

Date of last update: 22nd May 2024

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Education

- 2022-Present PhD Student
Van Andel Institute Graduate School
Grand Rapids, MI, USA
- Project: Metabolic regulation of dendritic cell activation
Mentor: Connie Krawczyk (PhD): connie.krawczyk@vai.org
- 2015-2019 Biochemistry (BSc)
University of Cape Coast,
Cape Coast, Ghana
- Dissertation: Stabilization of ascorbic acid through liposomal encapsulation
Supervisor: Francis Abrokwa (PhD): fabrokwa@ucc.edu.gh

Research and Teaching Experience

- 2023-present **PhD Student**
Van Andel Institute Graduate School
Project: Metabolic regulation of dendritic cell activation.
I combine techniques in the fields of metabolism, immunology, AND epigenetics to understand how metabolism regulates the activation process of dendritic cells. Results from this project are expected to offer novel opportunities to potentiate DC activation for enhanced T cell priming, which will be key for the development of the next-generation DC-based cancer vaccines.
Mentor: Connie Krawczyk (PhD)
- 2022 - 2023 **Rotation Student**
Van Andel Institute Graduate School
- Investigated the DNA methylome of colorectal cancer mice expressing Dnmt1 hypomorphs. (**Laird Lab**)
Supervisor: Peter Laird (PhD): peter.laird@vai.org
 - Investigated the epigenetic modifiers that are differentially expressed in HEK293T cells expressing the C9orf72 dipeptide repeats. (**Zhu Lab**)
Supervisor: Peter Laird (PhD): qiang.zhu@vai.org
 - Cloned, transfected, and expressed KDM5C in T cells. Characterized transduction efficiency by flow cytometry and western blotting. (**Krawczyk Lab**)
Supervisor: Peter Laird (PhD): connie.krawczyk@vai.org
- 2020 - 2022 **Research Assistant**
Kumasi Center for Collaborative Research in Tropical Medicine (KCCR), Ghana
- Performed bioinformatics and computational studies.
 - Prepared manuscripts for journal publication.
 - Assisted research on lymphatic filariasis stigmatization.
- Supervisor:** Alexander Kwarteng (PhD): senkwarteng@yahoo.co.uk
- 2019-2020 **Teaching Assistant**
Department of Biochemistry, University of Cape Coast, Ghana
- Taught undergraduates practical courses (microscopy, spectroscopy, and electrophoresis)
 - Assisted lecturers with supervision and tutoring of undergraduates.
 - Marked and graded undergraduate examinations.
- 2018-2019 **Undergraduate Research**
Stabilization of ascorbic acid through liposomal encapsulation.
- Conceptualized and designed research.
 - Isolated egg phospholipids to prepare liposome-encapsulated ascorbic acid.
 - Analyzed encapsulated ascorbic stability.
- Supervisor:** Francis Abrokwa (PhD): fabrokwa@ucc.edu.gh

Research Interests

Immunology, Cancer vaccines, Epigenetics, Neuro-oncology

Research Works

Under peer-review

- Guak H, Weiland W., Vander Ark A., Zhai L., Kin Lau, Corrado M., Davidson P., **Asiedu E.**; Mabvakure B., Compton S., DeCamp L., Scullion A. C., Jones R. G., Nowinski S. M., Krawczyk C., *et al.* (2024). The histone demethylase KDM5C regulates IRF transcriptional programming impacting dendritic cell population heterogeneity and function. **Cell Reports**
- **Asiedu, E.**, *et al.*, (2023). Genomic analyses reveal molecular factors associated with an inverse relationship between glial tumorigenesis and neurodegeneration in Alzheimer's disease. **Scientific Reports**

Published

1. **Asiedu, E.**, Larbi, A., Adankwah, E., Yambah, K. J., Obiri-Yeboah, D., Kwarteng, A. Transcriptome profiling reveals unique biological mechanisms and gene signatures associated with cerebral malaria. (2022). **Gene Reports** 28.
<https://doi.org/10.1016/j.genrep.2022.101650>
Role: Conceptualized study, performed all analysis, wrote manuscript
2. Kwarteng, A., **Asiedu, E.**, Koranteng, K. K. & Asiedu, S. O. Highlighting the Relevance of CD8+ T Cells in Filarial Infections (2021). **Frontiers in Immunology** 12, 1–11.
<https://doi.org/10.3389/fimmu.2021.714052>
Role: Prepared figures, wrote manuscript
3. Kwarteng, A., **Asiedu, E.**, Sylverken, A., Larbi, A., Mubarik, Y., & Apprey, C. (2021). *In silico* drug repurposing for filarial infection predicts nilotinib and paritaprevir potential inhibitors of the Wolbachia 5'-aminolevulinic acid synthase. **Scientific Reports**, 1–14. <https://doi.org/10.1038/s41598-021-87976-4>
Role: Conceptualized study, performed all analysis, wrote manuscript
4. Kwarteng, A., Sylverken, A., **Asiedu, E.**, & Ahuno, S. T. (2021). Genome editing as control tool for filarial infections. **Biomedicine & Pharmacotherapy**, 137, 111292.
<https://doi.org/10.1016/j.biopha.2021.111292>
Role: Prepared figures, wrote manuscript
5. Kwarteng, A., **Asiedu, E.**, Sylverken, A. A., Larbi, A., Sakyi, S. A., & Asiedu, S. O. (2021). Molecular characterization of interactions between the D614G variant of SARS-CoV-2 S-protein and neutralizing antibodies: A computational approach. **Infection, Genetics and Evolution**, 91, 104815. <https://doi.org/10.1016/j.meeqid.2021.104815>
Role: Conceptualized study, performed all analysis, wrote manuscript
6. Fordjour, F. A., **Asiedu, E.**, Larbi, A., & Kwarteng, A. (2021). The role of nuclear factor kappa B (NF-κB) in filarial pathology. **Journal of Cell Communication and Signaling**, 15(2), 185–193. <https://doi.org/10.1007/s12079-021-00607-5>
Role: Prepared figures, reviewed manuscript
7. Kwarteng, A., **Asiedu, E.**, Mubarik, Y., Katawa, G., & Asiedu, S. O. (2021). Exploring *Onchocerca volvulus* Cysteine Protease Inhibitor for Multi-epitope Subunit Vaccine Against Onchocerciasis: An Immunoinformatics Approach. **Int. J. Pep. Res. Ther**, 1–14. <https://doi.org/10.1007/s10989-021-10224-w>
Role: Conceptualized study, performed all analysis, wrote manuscript
8. Kwarteng, A., **Asiedu, E.**, Sakyi, S. A., & Asiedu, S. O. (2020). Targeting the SARS-CoV2 nucleocapsid protein for potential therapeutics using immuno-informatics and structure-based drug discovery techniques. **Biomedicine & Pharmacotherapy**, 132, 110914.

<https://doi.org/10.1016/j.biopha.2020.110914>

Role: Conceptualized study, performed all analysis, wrote manuscript

9. **Asiedu, E.** (2020). Designing Effective Small Interfering RNA for Post-Transcriptional Silencing of Human GREM1: A Comprehensive Bioinformatics Approach. **Preprint.** <https://doi.org/10.1101/2020.01.23.917559>
10. **Asiedu, E.** (2019). *In-Silico* Methods for Investigating the Effect of Single Nucleotide Polymorphisms on the Structure and Function of Proteins: A Review. **Preprint.** 2019120131. <https://doi.org/10.20944/preprints201912.0131.v1>

Skills

- > **Programming:**
 - R, Python
- > **Bioinformatics:**
 - Analyses of Transcriptomics data, DNA methylation data, Histone modification data Protein Structure Modeling and Molecular Simulation, In silico drug screening Immuno-informatics, Machine Learning.
- > **Molecular biology assays:**
 - Flow Cytometry, Western Blotting, PCR, CRISPR-Cas9 gene editing, Cloning.
- > **Non-technical**
 - Quick Learner, Strategic, Organized, Team-player, Critical thinking, quick learner, Science communication.

Awards

Travel:

- > AACR Student and Early Career Investigator Scholarship (2021)
To support the attendance of the 14th AACR Conference on The Science of Cancer Health Disparities in Racial/Ethnic Minorities and the Medically Underserved held on October 6-8, 2021

Leadership Services

- > **President:** August 2018-May 2019
Biological Sciences Students' Association of Ghana (BIOSSTAG), University of Cape Coast Chapter

Professional Development Training

- > Epigenomics analysis, Canadian Bioinformatics Workshop (CBW), September 2021
- > Ethical Conduct for Research Involving Humans (TCPS 2), Canadian Panel on Research Ethics, April 2021

Webinar Talks

- > Immunological Society of Ghana 3rd Webinar on the current trends in COVID-19:
"Immuno-informatics applications to SARS-CoV 2 epitope vaccine design"
Kumasi-Ghana, September 2021

Volunteering Services

- > **Outreach speaker,** February 2019-May 2019
Toured high schools to discuss and excite the students' interests in biology related courses at the tertiary level.

Professional Association

- > Association of American Immunologists (AAI)
- > American Association of Cancer Research (AACR)
- > Ghana Biochemistry Students Association (GHABSA)
- > Biological Sciences Students Association of Ghana (BIOSSTAG)

Referees

Alexander Kwarteng (PhD)
Senior Lecturer
Department of Biochemistry and
Biotechnology,
Kwame Nkrumah University of
Science and Technology, Ghana
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