

Ebenezer Amare

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Education

University of North Carolina at Chapel Hill & North Carolina State University

B.S. Biomedical Engineering and Neuroscience w/ Chemistry Minor

Expected May 2027

Regenerative Medicine & Medical Microdevices Concentrations

GPA: 3.740

Honors: NAE Grand Challenges Scholar, Abrams Scholar, UNC Honors Program, NC Fellows Scholar

Professional Experience

UNC Undergraduate Researcher in Magness Lab | Chapel Hill, NC

Oct 2024 - Present

- Creating a novel platform that establishes a physiological oxygen gradient across ISC monolayers for my Senior Honors Thesis, integrating COMSOL modeling with real-time optical oxygen biosensing, CAD design and 3D printing
- Investigated SOX9 control of metabolism by engineering EGR1OE lines with Mito-TagRFP imaging; ran Seahorse Mito Stress Test assays across four SOX9 lines, identifying EGR1 as a potential downstream effector repressing glycolytic flux
- Co-authored (5th of 16) the SOX9 G1-elongation study; helped engineer an inducible INK4A construct via, ran Palbociclib and 5-FU assays on ISC organoids, and quantified survival, EdU, and formation efficiency via ImageJ.

SensUs Competition Chemical, Business, and Electrical Team | Chapel Hill, NC

Nov 2025 – Sep 2026

- Selected to develop triple-gate OECT biosensor for international SensUs competition with the BioInterface Lab
- Led polymer synthesis, electrochemical validation (CV, DPV, OCP, and EIS), and signal deconvolution design
- Assisted in stakeholder validation and B2B commercialization strategy; developed our regulatory/funding pathway

NIH Center for Advancing Translational Sciences Research Intern | Rockville, MD

May 2024 - Aug 2024

- Validated high-value proteins for new pain medicine targets using Western blot and Immunocytochemistry
- Optimized differentiation proportion of nocisphere (differentiated neural organoids) at the NIH's premier stem cell lab
- Presented summer research at the 2024 National Institutes of Health Summer Poster Day in Bethesda, MD

CareYaya Patient Care Technician | Research Triangle Park, NC

Aug 2024 – Present

- Supported elderly and neurodegenerative patients with mobility, cognitive engagement, and daily functioning through safe transfers, therapeutic exercises, advocacy, and mentally stimulating activities to encourage independence

Leadership & Community Involvement

Minority Association for Premedical Students: UNC Chapter, President/SNMA Liaison

May 2024 – Present

- Organized joint MAPS-SNMA events to facilitate mentorship, premedical workshops, & med school tours
- Established the MAPS Pediatric Shadowing Program; I presently oversee it alongside all other MAPS programming

InnovaXcell, Mentor and PAHS director

Jan 2026 - Present

- Developed new STEM curriculum for and am head mentor at Phoenix Academy High school for alternative learning
- Guided students through self-exploration, career development, and STEM project with speakers from various fields

North Carolina Fellows Program, Selection Committee Member

Aug 2024 - Present

- Completed capstone research project evaluating efficacy, longevity, and equity of NC STEM Designation Program
- Reviewed applications for UNC freshmen applying to the NC Fellows Program and deliberated acceptances

Student Health Action Coalition, Clinical Translator

Aug 2025 - Present

- Translated for Spanish-speaking patients while checking in and throughout interactions with medical professionals

Helping Hand Project, Innovation Team

Aug 2023 – Dec 2024

- CAD-designed and 3D printed out custom-made prosthetic wrist-actuated hand for low-income inquirers
- Developed a model for autonomous hand prosthetics using OpenSCAD on Innovation Team

Skills & Relevant Coursework

Technical: Arduino (C/C++), Python, Java, ArcGIS, CAD, 3D Printing, Laser Cutting, MATLAB, CSS, HTML, COMSOL

Coursework: Design & Manufacturing II, Genetic Engineering, Bioinstrumentation, Biomedical Mechanics, Mechatronics

Certifications: NIH Principles of Preclinical Translational Science, NIH Fundamentals of Omics Data Analysis, Green/Black Six-Sigma Belt; IBM Qiskit Quantum Computing; First Aid, CPR and AED usage; NCMW Mental Health First Aid

Projects: Implantable Bio-Artificial Kidney (CAD), Three-Compartment Propofol Pharmacokinetic Model (MATLAB), Peristaltic Pump (CNC/Machining), NIH F31 Grant Proposal (CRISPRa), A1 Noradrenergic Imaging (Immunofluorescence)