

AFRAIM MARIO MOKHTAR BOSHRA

Medical Biotechnology Student · Computational Proteomics & Protein Design

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PROFILE

Third-year Medical Biotechnology student at Badr University in Cairo (cGPA 3.87/4.00, top 3 of cohort) pursuing a self-directed, research-oriented path toward computational proteomics and protein structure and design. Building foundations in Python, R, and bioinformatics through a structured multi-year curriculum, and studying modern protein modeling methods (AlphaFold2, ColabFold, RFdiffusion, ESM-2). Currently developing an original ten-module computational research project on the EGFR receptor, with a bioRxiv preprint as its target. Brings additional experience in science communication, team leadership, and launching an educational platform.

EDUCATION

B.Sc. Medical Biotechnology — Badr University in Cairo

Sep 2024 – Sep 2028 (Expected)

School of Biotechnology · Level 3 · cGPA 3.87/4.00 (latest term sGPA 3.93) · Top 3 in cohort for three consecutive semesters

- Core coursework: Molecular Biology, Genetics, Cell Biology, Immunology, Biochemistry, Bioinformatics, Genetic Engineering, Pathophysiology
- Upcoming (Levels 3–4): Genomics & Proteomics, Cancer Biology, Gene Therapy, Molecular Pathology, Human Genome

RESEARCH & COMPUTATIONAL WORK

EGFR Integrative Proteogenomics — self-directed research project

2026 – Present

- Ten-module computational study of human EGFR (UniProt P00533) covering evolutionary conservation, transcriptomics, PTM network analysis, re-analysis of public PRIDE proteomics data, structural characterization, and the mechanism of clinical drug-resistance mutations (L858R, T790M; erlotinib → osimertinib)
- Written execution plan complete for all modules; reproducible repository scaffolding in place and first analysis modules beginning; target deliverable is a bioRxiv preprint
- Repository: github.com/Afraim10/egfr-integrative-proteogenomics

protein-python-foundations (GitHub)

2026

- Original biology-themed Python practice repository built lecture-by-lecture alongside Harvard's CS50P, including two independent capstone projects: a SQLite-backed DNA/protein sequence database and a FASTA batch sequence analyzer
- Repository: github.com/Afraim10/protein-python-foundations

protein-r-foundations (GitHub)

2026

- Companion R repository (six checkpoints plus a published Quarto report) applying R, ggplot2 and the Peptides package to amino acid physicochemical properties, including hydropathy analysis of the EGFR kinase domain
- github.com/Afraim10/protein-r-foundations · [published report](#)

LEADERSHIP & INDEPENDENT WORK

Founder & Product Owner — Synapse (online course platform)

2026 – Present

- Conceived and directed an online course platform for Egyptian Medical Biotechnology students (course catalog, protected video delivery, quizzes, payment verification, admin tools). Development was AI-assisted: I defined the requirements and design, assembled and deployed the system, and tested and debugged it
- Launching in the Fall 2026 semester, where I will manage the platform and teach its Human Genome course

Head of Design & Marketing — SSBS, Badr University

Sep 2025 – Present

- Scientific Society for Biotechnology Students: promoted from Member (Sep 2025) to Vice Leader (Oct 2025) to Head (Feb 2026); lead a team of designers and marketing agents producing campus-wide scientific content
- Helped organize the 2026 university Orientation Day for ~500 incoming students; assigned to design the School of Biotechnology's recruitment campaign for prospective students

Educational Content Creator — YouTube, "Afraim's 101 Courses"

Jun 2025 – Present

- Produce structured long-form Arabic-language science lectures with original illustrations and narration

Junior Teaching Assistant (TLC program) — Badr University in Cairo

Nov 2025 – Jan 2026

- Selected based on top grades in Cell Biology and Genetics; taught genetics and cell biology to a group of 5 Level 1 students, one of whom placed 9th in her cohort; later named one of the 10 top-performing junior TAs of ~100

PROJECTS & ACHIEVEMENTS

HCV Awareness Project — brochure and interactive website

2025

- Led a 9-person student team (supervised by Dr. Radwa Lutfy); researched the medical content, designed the physical brochure, specified the structure and visual design of the companion interactive website (built with AI assistance), and delivered most of the presentation to faculty; rated Excellent (A+) by all evaluating professors
- Live site: afraim10.github.io/hcv-awareness

SOLE 2026 — Biotech Explorers Track

2026

- Placed 4th of 16 participating universities; assessment covered dry-lab bioinformatics, wet-lab technique, and bioethical reasoning

Badr University Orientation Day honors

Sep 2026

- Received three certificates: 3rd place among Level 2 students, SOLE 4th place, and selection as one of the 10 top junior TAs; the only student to receive all three

Scientific Poster — 1st BUC International Conference on Biomedical & Environmental Biotechnology

Dec 2025

- Received Dean's recognition for scientific communication and visual clarity

COURSEWORK, WORKSHOPS & CERTIFICATIONS

- Bioinformatic Methods I & II — University of Toronto (Coursera): in progress; Methods I completing fall 2026, Methods II expected early 2027
- CS50P: Introduction to Programming with Python — Harvard: completed with certificate, including final project
- Data Science: R Basics — HarvardX (edX): completed all course content and quizzes (audit track)
- Genome Editing Hands-on Workshop (CRISPR-Cas9, qPCR, microscopy, gel electrophoresis) — Apr 2025, BUC IPDCE
- Echoes of Our Ancestors Workshop (ancient DNA, Egyptian Genome Project, archaeogenomics) — Nov 2025, BUC IPDCE

SKILLS

Computational: Python (intermediate) · R with ggplot2 and Quarto (intermediate) · Git/GitHub · Linux/Bash · Conda · JupyterLab · Google Colab · Biopython (sequence I/O) · NumPy (beginner) · AlphaFold2 / ColabFold / RFdiffusion / PyMOL / ChimeraX (conceptual familiarity)

Wet Lab: PCR · DNA and Plasmid Extraction · Microscopy · Cytogenetics · Gel Electrophoresis · CRISPR-Cas9 (workshop)

Design & Communication: Adobe Photoshop · Video Editing · Scientific Illustration · Scientific Poster Design

LANGUAGES

Arabic (Native) · English (Fluent — Professional) · French (Basic)