

Owen Karmel

Phone: (518) 860-9673, Email: obk9@cornell.edu, LinkedIn: linkedin.com/in/owen-karmel-b067a6280/

Education

Cornell University, Ithaca NY

Aug, 2023 - May, 2027

- Bachelor of Arts pursuing majors in Biological Sciences and Physics
- Current GPA: 3.82

Research Experience

Research Assistant, Biomedical Engineering, Jiang Lab, Cornell University

Aug, 2024 - Current

- Developing mRNA-based therapeutic approaches that selectively target senescent cells as a novel strategy to address aging and age-related diseases
- Leading two independent projects to (1) investigate the potential geroprotective effects of miRNA sponges, and (2) design a novel self-amplifying mRNA platform.
 - Designed and tested eight unique miRNA-responsive fluorescent reporters and then compared both 5' vs 3' mediated silencing mechanisms.
 - Optimized a series of low-cost stem-loop mediated RT-qPCR assays to accurately measure the absolute abundance of senescence-associated miRNAs across three different cell types *in vitro*.
 - Purified extracellular vesicles with size exclusion chromatography and characterized them via nanoparticle tracking analysis (NTA) and direct light scattering (DLS).
 - Investigated via flow cytometry the integration of a riboswitch into self-amplifying RNA for prolonged, non immunogenic expression
- Supported a diagnostic project utilizing Raman spectroscopy and machine learning to identify senescent cells and detect metabolic changes in a rapid, label-free manner.

Engineering Intern, Regneron Pharmaceuticals

May, 2024 - Aug 2024

- Conducted 3-month accelerated aging study of pre-filled syringe shelf life of 160 device samples. Discovered via ANOVA significant increase in plunger depression force and proposed a mechanistic explanation.
- Presented results to department leadership and wrote 15-page technical report.

Research Assistant, Biomedical Engineering, Cosgrove Lab, Cornell University

Dec, 2023 - May 2024

- Developed a FACS protocol for isolating primary macrophages using surface markers identified through scRNA-seq analysis

Wet Lab Skills: Mammalian cell culture (primary human dermal fibroblasts, NIH3T3s, HEK293s), bacterial cell culture (*E. coli*), plasmid purification, colony PCR screening, gel electrophoresis (DNA & RNA), *in vitro* synthesis of mRNA, transfections, cell imaging using a microplate reader, flow cytometry (SA- β -gal assay), RT-qPCR (for both mRNA and miRNA), western blotting

Computational Skills: Benchling for molecular biology applications (mRNA design, sequence alignment, and plasmid assembly). Python packages (NumPy, Pandas, scikit-learn, XGBoost), Affinity Designer and Graphpad Prism for scientific graphics, R and BLAST for bioinformatics and JMP for statistical analysis.

Service & Leadership

Volunteer, Longevity Biotechnology Association

Nov, 2024 - Current

- Wrote report evaluating 44 relevant companies while volunteering at the national Longevity Biotech Association to promote membership, outreach and investment in the longevity field
- Photography and social media lead for October 23 biotech pitch event in NYC

Co-founder and President, Cornell Longevity Association

- Independently organized fireside chat featuring biotech CEO Kelsey Moody with 60+ attendees at Cornell's Entrepreneurship Hub in collaboration with iGEM and entrepreneurship fraternity.

Editor, Cornell Undergraduate Research Journal

Aug, 2025 - Current

- Peer review of over 20 undergraduate research paper submissions in all disciplines

Peer Mentor, Cornell University

Oct, 2024 - Current

- Served as a mentor for 6 undergraduates in professional development and finding research opportunities as member of Peer Mentorship Program
- Led 14 mile summit of Algonquin and Cascade mountains in Adirondacks in NOLS program

Honors & Awards

Cornell Rawlings Presidential Research Fellowship (2025)

- Top 2% of Cornell undergraduates demonstrating strong commitment to research with \$7000 research and conference travel support account

Jiang Fellow (2025)

- Highly selective \$11000 award supporting Cornell students to perform summer research at a startup company of their choosing

Cornell Summer Experience Grant (2025)

- Competitive \$5000 award for pursuing summer research

Cornell Einhorn Center Engaged Student Grant (2024)

- \$1000 award for commitment to advocacy/outreach, e.g. longevity research advocacy

Presentations

Combination Product Dept. leadership at Regeneron, Albany, NY, Aug 7 2024. Karmel, O. "Characterization of a novel accelerated aging strategy for assessing device functional stability." (presentation and technical report)

Relevant Coursework: Honors Organic Chemistry I, Anatomy and Physiology Biomed. Engrs., Quantum Mechanics, Computational Genetics and Genomics, Data Science for Engineers