

## Professional Experience

---

**Postdoctoral Scholar** 2021 - pres.  
University of Chicago  
*Advisor:* Vincenzo Vitelli

## Education

---

**Ph.D. in Physics** 2015-2021  
Yale University  
*Advisor:* Michael P. Murrell  
*Thesis:* Energetics of biological mechanics and dynamics

**B.A. in Individualized Study** 2010-2014  
New York University; *Cum Laude*

## Academic Publications

---

### Published

- Irreversibility in dynamical phases and transitions**  
*Nature Communications* (2021)  
**Daniel S. Seara**, Benjamin B. Machta, Michael P. Murrell  
*Highlighted in Nature Communications' Focus Issue on Applied Physics and Mathematics*
- Detailed balance broken by catch bond kinetics enables mechanical adaptation in active materials**  
*Advanced Functional Materials* (2020)  
A. Pasha Tabatabai\*, **Daniel S. Seara\***, Joseph Tibbs, Ian Linsmeier, and Michael P. Murrell
- Wound healing coordinates actin architectures to regulate mechanical work**  
*Nature Physics* (2019)  
Visar Ajeti, A. Pasha Tabatabai, Andrew J. Fleszar, Michael F. Staddon, **Daniel S. Seara**, Cristian Suarez, M. Sulaiman Yousafzai, Dapeng Bi, David R. Kovar, Shiladitya Banerjee, and Michael P. Murrell.
- Entropy production rate is maximized in non-contractile actomyosin**  
*Nature Communications* (2018)  
**Daniel S. Seara**, Vikrant Yadav, Ian Linsmeier, A. Pasha Tabatabai, Patrick W. Oakes, S. M. Ali Tabei, Shiladitya Banerjee, and Michael P. Murrell.  
*Highlighted in Nature Collections: Active Matter*

## Talks

---

### Invited

Quantitative Life Sciences Seminar, *ICTP, Italy* Jan 2021  
MRSEC Rising Stars in Soft and Biological Matter Symposium, *UChicago* Oct 2020

Gotham-Metro Condensed Matter Conference, *New York University*

Oct 2019

## Contributed

APS March Meeting, <i>online</i>	Mar 2021
<b>CMD2020GEFES</b> , <i>Barcelona Spain</i>	Aug 2020
APS March Meeting, <i>Denver CO</i>	Mar 2020
APS March Meeting, <i>Boston MA</i>	Mar 2019
APS March Meeting, <i>Los Angeles CA</i>	Mar 2018

## Awards

---

Kadanoff-Rice Postdoctoral Fellowship, University of Chicago	2021 - pres.
Finalist for Schmidt Science Fellowship	2021
UChicago "Rising Stars in Soft and Biological Matter"	2020
DBIO Travel Grant to 2020 APS March Meeting	2020
NSF GRFP Fellowship	2016
Richard J. Koppenaal Award for Distinguished Interdisciplinary Study	2014
Physics National Honor Society ( $\Sigma\Pi\Sigma$ )	2013

## Teaching

---

### Yale University (Teaching assistant)

Introduction to Biomechanics ( <i>undergraduate and graduate, guest lecturer</i> )	Fall 2017
Statistical Mechanics ( <i>graduate</i> )	Spring 2017
Intro Physics for the Life Sciences I	Fall 2016
Intro Physics for the Life Sciences II	Spring 2016
Intro Physics for the Life Sciences I	Fall 2015

### New York University (Teaching Assistant)

Physics III	Spring 2015
Classical & Quantum Waves	Fall 2014

## Popular Science Publications

---

<b>APS March Meeting self-organizes online</b> , SoftBites	Mar 2020
<b>Spell-checking biology</b> , SoftBites	Oct 2018
<b>Scaling up biology</b> , SoftBites	Aug 2018
<b>Metastasis: a force to be reckoned with</b> , Hartford Courant	May 2018
<b>How the leopard got its spots</b> , SoftBites	Apr 2018
<b>Dividing liquid droplets as protocells</b> , SoftBites	Feb 2018

Editor for >10 articles for **SoftBites**

## Outreach

---

2020 Conference for undergraduate women in physics at Yale organizer	2019
Pathways Summer Scholars Instructor	2018
Splash at Yale Instructor	2017
Yale Science Diplomats	2015-2018
Girl's Science Investigation	2015-2020
"Science as a Creative Endeavor", TedXGallatin lecture	2014
Camp New Day	2013-2015
Co-director of summer science camp for Masa-MexEd	2012

## References

---

- **Michael P. Murrell** (Ph.D. advisor)  
Associate Professor of Biomedical Engineering & Physics  
Yale University  
michael.murrell@yale.edu
- **Benjamin B. Machta**  
Assistant Professor of Physics  
Yale University  
benjamin.machta@yale.edu
- **Shiladitya Banerjee**  
Assistant Professor of Physics  
Carnegie Mellon University  
shiladtb@andrew.cmu.edu