

Aaron Colon

973.861.6781

colonabrandon@gmail.com

Easton, PA

Summary

Undergraduate researcher in Biostatistics & Health Data Science with experience in computational epidemiology, bioinformatics, and DNA computation. I am interested in data-driven public health forecasting and outbreak simulation.

Education

Lehigh University, Bethlehem, PA

Biostatistics & Health Data Science, Pre-medicine | GPA: 3.77 |

Graduation: May 2027

Easton High School, Easton, PA

AP Scholar with Honors, High Honor Roll, Top 1% Graduating Class

Graduation: June 2023 Honors:

Technical Skills:

- **Programming & Data Science:** Python, R , GitHub
 - **Modeling & Analytics:** Epidemiological modeling (SIR), Simulation design, Feature engineering
 - **Bioinformatics Tools:** HHpred, Phamerator, DNA Master, PhagesDB, GeneMarkS, DeepTMHMM, SOSUI
 - **Data Visualization:** Matplotlib, ggplot2
-

Research Involvement

Forecasting Disease Outbreaks using Temporal Networks in Congregate Settings

2024-Current

- **Hypothesis:** Epidemic outbreaks in congregate settings can be predicted and mitigated through network-based modeling of temporal interactions.
- **Results:** Built temporal contact network models using real-world conference data; simulations showed that targeted interventions at high-degree or high-betweenness nodes significantly reduced outbreak magnitude.
- **Skills learned and applied:** Network analysis (Python: pandas, networkx, matplotlib), SIR simulation modeling, data visualization, public health informatics, and mathematical modeling of infection dynamics.

DNA Sticker Computation via Electrowetting

2023-Current

- **Hypothesis:** DNA strands can be used as programmable “stickers” in a microfluidic environment to perform combinatorial computations through electrowetting-on-dielectric (EWOD) control.
- **Results:** Demonstrated droplet-based manipulation of DNA “sticker” sequences on EWOD chips, validating the feasibility of bio-inspired logical operations and contributing to an upcoming manuscript.
- **Skills learned and applied:** EWOD operation, DNA computation principles, lab instrumentation, and research writing

Sea-Phages/Sea-Genes

2023-2024

- **Hypothesis:** The genomic structure and coding potential of *Mycobacterium smegmatis* phage *Hanako* could reveal unique gene functions contributing to host-phage interactions.
- **Results:** Successfully annotated and submitted *Hanako*’s genome to NCBI GenBank, identifying hypothetical proteins and refining gene start/stop predictions through comparative analysis using Starterator, GeneMarkS, and BLASTp.
- **Skills learned and applied:** Genome annotation, bioinformatics tools (DNA Master, PhagesDB, HHpred, DeepTMHMM, SOSUI, Phamerator), comparative genomics, GenBank formatting and submission.

Presentations

- Lehigh Summer Research Expo Presenter (2x)
 - Lehigh College of Health Research Expo Presenter
 - 30th International Conference on DNA Computing and Molecular Programming Poster Presenter
-

Awards

- Dean’s List (4x)
 - Best Research Award (DNA Sticker Computation via Electrowetting)
 - Tri-Alpha Inductee
 - Lehigh Trustee Scholar
-