Ben T. Larson

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Education and Training

University of California, San Francisco — San Francisco, CA
Postdoc, Biophysics, Laboratory of Cell Geometry — *2019-present*
Mentor: Wallace Marshall

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

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

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

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

Research Statement

Inspired by the intricate complexity and diversity of eukaryotes, I seek to uncover principles by which cells control shape and movement to thrive in various environments. To do so, I leverage my interdisciplinary training grounded in microscopy and quantitative data analysis to creatively address fundamental questions at the interface of cell biology, biophysics, and evolution.

Fellowships, Honors, and Awards

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

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 Grant for Student Collaborative Research
Reed College — *2010*

Publications

Google Scholar

1. BT Larson, J Garbus, JB Pollack, WF Marshall *2021*
   A unicellular walker controlled by a microtubule-based finite state machine
   bioRxiv doi: 10.1101/2021.02.26.433123

2. NT Chartier*, A Mukherjee*, J Pfanzelter*, S Fürthauer, BT Larson, M Kreysing, F Jülicher, SW Grill *2021*
   A hydraulic instability drives the cell death decision in the nematode germline
   Nat. Phys. doi: 10.1038/s41567-021-01235-x

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

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

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

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

7. MA Bedau and BT Larson *2013*
   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

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

**denotes equal contribution*

Selected Presentations

Biological Physics and Physical Biology Seminar† *2021*
American Physical Society

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

Beyond the Cell Atlas *2018*
Chan Zuckerberg Biohub, UCSF

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

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

Integrated Microbial Biodiversity *2016*
Canadian Institute for Advanced Research

ASCB annual meeting *2016*
American Society for Cell Biology

BPS annual meeting *2014*
Biophysical Society

** Talk selected from abstract*
† Invited talk

Skills

Wet lab: Optical and electron microscopy, cell culture, protist identification and isolation, environmental sampling and field work, basic molecular techniques, basic electronics and machining

Computational: Quantitative data analysis and data visualization, image analysis using Imaris, FIJI, and MATLAB, programming in MATLAB and C++, working knowledge of R, Python, Fortran, LabView, and Mathematica

Teaching, Service, and Outreach

Special Interest Subgroup Co-organizer
ASCB Annual Meeting, Cells in the wild: environmental influences on cell morphology and behavior *2021*
With Guillermina Ramirez-San Juan and David Booth.

Course Instructor
Center for Cellular Construction, CCC Summer Course, San Francisco, CA *2021*
Guided research experience with students (undergrad-PhD) from SFSU and UCSF emphasizing quantitative image analysis.

Undergraduate and PhD Student Mentor
Laboratory of Wallace Marshall, University of California, San Francisco *2019-present*
Laboratory of Nicole King, University of California, Berkeley *2017-2019*
Mentored undergrads Kevin Marroquin, Sheel Chandra, and Jake Hira, MCB PhD student Max Ferrin (UCB), and Biophysics PhD student Greyson Lewis (UCSF).

Teaching Assistant
Marine Biological Laboratory, Physiology Course, Woods Hole, MA *2018, 2021*
Evolution of Genomes, Cells, and Development, University of California, Berkeley *2016*

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.

Co-founder and Co-organizer
Cellular Basis of Patterns Working Group, University of California, Berkeley *2015-2017*
Interdepartmental seminar series dedicated to fostering a community of researchers interested in self-organization and pattern formation in biological systems. With Amy Shyer and Mike Levy.

Cell Biology and Microscopy Outreach *2014-present*
Venues including the Exploratorium, California Academy of Sciences, Chabot Space & Science Center, and Oakland schools

Nuclear Reactor Operator
Reed Research Reactor *2008-2012*
Licensed by the Nuclear Regulatory Commission in 2009, responsibilities included training new operators and giving tours to the public