Helena (Nellie) Kolon

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Summary

I am a biomedical engineering master's student at Georgia Tech with experience in polymer and lipid nanoparticle design, formulation, and characterization. I am looking to transition into sustainabilitydriven research, particularly in the process development of renewable, degradable, and environmentally responsible materials. I am looking to apply my skills in biomaterials design and engineering to create solutions that improve our relationship with the environment through redesigning the materials we use and how we create them.

Education

Research Experience	
B.S. Biochemistry. Magna Cum Laude.	
Northeastern University – Boston, MA	Sept. 17 – May 21
8 8	Sept (17 May (21
Biomedical Engineering Master's student.	
<u>Georgia Institute of Technology</u> – Atlanta, GA	Aug '24 – present

Georgia Institute of Technology: Ackun-Farmmer Lab

Graduate Student Researcher

- Designed and characterized a library of peptide-decorated poly(styrene-*alt*-maleic anhydride) polymeric)-based diblock copolymeric nanoparticles targeted to dendritic cells (DCs) with the goal of reprogramming the adaptive immune response of T cells to promote tolerance in autoimmunity.
- Mentored an undergraduate student on an independent project aiming to load disease-relevant antigens into the polymer nanoparticles for the treatment of a variety of autoimmune diseases such as multiple sclerosis and rheumatoid arthritis.

Eli Lilly and Company: Genetic Medicine Team – Cambridge, MA	May '21 – May '24
Senior Research Associate	

- Used Design of Experiments (DoE) for efficient experimental design and data analysis to effectively engineer lipid nanoparticles for delivery of nucleic acids to the central nervous system.
- Developed a high-throughput screening platform for formulating and characterizing over 100 lipid nanoparticle formulations per week.
- Developed scale-up methods for formulating and characterizing large batches of lipid nanoparticles, including microfluidic mixing strategies and tangential flow filtration systems.
- Used in vitro assays to determine the potency and toxicity of nanoparticle formulations.
- Used in vivo experiments to determine nanoparticle potency and distribution in the brain.
- Participated in cross-departmental and external partner collaborations.

Charles Krug Winery - Napa Valley, CA

Harvest Lab Intern

- Carried out inoculations of fresh grape juice, and monitored juice-to-wine fermentation processes.
- Used analytical techniques to generate quantitative data from grapes just off the vine to bottled wine.
- Obtained knowledge of the wine industry, including wine profiles, pairings, and grape varietals.

July '20 – Dec '20

Aug '24 – May '25

<u>Northeastern University</u>: Department of Chemistry – Boston, MA Undergraduate Research Assistant - Mabrouk Lab

- Investigated how Research Experience for Undergraduates (REU) programs transform chemistry and biochemistry majors' understanding of research and scientific inquiry.
- Developed strong research skills, including data analysis, critical thinking, and effective communication of results, and manuscript writing.
- Published an *Editor's Choice* article in the Journal of Chemical Education as first author.

Takeda Pharmaceuticals: Oncology Drug Discovery – Cambridge, MAJuly '19 – Dec '19Analytical Chemistry Co-op

- Performed purity, stability, and solubility assays on several small-molecule drug candidates and communicated results to medicinal chemists.
- Successfully maintained and operated analytical instruments, including HPLC/MS and high throughput liquid handlers, enabling the team to meet critical project deadlines.
- Completed an individual project on quantifying immune effects on mice dosed with CDN-conjugated liposomes using ELISA and presented results to over 50 research scientists.

Presentations and Publications

Kolon, H; Zhang, C. "Lipid Nanoparticles for Direct-to-CNS Delivery" *Internal Eli Lilly Poster Session*. Dec 2023.

Zhang, C.; Kolon, H. "A High-Throughput Screening Platform for Lipid Nanoparticle Formulation" *Internal Eli Lilly Poster Session*. Dec 2022.

Kolon, H.; Mabrouk, P.A. "How Participation in a Research Experiences for Undergraduate Program (REU) Transforms Chemistry and Biochemistry Majors' Understanding of Research and Scientific Inquiry." *Journal of Chemical Education* 2022, 99, 2493. DOI:10.1021/acs.jchemed.1c00999

Community Outreach

Trees Atlanta - Volunteer

- Assisted in tree planting and reforestation efforts to support urban forestry and improve local ecosystems.
- Contributed to forest conservation by removing invasive species and performing tree pruning to enhance tree health and biodiversity.

Lilly/New Mission High School Mentorship Program – Leader

- Provide mentorship and resources for high school students from Boston Public Schools interested in careers in science and technology.
- Coordinate and match mentor/mentees, give tours of Lilly research labs, lead hands-on lab activities, organize off-site visits, advertise program to parents and students at school events.

AP Chemistry/SAT tutor

- Provide one-on-one tutoring sessions to succinctly explain AP chemistry topics, encouraging a deep understanding of complex concepts and helping the student achieve higher grades.
- Conduct SAT preparation sessions, coaching on test-taking strategies, and content review.
- Provide information on the college applications, including essay writing and school selection.

May '19 – May '21

Sep '22 – May '24

Sep '22 – Present

April '25 – Present

illy Poster