

Alyssa DuBois *(she/her)*

PROFESSIONAL EXPERIENCE

Broad Institute of MIT and Harvard, Cambridge, MA | *Research & Computational Associate* **Feb 2023 – present**

- Investigate contributions of the immune system to sepsis pathophysiology
- Perform single-cell RNA sequencing of immune cells in a cohort of sepsis patients
- Generate and analyze high dimensional transcriptomic data
- Optimize methods of sample collection to support scalable multi-center study participation
- Collaborate with emergency department teams across Boston health care centers for patient recruitment

Selux Diagnostics, Charlestown, MA | *Microbiology Co-op* **Jul – Dec 2021**

- Aided in development of novel calorimetric microbial blood culture device
- Analyzed calorimetric data to extrapolate microbial growth rates
- Quantified adsorption kinetics of polymeric resins
- Evaluated antimicrobial susceptibility across resistant and susceptible bacteria strains
- Introduced additional experimental controls to uncover and correct bias

Orna Therapeutics, Cambridge, MA | *Delivery Sciences Co-op* **Jul – Dec 2020**

- Formulated and characterized lipid nanoparticles for RNA delivery (DLS, Zeta, Ribogreen, TNS, endotoxin)
- Optimized formulations with novel lipids for *in vivo* studies
- Designed and executed cell-based assays, characterization assays
- Ordered reagents, supplies, and equipment from vendors

Antibiotic Resistance Lab, Northeastern University | *Research Assistant* **Jan – May 2019**

- Investigated behavior of resistant and persisting bacteria over time
- Performed PCR, gene transformation, cloning

Environmental Ecosystems Lab, Northeastern University | *Research Assistant* **Jan – Dec 2018**

- Studied drivers of high microbial burden in drinking water distribution systems
- Assisted in flow cytometry, qPCR

LEADERSHIP

Engineers Without Borders, Northeastern University | *Program Director* **Jan – Dec 2020**

- Managed team of 30+ students to design and implement drinking water projects in rural Panama
- Contributed to and oversaw completion of six detailed 100+ page technical implementation reports
- Designed and led sustainability and impact monitoring initiatives
- Led speaking engagements with students, sponsors, community leaders, advisors, and nonprofit partners
- Coordinated IRB submissions, health research, user surveys within partner communities
- Adapted to virtual leadership, online club meetings, remote project implementation due to COVID-19

EDUCATION

Northeastern University, Boston, MA | **GPA: 3.98** **May 2022**

Bachelor of Science in Bioengineering, Minor in Global Health

SKILLS

Research: Assay development, experimental design, literature review

Analysis: cloud-based computing, transcriptomic data analysis/visualization

Software: R, Python, MATLAB, C++, GraphPad Prism, Microsoft Office

Interdisciplinary: Project management, leadership, written/verbal communication, research presentation, intermediate Spanish

December 1st, 2023

To Whom It May Concern,

My name is Alyssa, and it is with enthusiasm that I share my interest in the open position on the Somerville Board of Health. I have been a resident of the greater Boston area for the last six years and relocated to Somerville almost one year ago. I first moved to the area to attend college at Northeastern University, where I studied bioengineering and global health. My learning experience was profoundly shaped by the COVID-19 pandemic, and during this time my interests in communicable diseases, disease prevention, and public health communication solidified.

Since then, I have pursued several positions researching disease treatments and diagnostics, including my current position in the Infectious Disease and Microbiome Program at the Broad Institute, where I study sepsis pathology with a team of emergency department physicians. My research into sepsis has motivated me to connect with vulnerable and at-risk populations that stand to benefit most from this work; especially unhoused individuals and people who use drugs. I would love to learn from their unique experiences and circumstances to create public health programs, policies, and other social protection systems that would enable these populations to access their right to health stability.

Additionally, due to my lived experience as a renter in this city I am familiar with pest control issues and other factors impacting the quality of life and health in dwellings. I would love to take this opportunity to improve my understanding of housing policy protections and find ways to ensure that all Somerville residents are living in dignified conditions.

Lastly, I am confident in my skills of project management and record keeping after serving as the Program Director for the Northeastern University chapter of Engineers Without Borders, where I managed a team of student engineers to design a drinking water distribution system in collaboration with a community in rural Panama undergoing a drought. During this experience I enjoyed being involved in the community engagement, timeline management, and detailed documentation of an engineering project that had public health ramifications. If selected to serve on the Somerville Board of Health, I believe that these experiences would prepare me to make meaningful contributions to ongoing and upcoming community health projects.

I am continually amazed by the vibrant and mosaic culture that surrounds me as a resident of Somerville. Thank you for your consideration and for the opportunity to give back to this wonderful community.

Sincerely,
Alyssa DuBois