

Biographical Sketch

Dr. Saad Bhamla is an Assistant Professor at Georgia Tech's School of Chemical & Biomolecular Engineering. His interdisciplinary research in the physics of living systems uncovers the principles underlying ultrafast movements in biology and informs the design of bioinspired robotics. He is also at the vanguard of the emerging field of frugal science, to develop affordable and accessible tools for global health.

He directs notable projects like the Frugal Science Academy and the Jungle Biomechanics Laboratory in the Amazon Rainforest to democratize access to science to provide diverse training opportunities, empowering underrepresented students and teachers to engage in synthetic biology. He has also commercially translated a low-cost RNA vaccine technology (ePatch) via a venture-funded startup. At Georgia Tech, he has published over 30 articles and guided 3 postdocs to tenure-track positions.

His achievements been recognized through numerous awards, including the NSF Career Award, NIH MIRA Outstanding Investigator Award, Sigma Xi Young Faculty Award, CTL/BP Award for Teaching Excellence, and the 3M Non-Tenured Faculty Award. His dedication to making science accessible and enjoyable through the creation of multilingual comics, titled "A Curious Zoo of Extraordinary Organisms," has been honored with the National Academies' Eric and Wendy Schmidt Award for Excellence in Science Communication. In 2023, Newsweek listed him among the top 10 Innovators transforming healthcare.

SAAD BHAMLA

Assistant Professor

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I. EARNED DEGREES

- 2015 Ph.D. in Chemical Engineering, Stanford University
- 2010 B.Tech in Chemical Engineering, Indian Institute of Technology Madras

II. EMPLOYMENT HISTORY

- 2017 - Assistant Professor, School of Chemical and Biomolecular Engineering, Georgia Institute of Technology
- 2015-2017 School of Medicine Dean's Postdoctoral Fellow with Prof. Manu Prakash, Bioengineering Department, Stanford University
- 2010-2015 Graduate Research Assistant with Prof. Gerald G Fuller, Department of Chemical Engineering, Stanford University

III. HONORS AND AWARDS

- 2023 National Academies Eric and Wendy Schmidt Awards for Excellence in Science Communication. [\[url\]](#)
- 2023 10 Innovators revolutionizing healthcare, Newsweek Magazine [\[url\]](#)
- 2023 Soft Matter Emerging Investigator
- 2023 3M Non-tenured Faculty Award (NTFA)
- 2023 Sigma Xi Young Faculty Award, Georgia Tech
- 2023 CTL/BP Junior Faculty Teaching Excellence Award
- 2021 TED Global Idea Search Winner and TED Speaker [\[url\]](#)
- 2021 NIH R35 MIRA Outstanding Investigator Award
- 2021 *Industrial & Engineering Chemistry (I&EC)* Class of Influential Researchers
- 2020 NSF CAREER award
- 2020 CS for Social Justice Hero, 1 of 10, CEdWeek. *For accessible hearing aid.* [\[url\]](#)
- 2019 National Geographic Explorer
- 2018 Beazley Design Award, Best Product for Paperfuge [\[url\]](#)
- 2017 Medgadget's Best Medical Technology [\[url\]](#)
- 2017 INDEX: Design to Improve Life Award for 20-cent Paperfuge [\[url\]](#)
- 2016 Innovation in MedTech Award, American India Foundation and Stanford University [\[url\]](#)
- 2016 Dean's Postdoctoral Fellowship, School of Medicine, Stanford University
- 2015 Centennial Teaching Assistant Award, Stanford University
- 2015 Milton van Dyke Award, American Physical Society, Division of Fluid Dynamics [\[video\]](#)

2014 Accel Innovation Scholar, Stanford University

IV. SELECTED PUBLICATIONS

Google Scholar: <https://scholar.google.com/citations?user=1tRXS9gAAAAJ&hl=en>

* indicates co-authorship; § indicates senior corresponding author; *Colored* items indicate work done partially or wholly at Georgia Tech; **boldface** indicates GT advisees

13. Carlos Floyd, Arthur T Molines, **Xiangting Lei**, Jerry E Honts, Fred Chang, Mary W Elting[§], Suriyanarayanan Vaikuntanathan[§], Aaron R Dinner[§], M Saad Bhamla[§]. A unified model for the dynamics of ATP-independent ultrafast contraction. **PNAS** (2023)
12. Vishal Patil*, **Harry Tuazon***, **Emily Kaufaman**, **Tuhin Chakroborty**, **David Qin**, Jorn Dunkel[§] and M Saad Bhamla[§]. Ultrafast reversible self-assembly of living tangled matter. **Science** (2023)
11. E. Challita, P. Sehgal, R. Krugner, M. Saad Bhamla[§]. Droplet superpropulsion in an energetically constrained insect. **Nature Communications** (2023)
10. **Victor M. Ortega-Jimenez**, **Elio Challita**, Baekgyeom Kimd, **Hungtang Ko**, Minseok Gwond, Je-Sung Koh, and M Saad Bhamla[§]. Directional takeoff, aerial righting and adhesion landing of semiaquatic springtails. **PNAS** (2022)
9. **Xia D.**, **Jin R.**, **Byagathvalli G.**, **Yu H.**, **Ye L.**, and Bhamla, M. S.[§], Yang C.[§], and Prausnitz M.[§], An Ultra-Low-Cost Electroporator with Microneedle Electrodes (ePatch) for SARS-CoV-2 Vaccination. **PNAS** (2021)
8. **Ozkan-Aydin Y.**, Goldman DI, and Bhamla, M. S.[§], Collective dynamics in entangled worm and robot blobs. **PNAS** (2021)
7. **Sinha S.**, **Irani U.**, Manchaiah V. and Bhamla, M. S.[§], LoCHAid: An ultra-low-cost hearing aid for age-related hearing loss **PLOS ONE**, 15(9), e0238922 (2020)
6. **Alexander S.** and Bhamla, M. S.[§], Ultrafast launch of slingshot spiders using conical silk webs. **Current Biology**, (2020)
5. **Byagathvalli G.**, **Sinha S.**, **Zhang Y.**, Styczynski M, Standeven J., Bhamla, M. S.[§]. ElectroPen: An ultra-low-cost, electricity-free, portable electroporator. **PLOS Biology**, 18(1): e3000589 (2020)
4. Mathijssen A., **Culver J.** Bhamla, M. S.[§], Prakash M.[§] Collective intercellular communication through ultra-fast hydrodynamic trigger waves. **Nature** 571, 560–564 (2019)

3. **Byagathvalli G.***, Pomerantz A.F.*, **Sinha S.**, Standeven J., Bhamla, M. S.[§]. A 3D-printed hand-powered centrifuge for molecular biology **PLOS Biology**, 17(5):e3000251 (2019)
2. Ilton M., Bhamla M. S.*, Ma X.*, Cox S.*, ... and Patek S. N.[§]. The Principles of Cascading Power Limits in Small, Fast Biological and Engineering Systems. **Science**, 360.6387, eaao1082 (2018)
1. Bhamla M.S., Benson B., Chai C., Katsikis G., Johri A., Prakash M.[§] Hand-powered ultralow-cost paper centrifuge. **Nature Biomedical Engineering**, 1, 0009 (2017)

V. GRANTS AND CONTRACTS

13.5M Total Funds Raised

8.7M Funds to Bhamla Lab at GT

Co-Founder of **Piezo Therapeutics** (Dec 2022). Raised **2M** in seed funding. The mission of this GT spin-out company is to develop and commercialize technology to enhance delivery of genetic material by electroporation. Other co-founders include Mark Prausnitz, Gaurav Byagathvalli and Cynthia Sundell.

Lead PI of **Frugal Science Academy (FSA)** (Sept 2022). NIH R25 award **1.3M**. The goal is to establish a new center at Georgia Tech, Frugal Science Academy (FSA), to empower underrepresented minority students and teachers from rural schools in Georgia to engage in synthetic biology, where the traditional bottleneck has been the lack of affordable scientific equipment for hands-on STEM. The Frugal Science Academy will train young URM high school investigators to develop “frugal hardware” (from concept to publication) used in synthetic biology research and disseminate their research into underequipped labs while also training rural high school teachers to incorporate synthetic biology education and frugal hardware into their curricula. This work will increase the diversity, creativity, and innovation in the rapidly expanding field of synthetic biology, with an emphasis on affordability and accessibility through the lens of frugal science, helping to democratize access to scientific tools.

Director of Jungle Biomechanics Laboratory (JBL) (2023 - present)

The vision of this NSF supported JBL initiative is to facilitate physics of living systems research in the Peruvian Amazon Rainforest, providing a diverse group of U.S. students an avenue to study non-traditional organisms in one of the most biodiverse, yet infrastructurally limited environments on Earth. Designed to lower barriers to scientific research, the JBL program establishes a frugally equipped jungle biomechanics laboratory at Finca Las Piedras in the Peruvian Amazon Rainforest, serving as an emerging model for field-based research laboratories. By offering these unique field research experiences, and fostering professional relationships between U.S. and Peruvian scientists, the program enhances students’ intercultural research capabilities and contributes to the training of the next generation of interdisciplinary scientists and engineers.