

Ian Ho

📞 917-288-8729 | ✉ ianho@stanford.edu | 🌐 ianaho.github.io | 📄 Google Scholar

Research Interests

Biological Fluid Mechanics, Physical Computing, Active Matter, Interfacial Phenomena

Education

Stanford University, School of Engineering **Stanford, CA**
Ph.D. Biological Engineering 2021-
Advisor: Manu Prakash

Stanford University, School of Engineering **Stanford, CA**
M.Sc. Biological Engineering 2021-2023

Brown University, School of Engineering **Providence, RI**
B.Sc. Mechanical Engineering (Honors) 2017-2021
Research Advisor: Daniel Harris

Research Experience

Prakash Lab (Stanford University) **Stanford, CA**
Graduate Research — Advisor: Prof. Manu Prakash 2022-

- **Coral Larvae Swimming Behavioral**
 - 3D long-term tracking across the larval life cycle quantifies swimming states and transitions that shape dispersal strategies [1].
- **Parasite Interfacial Swimming**
 - Identified and modeled a novel interfacial swimming mode in schistosome larvae that enhances near-surface transport and dispersal [2].
- **Self-learning Mechanical Circuits**
 - Realized unsupervised learning in elastic networks where spring stiffness adapts as the learning degree of freedom, enabling programmable mechanical memory [3].

Harris Lab (Brown University) **Providence, RI**
Undergraduate Research — Advisor: Prof. Daniel Harris 2018–2021

- **Self Propulsion and Collective Interaction of Capillary Surfers**
 - Established a capillary-wave-driven active-matter system of “surfer” particles with tunable self-propulsion and wave-mediated interactions [5,6].
- **Direct Measurement of Capillary Attraction**
 - Developed a magnetic force measurement platform to directly measure capillary attraction between floating cylinders [9].
- **Interfacial Drag on Floating Bodies**
 - Quantified skin-friction drag for centimeter-scale disks sliding on the air–water interface, isolating boundary-layer contributions [10].

Breuer Lab (Brown University) **Providence, RI**
Independent Study — Advisor: Prof. Kenny Breuer 2020–2021

- **Energy Harvesting with Flexible Hydrofoils**
 - Measured how a flexible tip alters heaving–pitching hydrofoil dynamics and boosts energy-harvesting performance [8].

In Preparation

*co-first author

- [1] **Ian Ho***, Qing Zhang*, Benjamin Foster, Elora López-Nandam, Rebecca Albright and Manu Prakash. Behavior plasticity in free swimming coral larvae via long term tracking microscopy. **In Preparation**, 2025.

- [2] Melanie Hannebelle, **Ian Ho** and Manu Prakash. Schistosomiasis parasite enhance transmission rates via interfacial swimming. **Submitted**, 2025. [\[PDF\]](#)
- [3] Vishal P. Patil*, **Ian Ho***, and Manu Prakash. Self-learning mechanical circuits. **Submitted**, 2024. [\[PDF\]](#)
- [4] **Ian Ho***, Giuseppe Pucci*, Anand U. Oza and Daniel M. Harris. Capillary surfers: wave-driven particles at a fluid interface. **Physical Review Fluids**, 2023. (“Editors’ Suggestion” and “Featured in Physics”). [\[PDF\]](#)
[APS](#) | [FYFD](#) | [DFD Gallery of Fluid Motion](#)
- [6] Anand U. Oza , Giuseppe Pucci, **Ian Ho**, and Daniel M. Harris. Theoretical modeling of capillary surfer interactions on a vibrating fluid bath. **Physical Review Fluids**, 2023. (“Featured in Physics”) [\[PDF\]](#)
- [7] **Ian Ho**, Ajay Harishankar Kumar and Daniel M. Harris. Reconfigurable mechanical vibrations laboratory kit. **Journal of Open Hardware**, 2022. [\[PDF\]](#)
- [8] Howon Lee*, **Ian Ho*** and Kenneth Breuer. Energy harvesting performance of an oscillating hydrofoil with a flexible tip. **AIAA Scitech**, 2022. [\[PDF\]](#)
- [9] **Ian Ho**, Giuseppe Pucci, and Daniel M. Harris. Direct measurement of capillary attraction between floating disks. **Physical Review Letters**, 2019. (“Editors’ Suggestion” and “Featured in Physics”). [\[PDF\]](#)
[APS](#) | [Ars Technica](#) | [Physics Buzz](#) | [News from Brown](#) | [Futurity](#)
- [10] Giuseppe Pucci, **Ian Ho**, and Daniel M. Harris. Friction on water sliders. **Scientific Reports**, 2019. [\[PDF\]](#)

Contributed Presentations

- **Ian Ho**, Qing Zhang, Elora López-Nandam, Rebecca Albright, Manu Prakash. *Behavioral plasticity in free-swimming coral larvae via long-term tracking microscopy*. APS March Meeting 2023, Las Vegas. [\[Bulletin\]](#)
- **Ian Ho**, Ajay Harishankar Kumar, Daniel M. Harris. *Skin friction on oscillating interfacial bodies*. APS DFD Meeting 2021, Phoenix. [\[Bulletin\]](#)
- Hongquan Li, *et al.* (incl. **Ian Ho**). *Pufferfish: Developing a rapidly scalable full-feature ventilator for COVID-19 patients with ARDS*. APS DFD Meeting 2020, Virtual. [\[Bulletin\]](#)
- **Ian Ho**, Giuseppe Pucci, Daniel M. Harris. *Direct measurement of capillary attraction between floating disks*. APS March Meeting 2019, Boston, MA. [\[Bulletin\]](#)

Fellowships

Tau Beta Pi Fellowship (Stark No. 42): Among 28 selected, 2021-2022. [\[Link\]](#)

Awards and Honors

Poster award: Stanford Bio-X Interdisciplinary Initiatives Seed Grants Program Poster Session (25/229). [\[Link\]](#)

Stanford Bio-X Travel Award: Travel award to attend APS March Meeting, 2023. [\[Link\]](#)

Outstanding Senior Award in Mechanical Engineering: Brown School of Engineering, 2021. [\[Link\]](#)

Sigma Xi Honor Society: Inducted 2021.

Karen T. Romer Undergraduate Teaching and Research Award: Awarded to conduct research at Brown University, 2019.

Tau Beta Pi Engineering Honor Society: Awarded to top 1/8 of Engineering Class, inducted 2019. [\[Link\]](#)

Teaching Experience

Physiology: Modern Cell Biology — Marine Biological Laboratory (MBL)	Woods Hole, MA
Teaching Assistant [Link]	2025

BIOE 271 Frugal Science — Stanford University	Stanford, CA
Teaching Assistant	2023,2024,2025

ENGN 1735 Vibration of Mechanical Systems — Brown University <i>Teaching Assistant, Course Development</i> [7]	Providence, RI 2021
ENGN 1860 Advanced Fluid Mechanics — Brown University <i>Teaching Assistant</i>	Providence, RI 2020
Summer@Brown "Fluid Mechanics Through Hovercraft Physics" — Brown University <i>Co-instructor</i>	Providence, RI 2018
APMA 340 Ordinary Differential Equations <i>Teaching Assistant</i>	Providence, RI 2018

Field Research

2023: *R/V Atlantic Explorer (Bermuda)* — Tracking microscopy measurements of acantharian sedimentation.
2022: *R/V Sikuliaq (Alaska)* — Measurements of centric diatom buoyancy-regulation behavior.

References

Manu Prakash Associate Professor of Bioengineering Stanford University Ph.D. Advisor Email: manup@stanford.edu Web: prakashlab.stanford.edu	Daniel M. Harris Associate Professor of Engineering Brown University Undergraduate Research Advisor Email: daniel_harris3@brown.edu Web: sites.brown.edu/harrislab	Vishal P. Patil Assistant Professor of Mathematics University of California, San Diego Co-author / Collaborator Email: vppatil@ucsd.edu Web: mathweb.ucsd.edu/vipatil
---	--	--