

ISAAC WILLIAMS

Sunyani, Ghana | isaac.williams@uenr.edu.gh | +233205804402 ||[LinkedIn](#)

EDUCATION

Kwame Nkrumah University of Science and Technology (KNUST)

Master of Philosophy in Microbiology CWA 72.75/100 (CGPA 3.75/4.0)

Kumasi, Ghana

Nov 2023 – Present

Relevant courses: Scientific communication, Research ethics, Research methods, Medical microbiology

University of Energy and Natural Resources (UENR),

Bachelor of Science in Biological Science CGPA 3.68/4.0

Sunyani, Ghana

Sept 2017 – Oct 2021

LIST OF RESEARCH WORKS

1. Development of a high-sensitivity molecular assay for active case detection of high-risk HPV and female genital schistosomiasis in rural Ghana
2. Mapping environmental threats for helminthiasis and schistosomiasis drug resistance among children in a persistently endemic rural community in Ghana. **Funded by RSTMH**
3. Laboratory surveillance of ESBL and colistin-resistant genes in Enterobacteriaceae Clinical isolates obtained from the three major hospitals in Sunyani, Ghana
4. Implementation of a self-sampling strategy for improving access to cervical screening and the detection of female genital schistosomiasis in rural Ghana. **Funded by ARNTD**
5. Cross-sectional evaluation of anti-SARS-CoV-2 antibody response to AZD1222 recombinant vaccine deployment in the Bono Region, Ghana

Undergraduate Research Thesis, UENR

Jan 2021 – Oct 2021

Thesis title: Physicochemical analysis and isolation of multidrug-resistant enteric bacteria in drinking water from different sources in Agona Swedru, Ghana

Supervisor: Prof. Samuel Fosu-Gyasi

- Collected and analyzed 78 drinking water samples, measured some physicochemical parameters to evaluate water quality against WHO standards.
- Quantified total coliform and *E. coli* counts using a culture-based method to detect microbial contamination in the community water sources.
- Isolated and identified 219 bacterial strains, including *E. coli*, *Pseudomonas*, *Vibrio*, *Salmonella*, *Klebsiella*, *Shigella*, *Citrobacter*, *Proteus spp*
- Determined antimicrobial susceptibility patterns of the isolates using the Kirby-Bauer disc diffusion method, interpreted per CLSI guidelines, and identified multi-drug-resistant strains.

Undergraduate research supervised

1. Surveillance of ESBL resistance genes in diabetic patients from two hospitals in the Sunyani Municipality
Nov 2023 – Nov 2024
2. Comparative performance of isothermal PCR tests for the detection of high-risk HPV in remote settings in Ghana. Nov 2022 – Nov 2023
3. Bacterial load on fresh vegetables and their resistance to the currently used antibiotics in Sunyani Oct 2022-2022

PUBLICATION

-
- Yahaya I, Gyasi SF, **Williams I**, Bismark AO. Comparative Analysis of the Root and Root Bark Extracts of *Syzygium samarangense* by Spectroscopic Characterization and Antimicrobial Effects
 - Gyasi SF, Donkoh ET, Frempong S, Asamoah A, Raji AS, **Williams I**, Baidoo RC, Essel D, and Asakiya HA. Cross-sectional evaluation of anti-SARS-CoV-2 antibody response to AZD1222 recombinant vaccine deployment in the Bono Region, Ghana [DOI](#)

MANUSCRIPTS IN PEER REVIEW

- Effah K, Ametefe DL, Amuah JE, Essel NOM, Afetor M, Dugbazah AE, Deho E, Kemawor S, Danyo S, Sesenu E, Tay G, Kitcher YT, Gedzah I, **Williams I**, Klutsey GB, Donkoh ET: Implementing a collaborative cervical precancer screening strategy with concurrent HPV genotyping and visual inspection across Ghana: The ‘Protect Your Pearl’ initiative. Submitted to The Lancet Public Health
- Donkoh ET, Iddrisu WA, Ahiakpa AK, **Williams I**, Akologo RN, Danyo S, Kubio C, Effah K, Amuah JE. Assessing the impact of cervical cancer prevention and training programmes in Ghana: a systematic review and meta-analysis protocol. Submitted to PLOS ONE with manuscript ID: PONE-D-25-31551
- Gyasi SF, Donkoh ET, **Williams I**, Ofori-Atta RJ, Baidoo RC, Akologo RN, Essel D, Yabiri S, Arthur E, Attakor FM, Antwi M, Boateng DA, Fuseni F, Jones FP, Arthur SK, Predaney HZY, Yahaya I. Investigating the role of hospital wastewater in the spread of extended-spectrum beta-lactamase-mediated antimicrobial resistance in Ghana. Submitted to the Journal of Environmental Studies
- Yahaya I, Gyasi SF, **Williams I**. Antimicrobial and Relational Investigation of the Secondary Metabolites in the Stem and the Stem Bark of *Syzygium samarangense*. (Submitted to Pharmacological Research-Natural Products with manuscript ID: PRENAP-D-24-00196)
- Yahaya I, Darko B, Oppong B A, **Williams I**. Phytochemical Profiling, Spectroscopic Characterization, and Antimicrobial Activity of *Carica papaya* Seed Extracts. (Submitted to Revista Brasileira de Farmacognosia)

CONFERENCES AND PRESENTATIONS

- Providing reliable HPV DNA screening services to support national cervical cancer prevention efforts in Ghana. Oral presentation delivered at the Maiden International Conference on Science, Technology, and Health Innovation for Sustainable Development, UENR, Ghana. Aug 2025
- Investigating the role of hospital wastewater in the spread of extended-spectrum beta-lactamase-mediated antimicrobial resistance in Ghana. Oral presentation delivered at the Maiden International Conference on Science, Technology, and Health Innovation for Sustainable Development, UENR, Ghana, Aug 2024
- Cross-sectional evaluation of anti-SARS-CoV-2 antibody response to AZD1222 recombinant vaccine deployment in the Bono Region, Ghana. Poster presentation at the annual science fest organized by the School of Science in collaboration with CeRAB, Ghana, Aug 2022
- Physicochemical analysis and isolation of multi-drug resistance enteric bacteria in drinking Water from different sources in Agona Swedru, Ghana. Defended to a panel of 7 faculty members at the Department of Biological Sciences, UENR, Ghana, Oct 2021

HONORS, AWARDS, AND SCHOLARSHIPS

Fully Funded Scholarship to Participate in Bacteriology Hands-on-Training at KCCR	Nov 2024
<i>Awarded to 20 Research and Laboratory scientists to mark World Antimicrobial Awareness Week</i>	
Fully Funded Scholarship to Participate in Systematic Review and Meta-analysis	KNUST, July 2024
<i>Awarded to 50 KNUST Master's students</i>	
Vice Chancellor's Leadership Award, UENR	Dec 2021
Ghana Scholarship Secretariat (GSS) Scholarship	Dec 2020 – Oct 2021
<i>Awarded to needy but brilliant students</i>	

TEACHING, MENTORSHIP AND LEADERSHIP (40 hours per week)

Head of Microbiology Unit, CeRAB	June 2023, 2024 and 2025
• Trained 426 undergraduate students in Medical Laboratory and Biological Sciences on molecular techniques, including nucleic acid extraction and real-time PCR, through hands-on laboratory sessions. • Mentored 6 Master's students in internships, providing training in microbiological assays, molecular diagnostics, and data analysis.	

Teaching Assistant, Department of Biological Science and Medical Laboratory Science Oct 2021 - Sept 2023
University of Energy and Natural Resources, Sunyani- Ghana

- Tutored 21 undergraduate students individually in microbiology and molecular biology, resulting in an average 30% improvement in performance.
- Designed, administered, and graded midterm and final examinations to 146 undergraduate students and ensured timely feedback with a one-week turnaround.

WORK EXPERIENCE

Research Intern, St. Luke Catholic Hospital Research Laboratory, Apam, Ghana June 2018 – Sep 2018

- Processed and analyzed blood, urine, and stool samples by microscopy for routine diagnostics, ensuring accurate detection of parasitic and bacterial infections.
- Utilized GeneXpert and Ziehl-Neelsen staining method to detect *Mycobacterium tuberculosis* in clinical samples, improving the sensitivity and reliability of tuberculosis diagnosis.

COMMUNITY IMPACT AND VOLUNTEER EXPERIENCE

- Collaborated with Omni Diagnostic to implement national HPV screening and screened 1200 women across Ghana
- Collaborated with the Rotary club and the Cervical Cancer Prevention and Training Centre (CCPTC) to implement nationwide HPV screening, during which we screened 1700 women across Ghana
- Monitored the Polio vaccination exercise and activities of the immunization team across the Techiman North district while working with the United Nations and Ghana Health Service on Polio eradication in Ghana

World HPV Day

March 2023 & 2024

- Formed part of a team to train 60 midwives in the three major Hospitals in the Sunyani Municipality on HPV screening and endocervical swab collection.

RELEVANT SKILLS

Laboratory Techniques: RT-PCR and Conventional PCR, DNA/RNA Extraction, Bacterial/Parasite identification, Gene cloning, Protein Purification, Gel Electrophoresis, ELISA, Isothermal PCR, Primer and probe design, in-silico analysis

Laboratory Skills: BSL-2 and BSL-3 Laboratory Experience, Quality Control, Laboratory and Safety Management, Experience in handling samples in microbiology and molecular biology laboratories.

Software: SPSS, GraphPad, R-software, and Microsoft Office

Personal Skills: Community engagement, Fast learner, Organizational skill, Research enthusiasm, Problem-solving, Grant writing, Manuscript writing

TRAINING, WORKSHOPS, AND PROFESSIONAL DEVELOPMENT COURSE

Bacteriology Hands-on-Training	Nov 2024
Introduction to Grant Writing	June 2024
Introduction to Cancer Biology	Jun 2023
Introduction to Bioinformatics	Aug 2023

PROFESSIONAL ASSOCIATION

Member, International Papillomavirus Society (IPVS)	2023 - Present
Member, Black in Microbiology	2023 - Present
Member, American Society for Microbiology (ASM)	2021 – Present
Member, African Society for Laboratory Medicine (ASLM)	2021 – Present