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 deepen our understanding of how cells regulate shape and movement to thrive in various environments and of how these capacities evolve. To do so, I leverage my interdisciplinary training grounded in microscopy and quantitative data analysis to creatively address fundamental questions in cell biology.

Fellowships, Honors, and Awards

Postdoctoral Fellowship
Merck Fellow of the 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*

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

Orloff Science Award
National Institutes of Health — *2013*

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 embodies a 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 *2020*
   A hydraulic instability drives the cell death decision in the nematode germline
   bioRxiv doi: 10.1101/2020.05.30.125864

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

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

Electronic Symposium on Protistology† *2020*
Various institutions, Online

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

Size and Shape Workshop* *2018*
European Molecular Biology Organization

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, 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 and Outreach

Undergraduate and PhD Student Mentor *2017-present*
Laboratory of Wallace Marshall, University of California, San Francisco
Laboratory of Nicole King, University of California, Berkeley

Mentored undergrads Kevin Marroquin, Sheel Chandra, and Jake Hira and MCB PhD student Max Ferrin.

Data Science Mentor *2018-present*
Gaza Sky Geeks

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*
Various venues including the Exploratorium, California Academy of Science, Chabot Space & Science Center, and Oakland schools

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

Nuclear Reactor Operator *2008-2012*
Reed Research Reactor

Licensed by Nuclear Regulatory Commission 2009, responsibilities included training new operators and giving tours to the public