# DOMINIQUE DANG

Cambridge, MA ◇ 781·980·3797 ◇ ddang@mit.edu ◇ dom-dang.github.io

## Education

**Massachusetts Institute of Technology** **May 2027**
B.Sc. Computer Science & Molecular Biology

*Classwork:* Machine Learning in Molecular & Cellular Biology, Biostatistics, Algorithms, Probability & Statistics, Linear Algebra, Cell Biology

## Research & Work Experience

**Novartis Biomedical Research Institute** *Oncology Data Science Intern* **May 2025 – Aug. 2025**

- Developed a predictive ML model in Python/R that achieved 85% accuracy in forecasting tumorigenesis outcomes by integrating differential expression (DESeq2) and enrichment (GSEA) features, uncovering 200+ biomarkers significantly associated with tumor formation
- Applied gene signature scores to single-cell RNA-seq data from human breast cancer tumors to identify malignant subpopulations with high engraftment potential

**Undergraduate Research** *Prof. Eliezer Calo - MIT* **Jan. 2025 – Aug. 2025**

- Analyzed nanopore sequencing data to resolve tRNA splicing patterns and detect RNA modifications
- Designed and optimized bioinformatics pipelines incorporating tools such as NanoPlot (read QC), BWA (read alignment), and DESeq2 (differential expression/statistical analysis)

**Undergraduate Research** *Prof. Anders Hansen - MIT* **Jan. 2024 – Dec. 2024**

- Characterized and validated bidirectional gene promoters to develop a novel tool for gene co-regulation, by utilizing Fluorescence-Activated Cell Sorting (FACS) and MATLAB to analyze protein expression levels and identify significant patterns and trends

## Publications

J. Clarin, **Dang, Dominique**, L. Santos, and R. Amini. Mechanical characterization of porcine tricuspid valve anterior leaflets over time: Applications to ex vivo studies. *ASME Open Journal of Engineering*, 2:021032, 05 2023. ISSN 2770-3495. doi:10.1115/1.4062477.

## Leadership & Extracurriculars

**HackMIT** *Logistics Director* **Feb. 2024 – present**

- Led a 15-member subteam to organize HackMIT, one of the largest U.S. collegiate hackathon, enhancing operational efficiency and streamlining the review process for 3,000+ applications

**MIT Museum** *STEM Educator* **March 2023 – present**

- Facilitated the Maker Hub and Learning Lab, encouraging and educating over 50 daily visitors on STEM topics through interactive activities and hands-on demonstrations

## Technical Skills

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| **Programming** | Python (pandas, scikit-learn), R (Seurat, ggplot2), MATLAB, Bash, Git |
| **Bioinformatics** | RNA-seq analysis, DESeq2, FASTQ/FASTA, SAMtools, IGV, Scanpy |
| **Lab Techniques** | PCR, gel electrophoresis, Gibson Assembly, flow cytometry |

## Awards

**1st place, Innovation in Research: Data Science** Received at Novartis Summer of Science Internship. **2025**

**Genetic Medicine Scholar** **2025**
Selected as 1 of 12 MIT sophomores for Eli Lilly's competitive research fellowship, contributing to disease pathology mapping, therapeutic target identification, and early-stage drug development strategy design (preclinical study planning, therapeutic design, and regulatory submissions).

**Top Beginner Hack** Received at HackMIT, one of the largest collegiate hackathons in the US. **2023**