

# Avaneesh V. Narla

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## EDUCATION

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PhD Candidate in Physics with Quantitative Biology Specialization from <b>University of California, San Diego</b> Conducting research on theoretical population ecology, advised by Prof. Terry Hwa	AUG 2017 - <i>current</i>
A.B. <i>cum laude</i> in Physics from <b>Princeton University, Princeton, NJ</b> <i>Certificates:</i> Applications of Computing, Applied Mathematics, Biophysics	AUG 2013 JUN 2017

## RECOGNITION

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### University of California, San Diego

- Academic Senate Distinguished Teaching Award
- Physics Excellence Award
- QBio Fellowship
- Chair's Challenge Grant
- Dean of Undergraduate Education Summer Graduate Teaching Scholar
- Recognition of Expertise in Equitable and Evidence-Based Teaching

### Princeton University

- Allen G. Shenstone Award for Excellence in Physics
- Treiman Summer Research Award
- Sigma Xi Honor Society Election
- Davis United World College Scholar

## PUBLICATIONS

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1. Amarnath, K., **Narla, A. V.**, Pontrelli, S., Dong, J., Caglar, T., Taylor, B. R., ... & Hwa, T. (2021). Stress-induced cross-feeding of internal metabolites provides a dynamic mechanism of microbial cooperation. *bioRxiv*.
2. **Narla, A. V.**, Cremer, J., & Hwa, T. (2021). A traveling-wave solution for bacterial chemotaxis with growth. *Proceedings of the National Academy of Sciences*, 118(48), e2105138118.
3. **Narla, A. V.**, Borenstein, D. B., & Wingreen, N. S. (2021). A biophysical limit for quorum sensing in biofilms. *Proceedings of the National Academy of Sciences*, 118(21), e2022818118.
4. Deneke, V. E., Puliafito, A., Krueger, D., **Narla, A. V.**, De Simone, A., Primo, L., ... & Di Talia, S. (2019). Self-organized nuclear positioning synchronizes the cell cycle in *Drosophila* embryos. *Cell*, 177(4), 925-941.
5. **Narla, A. V.** (2022). Teaching to Fail: Creating Vulnerable Learning Communities to Facilitate Students' Growth. *Exploring how we teach: Lived experiences, lessons, and research about graduate instructors by graduate instructors*.

## MANUSCRIPTS IN PREPARATION AND AVAILABLE UPON REQUEST

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1. **Narla, A.V.**, Hwa, T., and Murugan A. (2022) Stable Coexistence in Cyclic Environments.
2. **Narla, A. V.**, Sahu, K., & Hwa, T. (2022) Chemotaxis and Growth on a Single Substrate.
3. Naigles, B., **Narla, A. V.**, and Nan Hao. (2022) Early and late IFN $\gamma$ -responsive genes decode dynamic IFN $\gamma$  stimulus in opposing ways in macrophages.
4. Cremer, J.,\* **Narla, A. V.\***, & Hwa, T. (2022) Taxis as the Driving Factor of Fast Range Expansion.
5. **Narla, A.V.\***, Bullard, E.M.\*, Edwards, M.\*, Petrie, K. (2022) Teaching Practices Affecting Students' Sense of Belonging in STEM Classrooms during the Pandemic.

## TEACHING EXPERIENCE

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<b>Instructor of Record</b> for PHYS 1A (taught twice) at UCSD Summer Graduate Teaching Scholar	JUN 2021 - SEP 2021
<b>Graduate Teaching Consultant</b> at the Engaged Teaching Hub in University of California San Diego Teaching + Learning Commons	APR 2020 - <i>current</i>
<b>Higher Learning Navigation Tutor</b> (Volunteer position) at the International Rescue Committee in San Diego	SEP 2020 - <i>current</i>
<b>Course Instructor</b> (Volunteer position) at East Mesa Re-Entry Facility with Bio Education and Art for Science Innovation	SEP 2020 - <i>current</i>
<b>Instructional Training: Introduction to College Teaching</b> in University of California San Diego Teaching + Learning Commons	SEP 2019 - DEC 2019
<b>Graduate Teaching Assistant for PHYS 201: Mathematical Physics</b> in UCSD Physics Dept. with Profs. R. Sekhar Chivukula and Michael Fogler	SEP 2018 - DEC 2019
<b>Instructional Training: Introduction to Physics Teaching</b> in UCSD Physics Dept.	SEP 2017 - DEC 2017
<b>Teaching Fellow for EGR 150: Foundations of Engineering,</b> Freshman Scholars Institute, Princeton University Generated course materials, and helped design course content.	MAY 2015- AUG 2016
<b>Teaching Assistant for EGR 192: Introduction to Engineering Math</b> <b>Teaching Assistant for MAT 204: Advanced Linear Algebra</b> Mathematics Department, Princeton University	AUG 2015 - MAY 2016
<b>Tutor for Integrated Science Curriculum</b> Lewis-Sigler Institute for Integrative Genomics, Princeton University	OCT 2014 - JUN 2016

## SERVICE, MENTORING, AND OUTREACH

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Gordon Research Seminar on Stochastic Biology, 2023	Chair of two-day Conference
UCSD Physical Sciences Cohort Program	Cohort Program Mentor
UCSD Instructional Assistant Symposium, 2022	Keynote Speaker
APS March Meeting, 2022	Session Chair
PLoS Computational Biology	Reviewer
eLife - Physics of Living Systems	Reviewer
Useful Science	Writer and Podcast Host
TheoBioPhys	Podcast Host
Skype a Scientist	Volunteer
Young Scientist Club, San Diego	Volunteer
ComSciCon San Diego 2020	Organizer
Kugelblitz	Podcast Host
Warren Honors College	Mentor for prospective PhD students
P2P Mentor Program, Physics Dept. UCSD	Peer mentor to 4 undergraduate students
SouthEast Science and Art Expo	Volunteer
Young Physicist Program, UCSD	Volunteer
Wilson College	Residential College Advisor for > 30 students
Prison Teaching Initiative, Princeton University	Tutor
Pete Greene Prison Tutoring Program	Tutor

## WORK EXPERIENCE

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<b>Instructor of Record in Physics Department at UCSD,</b> Sole instructor for two undergraduate-level physics courses for over 250 students. Developed course based on constructivist pedagogy, recommended by 95% of students.	JUN 2021 - SEP 2021
<b>Graduate Student Researcher in Quantitative Biology,</b> in UCSD Physics Dept. with Prof. Terence Hwa Investigating properties of microbial communities using theoretical and computational tools to understand community assembly, population spread and coexistence.	MAR 2020 - <i>current</i>
<b>Graduate Student Researcher in Theoretical Biophysics,</b> in UCSD Physics Dept. with Prof. Massimo Vergassola Investigated the role of actomyosin-mediated cytoplasmic flows in early nuclear positioning and cell-cycle synchronization in <i>Drosophila</i> embryos.	MAR 2018 - NOV 2019
<b>Independent Work in Theoretical Biophysics, including summer research,</b> in Princeton Physics Dept. with Prof. Ned Wingreen (Lewis Sigler Institute) Investigated the role of quorum sensing in evolutionary dynamics of bacterial biofilms using computational tools and theoretical models as part of Senior Thesis.	JAN 2016 - JUN 2017
<b>Research in Experimental Biophysics (Princeton University)</b> Research Assistant in Physics Department for Prof. Thomas Gregor Studied gene expression during early development of fruit fly embryo using computational tools and physical models, in collaboration with Prof. Mike Levine's lab.	JUNE 2015 - JAN 2016
<b>Research Experience for Undergraduates (Princeton University),</b> in Princeton Math. Dept. with Prof. Christine Taylor (Institute for Advanced Study) Studied theoretical results in Random Matrix Theory, and investigated applications in Physics and Biology including Quantum Many-Body systems and Compressed Sensing.	MAY 2015 - AUG 2015
<b>The European Organization for Nuclear Research (CERN),</b> Geneva Research Assistant for Prof. Daniel Marlow & Dr. David Stickland (Princeton Univ.) Member of Compact Muon Solenoid Beam and Radiation Monitoring Group.	JULY 2014 - SEP 2014

## NOTABLE SCIENTIFIC TALKS

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Simons Collaboration on Principles of Microbial Ecosystems Annual Meeting	AUG 2022
Aspen Workshop on Dynamics of Social Interactions	MAR 2022
American Physical Society March Meeting (Five talks over six years)	2017-2022
Invited Speaker at Azim Premji University (Bengaluru, India)	NOV 2021
Discussion Leader and Speaker at Gordon Research Conference (Ventura, CA)	OCT 2021
Invited Speaker at Emonet Group Meeting (Yale University)	MAR 2021
Annual Conference on Quantitative Biology, NSF-Simons Center for Quant. Biology	NOV 2020
Invited Student Speaker at qBio Symposium, UCSD	APR 2019

## SKILLS AND PROFICIENCY

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Extensive Knowledge:	Java, MATLAB, L <sup>A</sup> T <sub>E</sub> X, Python, Mathematica, FENiCs
Intermediate Knowledge:	C, Julia and C++
Experimental Methods:	Bacterial growth measurements, Human subject research
Languages:	English (Native Level), Hindi (Native Level), Spanish (Proficient) Telugu (Native level), Bengali (Proficient), French (Basic), ASL (Elementary)

## REFERENCES

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RESEARCH:	Prof. Terry Hwa, University of California, San Diego Prof. Arvind Murugan, University of Chicago Prof. Jonas Cremer, Stanford University Prof. Ned Wingreen, Princeton University
TEACHING:	Prof. Oleg Shpyrko, University of California, San Diego Prof. Phil Tsai, University of California, San Diego Dr. Eri Lynn Heinrichsen, University of California, San Diego