

# EBENEZER A. AMARE

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571-635-2546

## EDUCATION

**University of North Carolina – Chapel Hill (Joint BME w/ NC State)**

*Aug 2023 – May 2027*

Bachelors of Science in Biomedical Engineering and Neuroscience; Minor in Chemistry; GPA: 3.857

- ◆ **Honors Carolina** - Highly selective academic program admitting 10% of each incoming class
- ◆ **Relevant Coursework** – Biol 103 - Cell Biol., Physics for Engineers, Gen Chem 2, Psych 101, Writing in Medicine, Mechatronics, Orgo Chem 1, Diff Eq. (w/ Multi-var Calc), Oral Presentation, Intro to Neuroscience
- ◆ **Skills/Technology Learned** – Matlab, CSS, HTML, VS Code, Wordpress, Arduino (C/C++), Processing, Linux Commands, Qiskit, Mathematica, 3D Printing, Laser Cutting

**Thomas Jefferson High School for Science and Technology**

*Aug 2019 – June 2023*

Advanced Studies Diploma; GPA: 4.139

- ◆ **AP Scholar with Distinction** – Physics C: Mech (5), Physics C: E&M (4), BC Calculus (5), Statistics (5), Biology (4), Macroeconomics (5), Microeconomics (5), US Government (5), US History (4), Language (5)
- ◆ **Relevant Coursework** – Bio-Nanotechnology, Prototyping I & II, Sports Medicine & Anatomy (cadaver lab)
- ◆ **Skills/Technology Learned** – Scientific Literature Review, VEX Robotics, Java, Python, Anaconda, Google Colab, ArcGIS, Tig Welding, CNC Mills and Routers, Wood/Metal Saws and Drills

## HONORS & AWARDS

**Ron Brown Captains Program** – Top 5% of applicants; member of the Ruth-Norman Rales Leader Network

**National Pan-Hellenic Council** - \$1000 Black Scholar award (Earned \$19,000 outside scholarships for 23-24)

**2023 ASM Global Stars Scholars** – One of 50 awardees for Global scholarship of \$2500

**Robertson Scholars Program** – One of 18 students at UNC and Duke to reach the semi-finalist stage

**NC Fellows** – Cohort-based leadership development program admitting 0.5% of the UNC freshman class

**NIH Student Intramural Research Training Award** – Summer research stipend of \$6,300 from the NCATS

**Columbia University Medical Center SHPEP– Declined** – AAMC-hosted Medical Education Program

**UMD School of Public Health STAR Program – Declined** – Biomedical PhD Training and Research Program

## RESEARCH EXPERIENCE

**Research Statement:** I pursue low-cost, first-in-line innovation in regenerative medicine - e.g. organ manufacturing, iPSC neurogenerative disease repository, non-opiate analgesics - to contribute to sustainable Ethiopian/global health infrastructure

**National Institutes of Health** –Rockville, MD

*May 2024 – Aug 2024*

*National Center for Advancing Translational Sciences/ Stem Cell Translation Laboratory/ Summer Research Intern [SIP]*

- ◆ Researched mechanisms of chronic pain w/ Dr. David Castellano in the Premier NIH Stem Cell Lab, as part of the [Regenerative Medicine Program HEAL Initiative](#), by first optimizing hPSC-derived sensory neuron differentiation (improve efficiency while maintaining viability). I then validated high-value proteins from mass spec using a machine learning pain genes database and characterized proteins up/downregulated in response to 4-part inflammatory cocktail – particularly DCC, which binds to netrin-1, axonal guidance molecule, and is key for axonal elongation which causes inflammatory sensitization - using Western Blot and Immunocytochemistry [2 poster days]; lastly, I mined DCC's downstream signaling pathways for David's Aug grant presentation
- ◆ **Classes Enrolled:** MEDI 501 (Principles of Preclinical Translational Science), Intro to Bioinformatics (R Studio Multi-Omics Analysis), Building Resilience as a Research Scientist (OITE Seminar Series)
- ◆ **Primary Skills/Technology Used:** Scientific Literature Review, Science Communication, (Stem) Cell Culture & Differentiation of hPSCs (induced & embryonic), Western Blot, Immunocytochemistry, R, R Studio, Multi-omics Data Analysis, Electroporation (Helped create a HiBit-tagged reporter cell line to monitor multiple cell types' PPI), CRISPR Gene Editing, ELISAs, Assays (myriad), qRT-PCR, Multi Electrode Array, Patch Clamp EEG (I assisted recordings), Systems [eg. Incucyte, Fiji, AxIS, Graphpad Prism, Zen (Black & Blue ed.)]

**Oceanography Senior Research Lab** –Alexandria, VA

*Aug 2022 - May 2023*

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## Primary Investigator

- ◆ I conducted lit review, presented my research proposal to lab director, Dr. Shawn Stickler, began/maintained the lab's *C. Vulgaris* cell culture (used for multiple lab projects), ran conductance assay on algae tank for secondary research question (among others to ensure tank conditions remain optimal), made thin films of starch-based plastic w/ polyurethane-like properties, wrote a potential article submission, and presented my findings at the **TJ STAR symposium**. The project's purpose was to explore maleic acid's implementation in our lab-made bioreactor to enhance tensile strength of *C. Vulgaris*-derived bioplastic can be used to help industries outside of plastic wrapping produce biodegradable plastic bags, clothes, etc.
- ◆ **Shared responsibilities:** Fish Farm Maintenance (Creating Artificial Tilapia Farm in TJ Greenhouse), Tank Condition Homeostasis (daily assays to assess water quality/supplementing w/ nutrients), Janitorial Lab Work
- ◆ **Primary Skills/Technology Used:** (Algae) Cell Culture, Plastic Film Production & Testing, Aquatic Habitat Maintenance, Live Creature Culture (zebrafish, coral, Cnidaria – jellyfish, other algae), Dishware Cleaning

**TJHSST Biotechnology Club** – Alexandria, VA

Oct 2019 - Jun 2023

## Activities and Pres. Coordinator

- ◆ I curated weekly "Current Field of Biotech" presentations through lit review and orchestrated fundraising efforts totaling \$350 to support five annual labs I designed (e.g., gene editing, PCR amplification, gel electrophoresis). I used the chance to explore tissue regeneration by creating biodegradable plant under the mentorship of Dr. James Jennifer, leveraging early, exclusive access to the TJHSST Biotechnology Senior Research Lab
- ◆ **Primary Skills/Technology Used:** Bacterial Cell Culture, Gel Electrophoresis, PCR Amplification, Microscopy, Protocol Creation (for my labs), Centrifugation, DNA Isolate Preparation

## POSTERS & PRESENTATIONS

**NIH Summer Poster Day** – Bethesda, MD

Jun 2024

Poster: *Characterization of Netrin-1 Receptor DCC in Human Pluripotent Stem Cell-Derived Sensory Neurons During Inflammatory Sensitization*

**TJ Science and Technology Research (STAR) Symposium** – Alexandria, VA

May 2022

Presentation: *Optimization of Durability and Biodegradability of C. Vulgaris Starch-Based Bioplastic*

## CLINICAL EXPERIENCE

**Children's National Hospital** – Washington, DC

May 2024 – Jun 2024

*Department of Pain Medicine and Anesthesiology Observership*

- ◆ Facilitated by Dr. Tamanda Douglas, I was accepted to shadow (cardiac) pediatric anesthesiologists in urology, neurosurgery, ENT, general, and cardiac surgery, attending lectures by attendings like Dr. Andrew Waberski and Dr. Jeremy Deer. Gained hands-on insights into procedures from biopsies to cranioplasties, solidifying my commitment to a medical career. More in "An Ultimate Confirmation" on my blog: [Tarheels.live/EbenezerAmare](https://tarheels.live/EbenezerAmare).

**Sentara Northern Virginia Medical Center** – Woodbridge, VA

Mar 2022 – Jun 2023

*Emergency Department Junior Auxiliary*

- ◆ Assisted medical staff and patients through supply management, addressing patient requests, stretcher transport, developing composure in high-pressure situations and commitment to patient-facing work. By request, I shadowed diverse healthcare professionals e.g. Medical Lab Technicians, Pathologists, nurses in all departments.

## LEADERSHIP & COMMUNITY INVOLVEMENT

**Student National Medical Association: UNC Chapter** – Chapel Hill, NC

May 2024 – Present

*Minority Association for Premedical Students' SNMA Liaison*

- ◆ Organize joint MAPS-SNMA events which facilitate mentorship, premedical workshops, & med school tours
- ◆ Collect UNC medical school opportunities and local health equity volunteer work to provide to members

**Grow Your World** – Orange County, NC

Sep 2023 - Present

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*Inkounter – Providing Justice-Impacted Youth a Second Chance*

- ◆ Record information related to student attendance, truancy, and/or behavior problems
- ◆ Visit the Orange County Courthouse monthly to record trials and support GYW's case-load
- ◆ Publish Grow Your World's actions for social justice in school, local, and national papers

**Helping Hand Project** – Research Triangle, NC

Aug 2023 - Present

*Innovation Team and Carleigh's Case [One HHP inquirer]*

- ◆ CAD designing and printing out custom-made prosthetic arms/hands for low-income inquirers
- ◆ Developing a model for autonomous hand prosthetics using OpenSCAD on Innovation Team

**Voices of Praise: Gospel Choir** – Chapel Hill, NC

Aug 2023 - Present

*Executive Assistant*

- ◆ Reaching out to churches for community engagement and hosting worship in nearby counties
- ◆ Coordinating efforts to get choir members transportation, reserve spaces for practices, and lead prayer

**Ethiopian Eritrean Student Association** – Chapel Hill, NC

Aug 2023 - Present

*Community Outreach Chair – Pre-professional Events Coordinator*

- ◆ Reach out to Habeshas/Africans on campus, alumni, and grad schools for community and opportunities
- ◆ Partner with Table NC to organize, fundraise for, and maintain supplies at new Carrboro warehouse

**Amanuel Ethiopian Evangelical Church** – Alexandria, VA

Feb 2021 – Present

*Sunday School Teacher & Activities Coordinator*

- ◆ Preach biweekly to middle schoolers (~30 ppl) and lead the Friday Youth Bible Study (8 ppl)
- ◆ Coordinate youth events (e.g., bouncy house for kids, sports tournaments for college students)
- ◆ Create lesson plans and lead weekly discussions for TJ Bible Study Club (100+ ppl)

## ADDITIONAL INFORMATION

**Languages:** Amharic (native), English (native), Spanish (professional)

**Certifications:** IBM Qiskit Quantum Computing; Recognizing Signs of Child Mistreatment; First Aid, CPR and AED usage; Preventing Bloodborne & Airborne Pathogens; ABAB-ANSI Handling Food & Alcohol, NIH Principles of Preclinical Translational Science

**Interpersonal Skills:** Teaching/Tutoring, Leadership, Project Collaboration, Social Media Marketing, Public Speaking, Event Planning, Outreach (individuals and orgs)

**Hobbies:** Weight Lifting, Running, Gospel Singing, Reading (history, theology, thriller, adventure, action)