Ben T. Larson

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Education and Academic Positions

Rensselaer Polytechnic Institute — Troy, NY
Assistant Professor, Department of Biological Sciences — *2024-present*
Center for Biotechnology and Interdisciplinary Studies

University of California, San Francisco — San Francisco, CA
Postdoctoral Scholar, Biophysics, Laboratory of Cell Geometry — *2019-2024*
Mentor: Wallace Marshall

University of California, Berkeley — Berkeley, CA
PhD, Biophysics with Designated Emphasis in Computational Biology, Animal Origins Lab — *2014-2019*
Mentor: Nicole King

Marine Biological Laboratory — Woods Hole, MA
Physiology Course — *2016*

National Institutes of Health, NHLBI — Bethesda, MD
Postbac Researcher, Biophysics, Laboratory of Molecular and Cellular Imaging — *2012-2014*
Mentor: Justin Taraska

Reed College — Portland, OR
BA, Physics — *2008-2012*

Fellowships, Honors, and Awards

Merck Postdoctoral Fellowship
Jane Coffin Childs Memorial Fund for Medical Research — *2020-2023*

Porter Prize for Research Excellence
American Society for Cell Biology — *2022*

Best Talk
Gordon Research Seminar, Plant and Microbial Cytoskeleton — *2022*

Summer Program
Aspen Center for Physics, Learning Dynamical Models from Biophysical Data — *2022*

Graduate Research Fellowship
National Science Foundation — *2016-2019*

Post-course Research Award
Marine Biological Laboratory, Physiology Course — *2016*

Society of General Physiology Scholar
Society of General Physiology — *2016*

Orloff Science Award
National Institutes of Health — *2013*

Post-baccalaureate Intramural Research Training Award
National Institutes of Health — *2012-2014*

Phi Beta Kappa
Reed College — *2012*

Commendation for Academic Excellence
Reed College — *2008-2012*

Ruby-Lankford Grant for Faculty-Student Collaborative Research
Reed College — *2010*

Publications

Google Scholar, *ORCID*

1. N Ros-Rocher*, J Reyes-Rivera*, Y Foroughijabbari, U Horo, C Combredet, Y Foroughijabbari, BT Larson, MC Coyle, EAT Houtepen, MJA Vermeij, JL Steenwyk, T Brunet
Clonal-aggregative multicellularity tuned by salinity in a choanoflagellate
Nature doi: d10.1038/s41586-026-10137-y *2026*

2. BT Larson, D Giannotti, M Mtawali, SJ Lord, V Boscaro, PJ Keeling
Regulated development of cannibalistic supergiant cells
bioRxiv doi: 10.1101/2025.08.19.671124 *2025*

3. V Boudreau*, AR Albright*, BT Larson, TM Gerbich, T Fadero, V Yan, A Lucas-DeMott, J Yung, SLY Moulin, CP Descovich, MM Slabodnick, A Burlacot, JR Wang, KK Niyogi, WF Marshall
The cell biology and genome of *Stentor pyriformis*, a giant cell that embeds symbiotic algae in a microtubule meshwork
Mol. Biol. Cell 36 (4) *2025*

4. BT Larson, WF Marshall
Cell motility: Bioelectric control of behavior without neurons
Curr. Biol. 34 (4) *2024*

5. BT Larson
Perspectives on principles of cellular behavior from the biophysics of protists
Integr. Comp. Biol. 63 (6) *2023*

6. L Fung, A Konkol, T Ishikawa, BT Larson, T Brunet, RE Goldstein
Swimming, feeding and inversion of multicellular choanoflagellate sheets
Phys. Rev. Let. 131 (168401) *2023*

7. BT Larson, J Garbus, JB Pollack, WF Marshall
A unicellular walker controlled by a microtubule-based finite-state machine
Curr. Biol. 32 (17) *2022*

8. NT Chartier*, A Mukherjee*, J Pfanzelter*, S Fürthauer, BT Larson, M Kreysing, F Jülicher, SW Grill
A hydraulic instability drives the cell death decision in the nematode germline
Nat. Phys. 17 *2021*

9. BT Larson, T Ruiz-Herrero, S Li, S Kumar, L Mahadevan, N King
Biophysical principles of choanoflagellate self-organization
Proc. Natl. Acad. Sci. 117 (3) *2020*

10. T Brunet*, BT Larson*, TA Linden*, MJA Vermeij, KL McDonald, N King
Light-regulated collective contractility in a multicellular choanoflagellate
Science 366 (6463) *2019*

11. D Laundon, BT Larson, KL McDonald, N King, P Burkhardt
The architecture of cell differentiation in choanoflagellates and sponge choanocytes
PLOS Biol. 17 (4) *2019*

12. BT Larson, KA Sochacki, JM Kindem, JW Taraska
Systematic spatial mapping of proteins at exocytic and endocytic structures
Mol. Biol. Cell 25 (13) *2014*

13. MA Bedau and BT Larson
Lessons from environmental ethics about the intrinsic value of synthetic life
GA Kaebnick and TH Murray (Ed.)
Synthetic biology and morality: artificial life and the bounds of nature, MIT Press *2013*

14. KA Sochacki, BT Larson, DC Sengupta, MP Daniels, G Shtengel, HF Hess, JW Taraska
Imaging the post-fusion release and capture of a vesicle membrane protein
Nat. Comm. 3 (1) *2012*

**denotes equal contribution*

Selected Presentations

Marine Microbes† *2026*
Gordon Research Conference

Curiosity-Driven Dialogue and Collaboration Between Experiment and Theory† *2026*
NSF-Simons National Institute for Theory and Mathematics in Biology, Chicago, IL

Complex Cellular Behavior Workshop† *2025*
University of Pennsylvania, Department of Physics, Philadelphia, PA

Cell Bio Annual Meeting† *2025*
ASCB/EMBO, Cell Behavior and Cognition, Philadelphia, PA

Learning Dynamical Systems from Biological Data† *2025*
NSF-Simons National Institute for Theory and Mathematics in Biology, Chicago, IL

Symposium on Physics of Adaptation and Decision-Making in Biological Systems† *2025*
University of Amsterdam

Shaping Microbial Life in a Changing Environment† *2025*
Latsis Symposium, EPFL, Lausanne

Biology Seminar† *2025*
Biology Department Seminar, Skidmore College, Saratoga Springs, NY

Annual Biophysical Society Meeting† *2025*
Motility and Cytoskeleton Subgroup, Los Angeles, CA

Diversity and Evolution in Cell Biology* *2024*
JCS2024, The Company of Biologists, Catalonia, Spain

Biological Sciences Seminar† *2024*
Biological Sciences Department, Rensselaer Polytechnic Institute

Biology Seminar† *2024*
Biology Department, Wesleyan University

BMB Seminar† *2024*
Department of Biochemistry and Molecular Biology, Colorado State University

Quantitative Biosciences Seminar† *2024*
Biomolecular Science and Engineering, University of California, Santa Barbara

Physics Seminar† *2024*
Physics Department, Case Western Reserve University

SICB Annual Meeting* *2024*
Invertebrate Swimming Session, Society of Comparative and Integrative Biology Seattle, WA

Molecular Biology Seminar† *2023*
Department of Molecular Biology, University of Wyoming

Physics Seminar† *2023*
Physics Department, Reed College

Physics of Life Seminar* *2023*
Chan Zuckerberg Biohub, San Francisco, CA

Quantitative Biosciences Seminar† *2023*
Departments of Biology and Physics, Georgia Institute of Technology

Cell Learning Seminar† *2023*
Harvard University

APS March Meeting† *2023*
Data-driven Dynamical Systems in Biology and Soft Matter Symposium, American Physical Society, Las Vegas, NV

Biology Seminar† *2023*
Department of Biology, Stanford University

Organismal Biology Seminar† *2023*
Department of Organismal Biology and Anatomy, University of Chicago

Quantitative Biology and Biophysics Seminar† *2023*
Departments of Biology, Physics, and Computer Science, Carnegie Mellon University

Molecular and Cellular Biology Seminar† *2023*
Department of Molecular and Cellular Biology, Harvard University

Eugene Bell Center Seminar† *2023*
Marine Biological Laboratory

SICB Annual Meeting† *2023*
Microscale Life Symposium, Society for Integrative and Comparative Biology, Austin, TX

Cell Bio Annual Meeting† *2022*
ASCB/EMBO, New Organisms; New Directions Symposium, Washington, DC

Genotype to Phenotype: Bridging Comparative Genomics and Cell Biology Workshop* *2022*
The Company of Biologists, Buxted Park, UK

Optical Engineering for the Biological Sciences Course† *2022*
Department of Biology, San Francisco State University

Cilia Supergroup† *2022*
Department of Biochemistry and Biophysics, University of California, San Francisco

Plant and Microbial Cytoskeleton*,† *2022*
Gordon Research Seminar and Conference

Summer Coding Immersion Program† *2022*
San Francisco State University

APS March Meeting* *2022*
American Physical Society, DBIO

Microbiology Seminar† *2022*
Department of Microbiology and Molecular Genetics, UC Davis

Established and Emerging Model Organisms Course† *2022*
Department of Biology, Duke University

ASCB/EMBO Annual Meeting* *2016, 2021*
American Society for Cell Biology, European Molecular Biology Organization

US Protistology Network† *2021*
Independently organized, various institutions

Biological Physics and Physical Biology Seminar† *2021*
Independently organized, various institutions

Stochastic Physics in Biology* *2021*
Gordon Research Conference and Seminar

Cellular Dynamics and Models* *2021*
Cold Spring Harbor Laboratory

BioWeb Conference† *2021*
Department of Biological Sciences, Smith College

Build-a-Cell Seminar† *2020*
NSF Build-a-Cell Network

Electronic Symposium on Protistology† *2020*
Independently organized, various institutions

Biophysics Seminar† *2019*
Life Sciences Institute, Exeter University

Bio Lunch† *2019*
Department of Applied Mathematics and Theoretical Physics, Cambridge University

Size and Shape Workshop* *2018*
European Molecular Biology Organization, NCBS/INSTEM

International Choanoflagellate Workshop*,*,* *2015, 2017, 2023*
Station Biologique de Roscoff, UC Berkeley

Upcoming
†*Invited talk*
**Talk selected from abstract*

Teaching and Mentorship

Instructor

Biological Sciences Department, Rensselaer Polytechnic Institute, Troy, NY *2025*

Biol 4/6960: Evolutionary Cell Biology. Lecture and discussion based course for graduate and advanced undergraduate students exploring the evolutionary basis of cellular diversity. Topics include the origin of life, organelles and their origins, constraints on cellular evolution, the origin of eukaryotes, complex cellular life cycles, and multicellularity, among others.

Biol 4/6140: Current Topics in Cytoskeletal Research. Seminar-based course for graduate and advanced undergraduate students emphasizing recent progress in the regulation of cytoskeletal networks.

Undergraduate, Graduate Student, and Postdoc Mentor

Rensselaer Polytechnic Institute *2024-present*

Biochemistry and Biophysics undergrad Nehla Ismail, Computational Biology undergrad Alexander Muto, Biochemistry and Biophysics Master's student Hebah Moait, Biological Sciences PhD student Kristina Braverman, Postdoc Manuel Castro-Berman

Laboratory of Wallace Marshall, University of California, San Francisco *2019-2024*

Bioengineering undergrad Ching Ting Roy Ng (UC Merced), Biophysics PhD student Greyson Lewis (UCSF), Computer Science PhD student Jack Garbus (Brandeis), and MBL Physiology post-course research students Veronica Farmer (Vanderbilt), Alice Herneisen (MIT), Zoë Lange (FIAS), Yahor Savich (MPI-PKS/CBG), and Lakshmi Balasubramaniam (Cambridge).

Laboratory of Nicole King, University of California, Berkeley *2017-2019*

Physics undergrad Kevin Marroquin, MCB undergrads Sheel Chandra and Jake Hira, MCB PhD student Max Ferrin, and Biophysics PhD students Mike Levy and Ben McInroe (all UCB).

Lecturer

Department of Biology, San Francisco State University, San Francisco, CA *2022*

Biol 861: Advances in Cell and Molecular Biology. Seminar-based course for graduate and advanced undergraduate students emphasizing recent progress in understanding how diverse cells control shape and movement.

Lead Instructor

Center for Cellular Construction, CCC Summer Course, San Francisco, CA *2021, 2022*

Guided intensive research experience with a total of 10 students (undergrad-PhD) from SFSU and UCSF emphasizing quantitative image analysis.

Teaching Assistant

Marine Biological Laboratory, Physiology Course, Woods Hole, MA *2018, 2021, 2022, 2023*

Guided intensive research experience with a total of 16 students from varied disciplinary backgrounds (PhD-postdoc).

Evolution of Genomes, Cells, and Development, University of California, Berkeley *2016*

Service and Outreach

Focus Session Co-organizer

APS March Meeting, Collective behaviors *2025*

With Benjamin Seleb.

Special Interest Subgroup Co-organizer

ASCB Annual Meeting, Cells in the wild: environmental influences on cell morphology and behavior *2021,2023*

With Guillermina Ramirez-San Juan and David Booth.

Protist Editor

International Microbiology Literacy Initiative *2021-present*

Aims to foster understanding and appreciation of microbes through open-access school curriculum development

Ad Hoc Reviewer

Various journals *2019-present*

Nature Communications, eLife, Philosophical Transactions of the Royal Society B, Protist, Current Biology, Journal of the Royal Society Interface, PRX Life

Data Science Mentor

Gaza Sky Geeks *2018-present*

Included delivering lectures to Gaza's first tech hub covering topics in exploratory data analysis, basic approaches to quantitative analysis of data, and effective communication of results.

Cell Biology and Microscopy Outreach *2014-present*

Venues such as Exploratorium, California Academy of Sciences, Maker Faire, Chabot Space & Science Center, and Oakland schools

Cellular Basis of Patterns Working Group Co-founder and Co-organizer

University of California, Berkeley *2015-2017*

Interdepartmental seminar series and collaborative network dedicated to fostering a community of researchers interested in self-organization and pattern formation in biological systems. With Amy Shyer and Mike Levy.

Nuclear Reactor Operator

Reed Research Reactor *2008-2012*

Licensed by the Nuclear Regulatory Commission in 2009, responsibilities included training new operators, giving tours to the public, reactor operation, and detector calibration