social improvement projects for disadvantaged adults and youth in the Fayetteville metropolitan area. Packaged and distributed food and clothing donations. Expanded the impact and reach of these projects with custom-designed promotional material.

■ PROFESSIONAL ASSOCIATIONS + AFFILIATIONS

American Association for Cancer Research	December 2024 - Present
American Association for the Advancement of Science	December 2024 - Present
American Society for Cell Biology	December 2024 - Present
Arizona State University Alumni Association	May 2024 - Present
Biomedical Research Infrastructure Center (WSSU)	June 2024 - Present
Wake Forest Institute for Regenerative Medicine (WFU)	June 2024 - Present

■ RESEARCH TECHNIQUES + RELEVANT SKILLS

Cell Culture / Aseptic Technique, Biosafety Hood Workflow and Maintenance, Cell Counting, Cryopreservation, Growth Optimization, Hemocytometry, Media Preparation, Microscopy, Subculture

Computation / Adobe Creative Cloud (including Adobe Acrobat, Illustrator, and InDesign), AI Solutions, BLAST, Microsoft Office (including Microsoft Excel and Word), R, SPSS, Statistical Data Analysis

Experimental Techniques / Assay Selection, Cell Viability Protocols, Experimental Design, Fluorescent Spectrophotometry, Literature Review, Troubleshooting

Genetics / DNA and RNA Extraction Protocols, NanoDrop Spectrophotometry, Primer Design and Selection

Professional / Planning and Organization, Leadership, Communication, Technical Writing, Collaborative Problem Solving, Project Management

■ PRESS

INNOVATION QUARTER — PROFILE ARTICLE

Innovation Quarter. (2025, April 15). *Michael McNeil, the next generation of cell biologist* in "Keeping the gears moving: Unsung heroes of research in the iQ." https://www.innovationquarter.com/articles/keeping-the-gears-moving-unsung-heroes-of-research-in-the-iq/