

HAMZA AL HALABI

Cincinnati, OH | alhalaha@mail.uc.edu | linkedin.com/in/alhalabihamza | hamza-bme.tech

BIOMEDICAL ENGINEERING | PRODUCT DEVELOPMENT & RESEARCH

Biomedical engineering student with single-cell genomics, laboratory data analysis and medical-device prototyping experience. Ran 88 samples through the full 10x Genomics Flex v2 protocol and analyzed the sequencing data with Cell Ranger. Created an Excel/VBA mass-spectrometry workflow that automated analysis tables, t-tests and volcano plots.

EDUCATION

B.S. Biomedical Engineering | University of Cincinnati, Cincinnati, OH | Expected 2028

TECHNICAL SKILLS

Product: user research, requirements, benchmarking, FMEA, human factors, verification planning, CAD, prototyping | **Design:** SolidWorks, Siemens NX, Fusion 360, Blender, FDM/SLA, silicone casting | **Programming & data:** Python, MATLAB, R, C/C++, JavaScript, Excel/VBA, Linux/HPC | **Lab & electronics:** high-resolution mass spectrometry, PBMC isolation, Illumina, 10x Genomics Flex v2 and custom probe preparation, Arduino, KiCad, LTSpice

EXPERIENCE

Biomedical Engineering Co-op | Live Well Collaborative, Cincinnati, OH | Aug 2026 - Present

- Train an airway sound-detection model on public respiratory-audio data.
- Cast silicone tracheal surrogates for nonclinical tests of endotracheal-tube location and external-visualization prototypes.
- Conduct market research and consumer interviews on upper-limb prosthesis accessibility; develop repeatable benchmarks for packaging and household tasks.
- Reverse-engineer pediatric care equipment and model mechanisms, interfaces, fit, and clearance in CAD for an early hospital-compatible rocking-accessory concept.

Research Student II | Cincinnati Children's Research Foundation, Cincinnati, OH | Aug 2025 - May 2026

- Spent about half the placement on 10x Genomics Flex v2: prepared the protocol, samples and custom probes; ran 88 samples through the full protocol for a mouse study, with sequencing on Illumina instruments.
- Performed the Flex v2 data analysis with Cell Ranger on Linux/HPC systems.
- Created an Excel/VBA workflow for mass-spectrometry data, with human samples as the main use and additional support for the mouse-study samples. Automated analysis tables, t-tests and volcano plots.

Project Lead | EnableUC, University of Cincinnati | Aug 2024 - May 2025

- Led early development of a closed-loop PLA recycling and refilamentation workflow; used rheology with UC's RheOhio Lab to inform material and process decisions.

Clinical Research Assistant | iTRI, Hamad Medical Corporation, Qatar | May 2021 - Jul 2024

- Processed 50+ endocrine research samples, isolated PBMCs, analyzed Illumina sequencing data, maintained study records, and trained four incoming colleagues.

SELECTED PROJECTS

LungScope | AI-assisted data engineering. Directed requirements and reviewed code for subject-separated respiratory-audio datasets: 5,881 eligible recordings from 854 subjects, with no subject or duplicate-audio overlap between splits.

ECG acquisition and visualization. Soldered a Ninetales board, sampled its analog input with Arduino at approximately 100 Hz, and wrote a Processing monitor with a scrolling trace and beat-interval heart-rate estimate. Educational prototype.

Pediatric arch support. Coordinated clinical contact and contributed research, system analysis and verification planning for a team sleeve-and-gel-insert concept for children ages 5-7.

JobHub | AI-assisted application development. Set product direction and reviewed code for a Cloudflare Workers job-search app with account-scoped data, two databases and a bounded language-model layer.

PUBLICATION

Co-author, *Metabolically Healthy Obesity Is Characterized by a Distinct Proteome Signature*, International Journal of Molecular Sciences, 2025. DOI: 10.3390/ijms26052262.