

# Melvin Osei Opoku

Gainesville, FL 32612 | melvinoseiopoku@ufl.edu | +1 (678) 303-6791 |  
<https://www.linkedin.com/in/melvin-osei-opoku/> | [melvinoseiopoku.com](http://melvinoseiopoku.com)

## EDUCATION

<b>Bachelor of Science in Biomedical Engineering, Minor in Electrical Engineering</b> University of Florida Honors Program, Gainesville, FL	May 2026 GPA: 3.82/4.0
--	---------------------------

## WORK EXPERIENCE

<b>Undergraduate Research Assistant</b> Brain Mapping Lab, University of Florida, Gainesville	August 2023 – Present
<ul style="list-style-type: none"><li>Developed multimodal pipelines (EMG, audio, video), improving tic detection by 70%</li><li>Built machine learning algorithms for automated tic detection in Tourette patients</li><li>Co-authored a manuscript</li><li>Presented findings at the BMES 2024 Annual Meeting</li></ul>	
<b>Research Intern</b> Lewis Lab, Massachusetts Institute of Technology, Cambridge	June 2025 – August 25
<ul style="list-style-type: none"><li>Segmented HERCULES-edited MRS data using EEG-based sleep stage classification</li><li>Worked on quantifying changes in 13 brain metabolites across healthy and depressed subjects</li><li>Assisted in overnight polysomnography and MRI data acquisition in human studies</li></ul>	
<b>Research Intern</b> Murthy Lab, Princeton University, Princeton	June 2024 – August 24
<ul style="list-style-type: none"><li>Analyzed FlyWire connectome data on Drosophila LC11 neurons for structure-function relationships</li><li>Discovered inhibitory synapse predominance, challenging the center-surround antagonism model</li><li>Shadowed split-GAL4 genetic experiments to complement computational work</li><li>Presented findings at Society for Neuroscience (SfN) 2024</li></ul>	
<b>Research Intern</b> American Society of Pharmacognosy, University of Florida, Gainesville	January 2023 – December 23
<ul style="list-style-type: none"><li>Expressed and purified UbiA terpene synthases in a GGPP-E. coli overproduction system</li><li>Screened 32 enzymes, identifying 5 novel diterpene synthase functions</li><li>Applied molecular docking and mutagenesis to characterize activity</li><li>Co-authored 3 publications in Nature[1], ScienceDirect[2], and ACS Catalysis[3]</li><li>Presented findings at the 2023 American Society for Pharmacognosy Annual Meeting</li></ul>	
<b>Resident Assistant</b> Housing and Residential Life, University of Florida   Gainesville, FL	August 2023 – May 2025
<ul style="list-style-type: none"><li>Devise events to encourage community belonging among 32 residents</li><li>Enforce community standards and policies to ensure a safe and supportive living environment</li><li>Serve in an on-call rotation by responding to emergencies and crises</li></ul>	

## LEADERSHIP & SERVICE

<b>Product Designer</b> Exactech Inc   Gainesville, FL	August 2025 – Present
<ul style="list-style-type: none"><li>Designed electronic circuitry for a hand-held intra-operative humeral bone quality assessment tool</li><li>Benchmark tested electrical impedance against humeral bone quality</li></ul>	
<b>Product Designer</b> Generational Relief in Prosthetics, University of Florida   Gainesville, FL	August 2023 – May 2024
<ul style="list-style-type: none"><li>Designed and optimized Unlimbited prosthetic arm using SolidWorks</li><li>3D printed and conducted non-destructive testing on a prosthetic arm</li></ul>	
<b>Director of Interfaith Affairs</b> Student Government, University of Florida   Gainesville, FL	August 2022 – May 2024
<ul style="list-style-type: none"><li>Program interfaith events to encourage a campus environment open to students of all faiths</li><li>Ensure a cohesive relationship between the 9 religious groups on campus</li></ul>	
<b>Undergraduate Teaching Assistant</b> Secrets of Alchemy, University of Florida   Gainesville, FL	August 2023 – December 2023
<ul style="list-style-type: none"><li>Graded weekly lab reports and provided helpful feedback</li><li>Held office hours for a class of 60 students: increasing grade by 20%</li><li>Assisted the instructor in preparing the lab, supporting students during the lab, and cleaning up</li></ul>	

## SKILLS

---

- **Programming:** Python, MATLAB, C++, R, HTML, SLEAP.ai, Label Studio,
- **Design & Analysis:** MRS, SolidWorks, Fusion 360, Connectomics, AutoDock Vina, Biostatistics, EEG sleep scoring
- **Laboratory:** MRI, EEG, DMA, TMA, PCR, Genetic Mutation, NMR data analysis, Molecular Docking, GC-MS data analysis
- **Software:** Microsoft Office, Adobe Photoshop, Premiere Pro, After Effects, InDesign, Illustrator
- **Hardware:** Circuitry, PCB Design (KiCad), Prototyping
- **Language:** Fluent: English, Twi | Conversational: French

## AWARDS/SCHOLARSHIP

---

- |  |                        |
|--|------------------------|
| • Undergraduate Student Excellence Award- UF BME   | December 2025          |
| • AI Scholars Program- \$1750 research stipend   | August 2025 – May 2026 |
| • University Scholars Program- \$1750 research stipend   | August 2024 – May 2025 |
| • Certificate of Outstanding Merit from the College of Engineering                               | November 2023          |
| • UF Hamilton Center Society Fellow- \$2,500 stipend and trip to Oxford and Cambridge University | August 2023            |
| • American Society of Pharmacognosy - \$5000 research stipend                                    | May 2023 –August 2023  |
| • Wentworth Travel Scholarship – \$500 Research Travel Funding                                   | May 2023 – August 2023 |
| • Emerging Scholar Award- \$1000 research stipend  | January 2023           |
| • Davis United World Scholar- \$160,000 fully funded University of Florida undergraduate degree  | August 2022 – May 2026 |

## PUBLICATIONS

---

- [1] *Xiuting Wei, Wenbo Ning, Caitlin A. McCadden, Tyler A. Alsup, Zining Li, Diana P. Łomowska-Keehner, Jordan Nafie, Tracy Qu, Melvin Osei Opoku, Glen R. Gillia, Baofu Xu, Daniel G. Icenhour & Jeffrey D. Rudolf.* “Exploring and expanding the natural chemical space of bacterial diterpenes,” *Nat. Commun.*, vol. 16, no. 1, p. 3721, Apr. 2025, doi: 10.1038/s41467-025-57145-6.
- [2] T. A. Alsup, M. Osei Opoku, and J. D. Rudolf, “Characterization of UbiA terpene synthases with a precursor overproduction system in *Escherichia coli*,” in *Methods in Enzymology*, vol. 699, Elsevier, 2024, pp. 395–417. doi: 10.1016/bs.mie.2024.02.001.
- [3] *Tyler A. Alsup, Diana P. Łomowska-Keehner, Melvin Osei Opoku, Zining Li, Caitlin A. McCadden, Tracy Qu, Glen Gillia, Jordan Nafie, and Jeffrey D. Rudolf,* “Discovery of UbiA-Type Cyathane Synthases in Bacteria,” *ACS Catal.*, vol. 15, no. 19, pp. 16873–16881, Oct. 2025, doi: 10.1021/acscatal.5c04650.