

Sara Kapasi

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EDUCATION

Georgia Institute of Technology

Atlanta, GA

Bachelor of science in biomedical engineering, chemistry and biochemistry minor

Aug. 2022 – Present

- GPA: 3.72/4.0, Major GPA: 3.70/4.0
- Relevant coursework: Systems Physiology, Principles and Applications of Engineering Materials, Intro to Bioengineering Statistics, Synthesis Lab I, Biochemistry I, Biotransport, Bioastronautics
- Activities: DramaTech, Undergraduate Research Ambassadors, BMES, Women in Engineering, Women in Aeronautics and Astronautics, Honors Program

EXPERIENCE

Undergraduate Research

Jan. 2023 - Present

Kostas Lab at Georgia Tech

Atlanta, GA

- Conducted statistical analysis and genomic assignment for crayfish metagenomes to see how composition of intestinal microbiomes affect survival in lakes impacted by climate change
- Investigated how intrinsic and acquired antigen response influences murine intestinal microbiome composition
- Analyzed the difference in the severity of diarrheal diseases through gut microbiome composition of remote and urban populations in Ecuador
- Presenting crayfish 16S amplicon results at ABRMCS 2025, manuscript in preparation
- Skills: R, 16S amplicon sequencing, metagenomics, HPC, bioinformatics pipelines, PCR, DNA extraction

Product Engineering Intern

May. 2025 - Aug. 2025

Varda Space Industries, Brooke Owens Fellowship

El Segundo, CA

- Performed high-throughput crystallization of ritonavir to investigate polymorph conversion rates
- Identified process controls to experimentally select polymorphs of pharmaceuticals when sent to space
- Skills: Chemical synthesis, XRPD, HPLC, high-throughput crystallization, microscopy

MIT Summer Research Program Intern

Jun. 2024 - Dec. 2024

Traverso Lab at MIT

Cambridge, MA

- Stabilized bacteria for long-term delivery of live biotherapeutics by optimizing excipient formulations
- Jointly organized and maintained the lab chemical library with >700 compounds for streamlined excipient testing
- Presented to the MIT community and the Traverso lab about stabilizing anaerobic *B. infantis* and *L. crispatus* in low-income areas for neonatal and female health applications in >100F temperatures and oxygenated environments
- Presented bacterial stabilization process and stability results at ABRCMS 2024, manuscript submitted
- Skills: Anaerobic culture, aseptic technique, agar plating, chemical library development

Summer Undergraduate Research Fellow

Jun. 2023 – Aug. 2023

Appel Lab at Stanford University

Stanford, CA

- Chemically synthesized and characterized the material properties of controlled-release polymer-nanoparticle hydrogels containing GLP-1 receptor agonists
- Presented a research poster and oral talk to the general Stanford community at the 2023 SURF Symposium
- Presented at the 2024 Out for Undergrad Engineering and Life Sciences Conference about the rheology and pharmacokinetic stability of GLP-1 RA-containing hydrogels
- Skills: rheology, ELISA, DLS, hydrogel synthesis, animal handling, in-vitro release assays

Undergraduate Researcher

Aug. 2022 - Dec. 2023

Yeo Lab at Georgia Tech

Atlanta, GA

- Fabricated soft wearable electronics and biosensors for cardiovascular monitoring and early arrhythmia detection
- Presented a poster on a novel soft SCG sensor at the 2023 BMES Annual Meeting
- Created figures and gathered >50 papers for a literature review on wearable neonatal health technologies
- Skills: FEA, AutoCAD, COMSOL, Altium, elastomer synthesis, soldering, spin coating

PUBLICATIONS

- Iterative evolution of synthetic extremophiles: stabilizing *Lactobacillus crispatus* to support vaginal health** May. 2024 – present
- Characterized and made different formulations of *L. crispatus*-containing live biotherapeutics for extreme manufacturing and transportation environments, submitted to *Science Translational Medicine*
- Long-acting hydrogel-based depot formulations of tirzepatide and semaglutide for the management of type 2 diabetes and weight** Aug. 2023 – present
- Characterized and formulated hydrogels carrying GLP-1 RA cargo, submitted, *doi:10.1101/2025.07.02.662867*
- Wireless batteryless soft sensors for ambulatory cardiovascular health monitoring** Jan. 2023 – May 2023
- Fabricated and helped develop a soft wireless battery-less SCG monitoring device comparable to clinical standards based on an LC circuit integrating a capacitive strain sensor, *doi:10.20517/ss.2023.17*
- Gut microbiome composition in diarrheal disease across a rural-to-urban gradient** Jan. 2023 – present
- Bioinformatics research uncovering and confirming microbial biomarkers present in rural and/or urban occurrences of diarrheal disease, *prepared for publication*

ACTIVITIES AND ORGANIZATIONS

- Head of Research** Aug. 2025 - Present
Southeast Analog Atlanta, GA
- Lead a team of 10 students soliciting research proposals for a student-run analog astronaut mission
 - Vet submitted research proposals to select projects for integration into the missions
 - Work with PIs to develop SOPs for analog astronauts and mission control to collect experimental data
- Undergraduate Research Ambassador** Aug. 2024 - Present
Undergraduate Research Ambassadors, Georgia Institute of Technology Atlanta, GA
- Attend weekly meetings with other ambassadors planning and hosting monthly events promoting undergraduate research participation across Georgia Tech campus
 - Hold weekly office hours for students interested in connecting to research opportunities on and off campus
- Women's Committee Member** Nov. 2022 – Present
US Squash Virtual
- Meet monthly with national women's squash leaders to expand accessibility of women's squash in Southeast US
 - Member of College Outreach initiative and City Ambassadors - 1/2 Atlanta ambassadors for women's squash
 - Tutoring and training A+ Squash participants, Atlanta's urban squash program
- Sound Designer, Production Manager** Aug. 2022 - Present
DramaTech Theatre, Georgia Institute of Technology Atlanta, GA
- 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
 - Sound designed and sound engineered shows over three years
 - Mentor in DramaTech mentorship program for queer students new to the theatre
 - Member of Technical Services Council responsible for upkeep of sound technology throughout show seasons
 - Awarded the Dave Clark Scholarship for exceptional service and community building within DramaTech
- BME Officer** Oct. 2024 - Aug. 2025
Asclepios Lausanne, Vaud, Switzerland
- Virtually organise and setup biomedical data collection for international scientific experiments involving analog astronauts in the Asclepios V analog mission
 - Meet with the Asclepios medical team to coordinate with mission control center and science team operations
- Crisis Counselor** Aug. 2022 – Dec. 2023
Crisis Text Line Virtual
- Participated in over 30 hours of crisis intervention training, 240 hours of intervention
 - Conduct risk assessments, utilize and execute psychological first aid: integrating prosocial coping skills, reducing distress, stabilizing mental and physical health, providing detailed and specific resources and plans

HONORS AND AWARDS

oSTEM Actalent Engineering: Queer Excellence Scholarship

August 2025

oSTEM (Out in Stem)

Grandville, MI

- \$5000 scholarship awarded for service towards the queer community within professional and social initiatives
- Attending and presenting at the 2025 oSTEM Annual Conference fully-funded

Women in Engineering Scholarship

March 2025, May 2024

Women in Engineering, Georgia Institute of Technology

Atlanta, GA

- Scholarship awarded for academic achievement and commitment within Women in Engineering

Brooke Owens Fellow

January 2025

Brooke Owens Fellowship

Los Angeles, CA

- Selected as a 2025 recipient of the Brooke Owens Fellowship, a competitive fellowship for women and gender minorities in the aerospace industry
- Completed a Product Engineering internship with Varda Space Industries during the summer of 2025

DEEPenn STEM Scholar

October 2024

University of Pennsylvania

Philadelphia, PA

- Participated in a selective all-expenses-paid graduate preview weekend for marginalized communities at the University of Pennsylvania, hosted by the Perelman School of Medicine

ABRCMS Travel Award

October 2024, November 2025

American Society of Microbiology

Pittsburgh, PA, San Antonio, TX

- Scholarship awarded to cover full registration, hotel, and travel to the ABRCMS 2024 conference, and partial coverage for the ABRCMS 2025 conference

President's Undergraduate Research Award (PURA)

Fall 2023, Spring 2024

Georgia Institute of Technology

Atlanta, GA

- Competitive funding from Georgia Tech supporting undergraduate student involvement in faculty research
- Salary Award for Spring 2024 semester research, Travel Award for travel to the 2023 BMES Annual Meeting

1st Place Poster Presentation - Hardware and Devices

April 2023

2022 VIP Innovation Competition, Georgia Institute of Technology

Atlanta, GA

- Georgia Tech's Annual VIP Innovation Competition, where students in the VIP program share research with students and faculty throughout campus

Faculty Honors and Dean's List

August 2022 - Present

Georgia Institute of Technology

Atlanta, GA

- Award given to undergraduate students with at least a 3.0 average (Dean's List), or a 4.0 average over all classes over a semester (Faculty Honors)
- Awarded Faculty Honors Fall 2022, Dean's List for following semesters