Sara Kapasi

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Education

Georgia Institute of Technology Atlanta, Georgia

Major in biomedical engineering, minor in chemistry and biochemistry *August 2022-Present*

- GPA: 3.72/4.0, Major GPA: 3.70/4.0
- Activities: Women in Engineering, Women of Aeronautics and Astronautics, Undergraduate Research Ambassadors, Honors Program, DramaTech, BMES

Experience

Undergraduate Researcher Jan. 2023 - Present

Kostas Lab at Georgia Tech *Atlanta, GA*

- Led a global team that conducted statistical analysis and genomic assignment for crayfish metagenomes to see how composition of intestinal microbiomes affect survival in lakes impacted by climate change (manuscript in prep)
- Compared dada2 and lab-developed 16S amplicon sequencing analysis pipelines to analyze the difference in the severity of diarrheal diseases through gut microbiome composition of remote and urban populations in Ecuador
- Used metagenomic and immune marker data to investigate how intrinsic and acquired antigen response influences murine intestinal microbiome composition

Product Engineering Intern May 2025 – Aug. 2025

Varda Space Industries, Brooke Owens Fellowship *El Segundo, CA*

- Performed high-throughput crystallization (80+ experiments) of ritonavir to investigate polymorph conversion rates over a range of process controls through XRPD and HPLC
- Developed and executed a protocol to synthesize out-sourced polymorphs in-house

MIT Summer Research Program (MSRP) Intern Jun. 2024 – Nov. 2024

Traverso Lab at MIT *Cambridge, MA*

- Stabilized anaerobic bacteria for long-term delivery of live biotherapeutics by optimizing excipient formulations for high temperatures and oxygenated environments
- Jointly organized and maintained the lab chemical library with >700 compounds for streamlined excipient testing
- Prepped agar plates and cultured batches of *B. infantis* and *L. crispatus* for use in stability testing (counting colonies on plates exposed to different environments)

Summer Undergraduate Research Fellow Jun. 2023 – Aug. 2023

Appel Lab at Stanford University *Stanford, CA*

- Chemically synthesized and characterized the rheology and pharmacokinetics of controlled-release polymer-nanoparticle hydrogels containing GLP-1 receptor agonists such as tirzepatide and semaglutide
- Handled 40+ rats for in-vivo testing of the hydrogels, monitoring physiological changes

Undergraduate Researcher Aug. 2022 – Dec. 2023

Yeo Lab at Georgia Tech *Atlanta, GA*

- Fabricated soft wearable electronics and biosensors for cardiovascular monitoring and early arrythmia detection
- Created figures and gathered >50 papers for a literature review on wearable neonatal health technologies

Publications

[1] **Kapasi S**, Meziti A, Brink C, Lucas M, Hatt J.K, Konstantinidis K.T, & Kormas K. (2025). The microbiome of *Procambarus clarkii* (crayfish) farmed under different growth conditions. *In prep*.
[2] Biggs K.A., Bozorgzadeh S, Murphy M, Aronson N.C., Hughes C, Raehse B, Whinney E, Verma S, McNally G, Snapper O, Heavey M, Tucker I.J., Levine C, Girand O, **Kapasi SM**, Kang Z, Muller B, Barron SM, Gaspie K, Hayward A, Karavasili C, & Traverso G. (2025). Iterative evolution of an extremophilic formulation: stabilizing *Lactobacillus crispatus* to support global vaginal health. *In submission*.
[3] d'Aquino, A. I., Dong, C., Nguyen, L. T., Yan, J., Jons, C. K., Saouaf, O. M., Song, Y. E., Eckman, N., **Kapasi, S**., Williams, C. M., Doulames, V., Sen, S., Manna, M. K., Alakesh, A., Lu, K., Hall, I., & Appel, E. A. (2025). Long-acting hydrogel-based depot formulations of tirzepatide and semaglutide for the management of type 2 diabetes and weight. bioRxiv, 2025.07.02.662867. https://doi.org/10.1101/2025.07.02.662867
[4] Guess M, Soltis I, Rigo B, Zavanelli N, **Kapasi S**, Kim H, & Yeo WH. Wireless batteryless soft sensors for ambulatory cardiovascular health monitoring. Soft Sci 2023;3:23. https://dx.doi.org/10.20517/ss.2023.17

Presentations

The microbiome of the crayfish, *Procambarus clarkii* farmed under different growth conditions.

- *2025 Out for Undergrad Life Sciences Conference*, Minneapolis, Minnesota (Sept. 19, 2025).
- *Annual Biomedical Research Conference for Minoritized Scientists 2025*, San Antonio, Texas (Nov. 20, 2025).

Long-term stabilization of live biotherapeutics for neonatal and female health.

- *Annual Biomedical Research Conference for Minoritized Scientists 2024*, Pittsburgh, Pennsylvania (Nov. 15, 2024).
- *2024 MSRP Research Symposium*, Cambridge, Massachusetts (Aug. 1, 2024).

Formulation of GLP-1 polymer-nanoparticle (PNP) hydrogels for treatment of type 2 diabetes.

- *2025 Out in Stem 15th Annual Conference*, Baltimore, Maryland (Oct. 18, 2025).
- *2024 Out for Undergrad Life Sciences Conference*, Minneapolis, Minnesota (Oct. 27, 2024).
- *2023 SURF Research Symposium*, Stanford, California (Aug. 17, 2023).

Wireless batteryless soft sensor for ambulatory cardiovascular health monitoring. *2023 BMES Annual Meeting*, Seattle, Washington (Oct. 14, 2023).
Soft wireless cardiorespiratory patch for arrhythmia detection. *2022 Georgia Tech VIP Innovation Competition*, Atlanta, Georgia (Oct. 27, 2022).

Honors and Awards

oSTEM Actalent Engineering: Queer Excellence Scholarship (Aug 2025)

- Awarded by oSTEM and Actalent for sustained service in the queer community

Women in Engineering (WiE) Scholarship (2024, 2025)
Brooke Owens Fellow (Jan 2025)

- Selected as a 2025 recipient of the Brooke Owens Fellowship, a competitive fellowship for women and gender minorities in the aerospace industry

DEEPenn STEM Scholar (Oct 2024)

- Selected for a graduate preview weekend for minorities at the University of Pennsylvania

ABRCMS Travel Award (2024, 2025)

Dave Clark Scholarship (Apr 2024)
- Given by DramaTech Theatre to a member with exceptional technical service

Georgia Tech President's Undergraduate Research Award (Fall 2023, Spring 2024)
1st Place Poster – Georgia Tech VIP Innovation Competition (Apr 2023)
Faculty Honors & Dean's List (2022 – Present)

Mentoring

- Mentored freshmen as part of **Georgia Tech's Women in Engineering** program
- Member of the **Brooke Owens Fellowship** Selection Committee
- Served as a **Georgia Tech Undergraduate Research Ambassador**, hosting office hours, panels, and symposia for undergraduates interested in research
- Served as a **DramaTech Theatre Peer Mentor**, mentoring students on balancing technical theatre with research involvements

Activities and Organizations

Head of Research, Southeast Analog (Aug 2025 – Present)
- Run a team of 10+ members, integrating research proposals into a student-run Martian analog astronaut mission

Undergraduate Research Ambassador, Georgia Tech (Aug 2024 – Present)
- Attend weekly meetings with other ambassadors planning and hosting monthly events promoting undergraduate research participation across Georgia Tech

Sound Designer & Production Manager, DramaTech Theatre (Aug 2022 – Present)
- Lead and organize technical production of five shows within the DramaTech 2024-2025 season, coordinating technical deadlines and space usage amongst 100+ members of crew working with Atlanta theatre professionals
- Member of Technical Services Council responsible for upkeep of sound technology throughout show seasons

BME Officer, Asclepios (Oct 2024 – Aug 2025)
- Virtually organize and setup biomedical data collection for international scientific experiments involving analog astronauts in the Asclepios V lunar analog mission

Women's Committee Member, US Squash (Nov 2022 – Present)
- Meet monthly with national women's squash leaders to expand accessibility of women's squash in Southeast US

Crisis Counselor, Crisis Text Line (Aug 2022 – Dec 2023)
- Participated in over 30 hours of crisis intervention training, 240 hours of intervention
- Conducted risk assessments, utilized and executed psychological first aid

Skills

- Bioinformatics-specific: 16S amplicon sequencing, metagenomic sequencing, Kraken2, QIIME2, Bash, Linux, Python, R, HPC, BLAST, LEfSe
- Engineering-specific: Fusion360, AutoCAD, COMSOL, Altium, PCB fabrication
- Other: Anaerobic culture, aseptic technique, agar plating, animal handling, chemical library development, spin coating, elastomer synthesis, hydrogel synthesis, ELISAs, in-vitro release assays, DNA extraction, PCR, XRPD, HPLC, DLS, microscopy, high-throughput crystallization