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## EDUCATION

**Ph.D. Physics**, University of California, Santa Barbara, California, 2004.

Thesis: *Biological Physics Studies of Microtubules, Taxol, and the Microtubule-Associated Protein, Tau*

**B.A. Physics and Mathematics**, *summa cum laude*, Wellesley College, Wellesley, Massachusetts, 2000.

## PROFESSIONAL POSITIONS

**Chair**, Department of Physics, Syracuse University, Syracuse, New York, 06/2020-present.

**Associate Chair**, Department of Physics, Syracuse University, Syracuse, New York, 01/2020-05/2020.

**Professor with Tenure**, Department of Physics, Syracuse University, Syracuse, New York, 2019-present.

**Professor with Tenure**, Department of Physics, University of Massachusetts Amherst, Amherst, Massachusetts, 2018-2020.

**Co-Director, Massachusetts Center for Autonomous Materials (MassCAM)**, Department of Physics, University of Massachusetts, Amherst, Amherst, Massachusetts, 2016-2019.

**Associate Professor with Tenure**, Department of Physics, University of Massachusetts Amherst, Amherst, Massachusetts, 2013-2018.

**Adjunct Professor**, Department of Biochemistry and Molecular Biology, University of Massachusetts Amherst, Amherst, Massachusetts, 2013-2019.

**Assistant Professor**, Department of Physics, University of Massachusetts Amherst, Amherst, Massachusetts, 2007-2013.

**Post-doctoral Researcher**, Pennsylvania Muscle Institute, University of Pennsylvania, Philadelphia, Pennsylvania, 2004-2007.

## AWARDS AND HONORS

**Fellow of the American Association for the Advancement of Science (AAAS), 2023.** Citation for Fellowship: *"For distinguished contributions to biophysics, particularly for experimentally elucidating regulatory mechanisms in intracellular transport."*

**Chancellor's Leadership Fellow, 2019.** The Chancellor's Leadership Fellowships seeks to cultivate future campus leaders by offering a half-time, one-year, temporary appointment to an administrative area on campus and by providing shadowing and mentoring from the leaders of the host units. In addition, fellows are expected to launch a significant program during the

fellowship year. Leadership project on faculty development with regard to management and leadership programming for faculty at all stages.

**Fellow of the American Physical Society (APS), 2018.** Citation for Fellowship: "*For significantly advancing understanding of the self-organizational principles of the microtubule cytoskeleton via motor proteins and severing enzymes and how that organization affects intracellular transport. Also, for outstanding service to DBIO and the biophysics community*"

**Scialog Fellow, 2015-2017.** Research Corporation for Science Advancement and the Moore Foundation sponsor this invitation-only event to organize new collaborative groups at the interface of biology and physical sciences.

**NSF INSPIRE Award, 2013.** The INSPIRE awards program addressed the most complicated and pressing scientific problems that lie at the intersection of traditional disciplines. It is intended to encourage investigators to submit bold, exceptional proposals that some may consider to be at a disadvantage in a standard NSF review process.

**University of Massachusetts Spotlight Scholar, 2013.** Spotlight Scholars are UMass Amherst faculty members who have demonstrated excellence and leadership in research, scholarship or creative activity.

**Margaret Oakley Dayhoff Award, Biophysical Society, 2013.** The Margaret Oakley Dayhoff Award is given to a woman who holds very high promise or has achieved prominence while developing the early stages of a career in biophysical research within the purview and interest of the Biophysical Society.

**Cottrell Scholars Award, Research Corporation for Science Advancement, 2011.** Cottrell Scholars Awards are for early career faculty members who are committed to excel at both research and teaching.

**Armstrong Fund for Science Award, University of Massachusetts Amherst, 2009.** The Armstrong Fund for Science is intended for faculty members with aggressive research visions, who are willing to challenge conventions in their field.

**Basil O'Connor Starter Award, March of Dimes Foundation, 2009.** The Basil O'Connor Starter Scholar Research Awards are a program specifically designed to support scientists just embarking on their independent research careers.

**Ruth L. Kirschstein National Research Service Award Postdoctoral Grant, National Institutes of Health, 2005.**

**UCSB Affiliates Barbara S. Uehling Graduate Dissertation Fellowship, (declined) University of California, Santa Barbara 2004.**

**Ferrando-Fithian Fellowship for Outstanding Woman in Physics, University of California, Santa Barbara, 2001.**

**Graduate Assistance in the Areas of National Need (GAANN) Fellowship, University of California, Santa Barbara, 2000.**

**Phyllis Flemming Physics Prize for Outstanding Physics Major, Wellesley College, 2000.**

**Jerome A. Schiff Fellowship for Thesis Work, Wellesley College, 1999.**

**Massachusetts Spaces Grant Consortium Thesis Fellowship, Wellesley College, 1999.**

**Hughes Research Travel Grant, Wellesley College, 1999.**

## PUBLICATIONS

Note: Author order for my discipline is indicative of contributions to work. The first author performs the experiments and typically writes the paper with the last author. The last author is typically corresponding author and is responsible for the publication. Middle authors contribute significantly to the experimental work. <sup>HS</sup> denotes high school student, <sup>UG</sup> denotes undergraduate student, <sup>G</sup> denotes graduate student, <sup>PD</sup> denotes postdoctoral researcher under supervision of J.Ross. <sup>G\*</sup> represents a graduate student where J.Ross had a significant contribution to research, but is not the advisor of record.

### *In Preparation, Under Review, Pre-prints:*

1. H. Zhou, N. Isozaki, K. Ukita, T.L. Hawkins, **J.L. Ross**, R. Yokokawa, "Nanometer-level localization precision reveals growth rate-dependent flexural rigidity of microtubules" under review Biophysical Journal (2019).
2. **J. Labastide**<sup>PD</sup>, D.A. Quint, R.K. Curtin<sup>UG</sup>, A. Gopinathan, **J.L. Ross**, "Multiple Kinesin-1 Motors Make for Faster Transport Through Dense Microtubule Networks," (2020).
3. **M. Xu**<sup>G</sup>, W. B. Rogers, W. W. Ahmed, **J. L. Ross**, "Crowder and Surface Effects on Self-organization of Microtubules," (2021). arXiv: <https://arxiv.org/abs/2012.15424>
4. D.H. Achiriloaie, C.J. Currie, J. Michel, M. Hendija, **K.A. Lindsay**, N.M. Schwartz Bolef, G. Lee, M.J. Rust, J.Y. Sheung, M. Das, **J.L. Ross**, R.J. McGorty, R.M. Robertson-Anderson, "Kinesin and Myosin Motors Compete to Drive Rich Multi-Phase Dynamics in Programmable Cytoskeletal Composites" (2021) arXiv: <https://arxiv.org/abs/2112.11260>
5. **S. Sahu**<sup>G</sup>, **P. Chauhan**<sup>G</sup>, E. Lumen, K. Moody, K. Peddireddy, N. Mani, R. Subramanian, R.M. Robertson-Anderson, A.J. Wolfe, **J.L. Ross**, "Spatially controlled microtubule nucleation and organization from crosslinker MAP65 condensates," (2022) bioRxiv: <https://www.biorxiv.org/content/10.1101/2022.10.23.513406v1> doi: <https://doi.org/10.1101/2022.10.23.513406>
6. **K.A. Lindsay**, **N. Abdelhamid**<sup>UG</sup>, S. Kahawatte, R.I. Dima, D.L. Sackett, **T.M. Finegan**<sup>PD</sup>, **J.L. Ross**, "A Tale of 12 Tails: Katanin Severing Activity Affected by Carboxy-Terminal Tail Sequences," submitted to Biomolecules special issue on Molecular Functions of Microtubules (2023). Preprint.org: <https://www.preprints.org/manuscript/202301.0344/v1>
7. C. Fermino do Rosario, Y. Zhang, J. Stadnick, J.L. Ross, P. Wadsworth, "Lateral and longitudinal compaction of PRC1 overlap zones drive stabilization of interzonal microtubules," bioRxiv: <https://www.biorxiv.org/content/10.1101/2023.01.30.526324v1>

### *Peer Reviewed Published or In Press:*

8. M. Sasanpour, D.H. Achiriloaie, G. Lee, G. Leech, C. Currie, **K.A. Lindsay**, **J.L. Ross**, R.J. McGorty, R.M. Robertson-Anderson, "Reconstituting and Characterizing Actin-Microtubule Composites with Tunable Motor-Driven Dynamics and Mechanics," Journal of Video Experiments (2022).
9. **P. Chauhan**<sup>G</sup>, **S. Sahu**<sup>G</sup>, **N. Goodbee**<sup>UG</sup>, **S. Martin**<sup>UG</sup>, **H. Beom Lee**<sup>UG</sup>, **R. Branch**<sup>UG</sup>, J.M. Schwarz, **J.L. Ross**, "Self-Assembly of Microtubule Tactoids" Journal of Video Experiments (2022).
10. L. Melcher, E. Rennert, **J. L. Ross**, M. Rust, R. Robertson- Anderson, M. Das, "Sustained Order-Disorder Transitions in a Model Colloidal System Driven by Rhythmic Crosslinking," Soft Matter (2022). Doi: <https://doi.org/10.1039/D1SM01583D>

11. H. Seyforth, M. Gomez, W. B. Rogers, **J. L. Ross**, W. W. Ahmed, "Non-equilibrium fluctuations and nonlinear response of an active bath," *Physical Review Research* (2021). Doi: arXiv: <https://arxiv.org/abs/2110.15917>
12. **L. M. Oster**<sup>UG</sup>, **J. Shechter**<sup>G</sup>, **B. Strain**<sup>UG</sup>, M. Shivrayan, S. Thayumanavan, **J.L. Ross**, "Controlling Liquid Crystal Configuration and Phase Using Multiple Molecular Triggers," *Molecules*, **27** (3), 878 (2022). Doi: <https://doi.org/10.3390/molecules27030878>
13. G. Lee, G. Leech, P. Lwin, J. Michel, C. Currie, M. J. Rust, **J.L. Ross**, R. J. McGorty, M. Das, R. M. Robertson-Anderson, "Active Cytoskeletal Composites Display Emergent Tunable Contractility and Restructuring" *Soft Matter*, **17**, 110765-10776 (2021) Doi: <https://doi.org/10.1039/D1SM01083B>
14. B.J. Gurmessa, M.J. Rust, M. Das, **J.L. Ross**, R.M. Robertson-Anderson, "Salt-mediated stiffening, destruction, and resculpting of actomyosin network," *Frontiers in Physics*, **19**, November 2021. DOI: <https://doi.org/10.3389/fphy.2021.760340>
15. J.Y. Sheung, D.H. Achiriloaie, C. Currie, K. Peddireddy, A. Xie, J. Simon-Parker, G. Lee, M.J. Rust, M. Das, **JL. Ross**, R.M. Robertson-Anderson, "Motor-Driven Restructuring of Cytoskeleton Composites Leads to Tunable Time-Varying Elasticity," *ACS Macroletters*, **10**, 1151-1158 (2021) doi: <https://doi.org/10.1021/acsmacrolett.1c00500>
16. **S. Sahu**<sup>G</sup>, **L. Herbst**<sup>UG</sup>, **R. Quinn**<sup>UG</sup>, **J.L. Ross**, "Crowder and Surface Effects on Self-organization of Microtubules," *Physical Review E* **103**, 062408 (2020). Doi: <https://doi.org/10.1103/PhysRevE.103.062408> arXiv: <https://arxiv.org/abs/2009.04669>
17. G. Lee, M. J. Rush, M. Das, R.J. McGorty, **J.L. Ross**, R.M. Robertson-Anderson, "Myosin-driven actin-microtubule networks exhibit self-organized contractile dynamics," *Scientific Advances*, Feb 5; 7(6): eabe4334 (2021). Doi: <https://doi.org/10.1126/sciadv.abe4334>
18. S.N. Ricketts, M.J. Rust, M. Das, **J.L. Ross**, R.M. Robertson-Anderson. "Triggering cation-induced contraction of cytoskeleton networks via microfluidics," *Frontiers in Physics* Nov 9 (2020). Doi: <https://doi.org/10.3389/fphy.2020.596699>
19. R.A. Varikoti, A.C. Macke, V. Speck, **J.L. Ross**, R.I. Dima, "Molecular Investigations into the Unfoldase Action of Severing Enzymes on Microtubules," *Cytoskeleton*, May; **77** (5-6), pp 214-228 (2020). doi: <http://dx.doi.org/10.1002/cm.21606>
20. **L. Farhadi**<sup>G</sup>, S.N. Ricketts, M.J. Rust, M. Das, R.M. Robertson-Anderson, **J.L. Ross**, "Actin and microtubule crosslinkers tune mobility and control co-localization in a composite cytoskeletal network," *Soft Matter*, **16**, 7191-7201 (2020). doi: <https://doi.org/10.1039/C9SM02400J>
21. **J. Shechter**<sup>G</sup>, N. Atzin, A. Mozaffari, R. Zhang, Y. Zhou, **B. Strain**<sup>UG</sup>, **L.M. Oster**<sup>UG</sup>, J. dePablo, **J.L. Ross**, "Direct Observation of Liquid Crystal Droplet Configurational Transitions using Optical Tweezers," *Langmuir*, Jun 30; **36** (25), pp 7074-7082 (2020). [10.1021/acs.langmuir.9b03629](https://doi.org/10.1021/acs.langmuir.9b03629)
22. **R. Kemp**<sup>UG</sup>, **A. Chippendale**<sup>UG</sup>, **M. Harrelson**<sup>UG</sup>, **J. Shumway**<sup>UG</sup>, **A. Tan**<sup>UG</sup>, **S. Zuraw**<sup>UG</sup>, **J.L. Ross**, "Interdisciplinary Optics Laboratory Course," *The Biophysicist*, **1**, pp 1-26 (2020). Doi: <https://doi.org/10.35459/tbp.2019.000114> \*Published in the first issue of this new educational journal for biophysics. Original version arXiv: <http://arxiv.org/abs/1606.03052>
23. M. Francis, S.N. Ricketts, **L. Farhadi**<sup>G</sup>, M.J. Rust, M. Das, **J.L. Ross**, R.M. Robertson-Anderson, "Non-monotonic dependence of stiffness on actin crosslinking in cytoskeleton composites," *Soft Matter*, (2019) doi: <https://doi.org/10.1039/c9sm01550g>

24. M. Xu<sup>G</sup>, L. Valdez, A. Sen, J.L. Ross, "Self-propulsion of single enzymes," *Physical Review Letters* **123**, 12 (2019). doi: [10.1103/PhysRevLett.123.128101](https://doi.org/10.1103/PhysRevLett.123.128101)  
arXiv: <https://doi.org/10.1103/PhysRevLett.123.128101>
25. S.N. Ricketts, L. Farhadi<sup>G</sup>, M. Das, J.L. Ross, R.M. Robertson-Anderson "Varying crosslinking motifs drive the mesoscale mechanics of actin-microtubule composites," *Scientific Reports*, **9**, 12831 (2019). doi: <https://doi.org/10.1038/s41598-019-49236-4>
26. B. Gurmessa, M. Francis, M.J. Rust, M. Das, J.L. Ross, R.M. Robertson-Anderson, "Counterion crossbridges enable robust multiscale elasticity in actin networks," *Physical Reviews Research*, **1**, 013016 (2019). doi: <https://doi.org/10.1103/PhysRevResearch.1.013016>
27. L. Szatkowski, D. Merz, N. Jiang, I. Ejikeme, L. Belonogov<sup>UG\*</sup>, J.L. Ross, R. Dima, "The Mechanics of the Microtubule Seam Interface Probed by Molecular Simulations and in Vitro Severing Experiments," *Journal of Physical Chemistry B*, **123** pp 4888-4900 (2019). doi: <https://doi.org/10.1021/acs.jpccb.9b03059>
28. B. Edozie<sup>UG</sup>, S. Sahu<sup>G</sup>, M. Pitta<sup>HS</sup>, C. Fermino Do Rosario<sup>UG</sup>, A. Englert<sup>UG</sup>, J.L. Ross, "Self-Organization of Spindle-Like Microtubule Structures," *Soft Matter*, **15**, pp 4797-4807 (2019). doi: <http://doi.org/10.1039/C8SM01835A> bioRxiv: <https://doi.org/10.1101/624874>
29. L. Belonogov<sup>UG\*</sup>, M.E. Bailey<sup>G\*</sup>, M.Tyler<sup>G\*</sup>, J.L. Ross, "Katanin Catalyzes Microtubule Depolymerization Independent of Tubulin Carboxy Terminal Tails," *Cytoskeleton* **76**, 3, pp 254-268 (2019). \*co-first authors contributed equally to experiments, analysis, and writing. doi: <https://doi.org/10.1002/cm.21522>
30. B.J. Gurmessa, N. Bitten, D.T. Nguyen, J.L. Ross, O.A. Salah, M. Das, R.M. Robertson-Anderson, "Triggered disassembly and reassembly of actin networks induces rigidity phase transitions," accepted at *Soft Matter*, **15**, 1335-1344 (2019). doi: <https://doi.org/10.1039/C8SM01912F>
31. S.N. Ricketts, J.L. Ross, R.M. Robertson-Anderson, "Co-entangled actin-microtubule composites exhibit tunable stress stiffening and biphasic power-law relaxation," *Biophysical Journal*, **116**, 1055-1067, (2018). doi: <https://doi.org/10.1016/j.bpj.2018.08.010>
32. S. Advani<sup>G</sup>, T.J. Maresca, J.L. Ross, "Creation and testing of a new, local microtubule-disruption tool based on the microtubule-severing enzyme, katanin p60," *Cytoskeleton*, **75**, 531-544 (2018). doi: <https://doi.org/10.1002/cm.21482>
33. L. Farhadi<sup>G</sup>, C. Fermino Do Rosario<sup>UG</sup>, E.P. Debold, A. Baskaran, J.L. Ross, "Composite Polymer Active Matter" *Frontiers in Physics*, (2018). doi: <https://doi.org/10.3389/fphy.2018.00075>
34. B. Harris<sup>UG</sup>, J.L. Ross, T.L. Hawkins, "Microtubules Seams are Not Mechanically Weak," *Physical Review E*, **97**, 062408 (2018). doi: <https://doi.org/10.1103/PhysRevE.97.062408>
35. R. Zhang, N. Kumar, J.L. Ross, M.L. Gardel, J.J. de Pablo, "Interplay of Structure, Elasticity and Dynamics in Actin-Based Nematic Materials," *Proceedings of the National Academy of Sciences, USA*, **115**, 2, E124-133, (2018). doi: <https://doi.org/10.1073/pnas.1713832115>
36. C.C. Homyak, A. Fernandez, M.A. Touve, B. Zhao, F. Anson, J.A. Hardy, R.Vachet, N.C. Gianneschi, J.L. Ross\*, S. Thayumanavan\*, "Lipogels for Encapsulation of Hydrophilic Proteins and Hydrophobic Small Molecules," *Biomacromolecules*, **9** (1), 132-140, (2018). \*co-corresponding authors, doi: <https://doi.org/10.1021/acs.biomac.7b01300>
37. N. Isozaki, H. Shintaku, H. Kotera, T.L. Hawkins, J.L. Ross, R. Yokokawa "Sorting of molecular shuttles by designing electrical and mechanical properties of microtubules," *Science Robotics* **2**,

- 10, ean4882 (2017). doi: <http://dx.doi.org/10.1126/scirobotics.aan4882> bioRxiv ID: <https://doi.org/10.1101/107458>
38. K. Stanhope<sup>UG,G</sup>, V. Yadav<sup>PD</sup>, C. Santangelo, J.L. Ross, "Contractility in and Extensile System," *Soft Matter* **13**, 4268-4277 (2017). doi: <http://dx.doi.org/10.1039/C7SM00449D>  
arXiv ID: <http://arxiv.org/abs/1703.08755>
39. M.W. Gramlich<sup>PD</sup>, L. Conway<sup>G/PP</sup>, W.H. Liang, J.A. Labastide<sup>PD</sup>, S.J. King, J. Xu, J.L. Ross, "Single Molecule Investigation of Kinesin-1 Motility Using Engineered Microtubule Defects" *Scientific Reports* (2017). doi: <http://dx.doi.org/10.1038/srep44290>
40. N. Jiang, M.E. Bailey<sup>G</sup>, J. Burke, J.L. Ross, R. Dima, "Effects of lattice defects on microtubule breaking and healing," *Cytoskeleton*, **74**, 3-17 (2017). doi: <http://dx.doi.org/10.1002/cm.21346>
41. F.B. Romano, K.C. Rossi, Y. Tang, K.R. Monopoli, J.L. Ross, A.P. Heuck, "Type 3 Secretion translocators spontaneously assemble a hexadecameric transmembrane complex", *Journal of Biological Chemistry*, **291**, 6304-6315, (2016). doi: <http://dx.doi.org/10.1074/jbc.M115.681031>
42. M.E. Bailey<sup>G</sup>, D.L. Sackett, J.L. Ross, "Katanin severing and binding microtubules is inhibited by tubulin carboxy tails and regulated by tail type," *Biophysical Journal*, **109**, 2546–2561 (2015). doi: <http://dx.doi.org/10.1016/j.bpj.2015.11.011>
43. S.K. Blanchard, B.J. Mann, J. Titus, J.L. Ross, P. Wadsworth, "TPX2 inhibits Eg5 by interactions with both motor and microtubule," *Journal of Biological Chemistry*, **290**, 17367-17379 (2015). doi: <http://dx.doi.org/10.1074/jbc.M114.612903>
44. L. Conway<sup>G/PP</sup>, M.W. Gramlich<sup>PD</sup>, S.M.A. Tabei, J.L. Ross, "Microtubule Network Architecture Regulates Motility of Kinesin," *Cytoskeleton (Hoboken)* **77**, 595-610 (2014). doi: <http://dx.doi.org/10.1002/cm.21197>
45. M.W. Gramlich<sup>PD</sup>, J. Bae, R.C. Hayward, J.L. Ross, "Fluorescence imaging of nanoscale domains in polymer blends using stochastic optical reconstruction microscopy (STORM)," *Optics Express*, **22**, 8438–8450 (2014). doi: <http://dx.doi.org/10.1364/OE.22.008438>
46. J. Pringle<sup>UG</sup>, A. Muthukumar<sup>HS</sup>, A. Tan<sup>UG</sup>, L. Crankshaw, L. Conway<sup>G</sup>, J.L. Ross, "Microtubule Organization by Kinesin Motors and Microtubule Crosslinking Protein, MAP65," *Journal of Physics: Condensed Matter*, Special issue: Physics of Protein Motility, **25**, 374103 (2013) doi: <http://dx.doi.org/10.1088/0953-8984/25/37/374103>
47. L. Conway<sup>G</sup>, J.L. Ross, "A model system to study transport of self-assembled cargos," *Communicative and Integrative Biology* **6**, e-25387 (2013). doi: <http://dx.doi.org/10.4161/cib.25387>
48. T.L. Hawkins<sup>PD</sup>, D. Sept, B. Mogessie, A. Straube, and J.L. Ross, "Mechanical Properties of Doubly-Stabilized Microtubule Filaments," *Biophysical Journal* **104**, 1517 – 1528 (2013). doi: <http://dx.doi.org/10.1016/j.bpj.2013.02.026>
49. L. Conway<sup>G</sup>, D.A. Wood<sup>G</sup>, E. Tuzel, J.L. Ross, "Motor Transport of Self-Assembled Cargos in Crowded Environments," *Proceedings of the National Academy of Science, USA* **109**, 20814-20819 (2012). doi: <http://dx.doi.org/10.1073/pnas.1209304109>
50. S. Mukherjee, J.D. Diaz-Valencia<sup>PD</sup>, S. Stewman, S. Monnier, U. Rath, A.B. Asenjo, R.A. Charafeddine, H.J. Sosa, J.L. Ross, A. Ma, and D.J. Sharp, "Human fidgetin is a microtubule severing enzyme and minus-end depolymerase that regulates mitosis," *Cell Cycle*, **11**, 1-8 (2012). doi: <http://dx.doi.org/10.4161/cc.20849>



51. T.L. Hawkins<sup>PD</sup>, M. Mirigian<sup>UG</sup>, J. Li<sup>UG</sup>, M.S. Yasar<sup>G</sup>, D.L. Sackett, D. Sept, J.L. Ross, "Perturbations in Microtubule Mechanics from Tubulin Preparation," Cellular and Molecular Bioengineering, **5**, 227-238 (2012).
52. A. Gable<sup>G\*</sup>, M. Qiu, J. Titus<sup>G\*</sup>, S. Balchand, N.P. Ferenz, N. Ma, E.S. Collins, C. Fagerstrom, J.L. Ross, G. Yang, P. Wadsworth, "Dynamic reorganization of Eg5 in the mammalian spindle throughout mitosis requires dynein and TPX2," Molecular Biology of the Cell, **23**, 1254-1266 (2012). doi: <http://dx.doi.org/1091/mbc.E11-09-0820>
53. N. Ma, J. Titus<sup>G\*</sup>, A. Gable<sup>G\*</sup>, J.L. Ross, P. Wadsworth, "TPX2 regulates the localization and activity of Eg5 in the mammalian mitotic spindle," Journal of Cell Biology, **195**, 87-98 (2011). doi: <http://dx.doi.org/10.1083/jcb.201106149>
54. L. Liu<sup>UG</sup>, E. Tuzel, J.L. Ross, "Loop formation in microtubules during gliding at high density," Journal of Physics: Condensed Matter. Special issue: Cooperative Dynamics in Cells, **23**, 374104 (2011). \*Highlighted as a top article for 2011 by Journal of Physics: Condensed Matter. doi: <http://dx.doi.org/10.1088/0953-8984/23/37/374104>
55. C.P. Samora, B. Mogessie, L. Conway<sup>G</sup>, J.L. Ross, A. Straube, A.D. McAinsh, "MAP4 and CLASP1 operate as a safety mechanism to maintain a stable spindle position in mitosis," Nature Cell Biology, **13**, 1040-1050 (2011). doi: <http://dx.doi.org/10.1038/ncb2297>
56. J.D. Diaz-Valencia<sup>PD</sup>, M.M. Morelli<sup>UG</sup>, M. Bailey<sup>G</sup>, D. Zhang, D.J. Sharp, J.L. Ross, "Drosophila katanin-60 depolymerizes and severs at microtubule defects," Biophysical Journal, **100**, 2440-2449 (2011). doi: <http://dx.doi.org/10.1016/j.bpj.2011.03.062>
57. D. Zhang, K. Grode, S. Stewman, J.D. Diaz-Valencia<sup>PD</sup>, E. Liebling, J. Curie, D.W. Buster, A.B. Asenjo, H.J. Sosa, J.L. Ross, A. Ma, S.L. Rogers, D.L. Sharp, "Drosophila Katanin is a microtubule depolymerase that regulates cortical-microtubule plus-end interactions and cell migration," Nature Cell Biology, **13**, 361-369 (2011). doi: <http://dx.doi.org/10.1038/ncb2206>
58. S. Gon, M. Bendersky, J.L. Ross, M.M. Santore, "Manipulating Protein Adsorption using a Patchy Protein-Resistant Brush," Langmuir, **26**, 12147-12154 (2010). doi: <http://dx.doi.org/10.1021/la1016752>
59. A. Hendricks\*, E. Perlson\*, J.L. Ross\*, H.W. Schroeder, M. Tokito, E.L.F. Holzbaur, "Motor Coordination Via Tug-of-War Mechanism Drives Bidirectional Vesicle Transport," Current Biology, **20**, 697-702 (2010). \*authors contributed equally. doi: <http://dx.doi.org/10.1016/j.cub.2010.02.058>
60. E. Perlson, G.B. Jeong, J.L. Ross, R. Dixit, K.E. Wallace, E.L. Holzbaur, "A switch in retrograde signaling from survival to stress in rapid-onset neurodegeneration," Journal of Neuroscience, **29**, 9903-9917 (2009). doi: <http://dx.doi.org/10.1523/JNEUROSCI.0813-09.2009>
61. K.J. Rosenberg, J.L. Ross, H.E. Feinstein, S.C. Feinstein, J. Israelachvili, "Complementary dimerization of microtubule-associated protein tau: Implications for microtubule bundling and tau-mediated pathogenesis," Proceedings of the National Academy of Science, USA, **105**, 7445-7450 (2008). doi: <http://dx.doi.org/10.1073/pnas.0802036105>
62. J.L. Ross, H. Shuman, E.L.F. Holzbaur, Y.E. Goldman, "Kinesin and dynein-dynactin at intersecting microtubules: Motor density affects dynein function," Biophysical Journal, **94**, 3115-3125 (2008). doi: <http://dx.doi.org/10.1529/biophysj.107.120014>

63. R. Dixit, **J.L. Ross**, Y.E. Goldman, E.L.F. Holzbaur, "Differential regulation of dynein and kinesin motor proteins by tau," *Science*, 319, 1086-1089 (2008). doi: <http://dx.doi.org/10.1126/science.1152993>
64. J. Caviston, **J.L. Ross**, S.M. Antony, M. Tokito, E.L.F. Holzbaur, "Huntingtin Facilitates Dynein/Dynactin-Mediated Vesicle Transport," *Proceedings of the National Academy of Sciences, USA*, 104, 10045-10050 (2007). doi: <http://dx.doi.org/10.1073/pnas.0610628104>
65. **J.L. Ross**, K. Wallace, H. Shuman, Y.E. Goldman, E.L.F. Holzbaur, "Single Dynein-Dynactin Complexes Exhibit Bi-Directional Motion *in vitro*," *Nature Cell Biology*, 8, 562-570 (2006). doi: <http://dx.doi.org/10.1038/ncb1421>
66. **J.L. Ross**, C.D. Santangelo, V. Makrides, D.K. Fygenson, "Tau Induces Cooperative Taxol Binding to Microtubules," *Proceedings of the National Academy of Science, USA*, 101, 12910-12915 (2004). doi: <http://dx.doi.org/10.1073/pnas.0402928101>
67. **J.L. Ross** and D.K. Fygenson, "Mobility of Taxol in Microtubule Bundles," *Biophysical Journal*, 84, 3959-3967 (2003). doi: [http://dx.doi.org/10.1016/S0006-3495\(03\)75123-6](http://dx.doi.org/10.1016/S0006-3495(03)75123-6)

**Peer-Reviewed Invited Chapters, Reviews, Commentaries, arXiv:**

68. **J.L. Ross**, "Autonomous materials from biomimicry," *MRS Bulletin*, **44**, pp 119-123 (2019). doi: <https://doi.org/10.1557/mrs.2019.20>
69. L. Atkins, S.K. Bur, J.D. Gilbertson, D. Kosenkov, **J.L. Ross**, S.B. Sigmann, "Continuum of Labs," chapter from the workshop report on *Expanding the CURE Model: Course-based Undergraduate Research Experience*, Eds. Rory Waterman and Jennifer Heemstra, Research Corporation for Science Advancement (2018). <http://rescorp.org/gdresources/publications/Expanding-the-CURE-Model.pdf> ISBN-13: 978-0-692-12373-7
70. V. Barsegov<sup>UG</sup>, **J.L. Ross**, R. Dima, "Dynamics of microtubules: highlights of recent computational and experimental investigations," *Journal of Physics: Condensed Matter*, **29**, 433003 (2017). doi: <https://doi.org/10.1088/1361-648X/aa8670>
71. R. Hernandez, M. Stains, K. Bjorkman, A. Donovan, P. Dorhout, A. Feig, P. Hammer, **J.L. Ross**, J. Wesemann, S. Iyer, "Leadership Training for Teacher-Scholars," in *Educational and Outreach Projects from the Cottrell Scholars Collaborative* Eds. Rory Waterman, ACS Books (2017).
72. H. Hess, **J.L. Ross**, "Non-Equilibrium Assembly of Microtubules: From Molecules to Autonomous Chemical Robots," *Chemical Society Reviews*, (2017). doi: <http://dx.doi.org/10.1039/c7cs00030h>
73. **J.L. Ross**, "The Dark Matter of Biology," *Biophysical Journal*, **111**, 909-916, (2016). doi: <http://dx.doi.org/10.1016/j.bpj.2016.07.037> \*This paper was picked to be the first article in the Best of Biophysical Journal 2016!
74. **M.E. Bailey<sup>G</sup>**, N. Jiang, R.I. Dima, **J.L. Ross**, "Microtubule Severing Enzymes Couple ATPase Activity with Tubulin GTPase Spring Loading," *Biopolymers*, **105**, 547-556, (2016) doi: <http://dx.doi.org/10.1002/bip.22842>
75. **K. Stanhope<sup>UG,G</sup>**, **J.L. Ross**, "Microtubules, MAPs, and Motor Patterns," Building a cell from its component parts, *Methods in Cell Biology*, Eds. J. Ross and W. Marshall, Chapter 13, Vol. 128 (2015).



76. L. Conway<sup>G/</sup>PD, J.L. Ross, "Chapter 11: Measuring Transport of Motor Cargos," in Fluorescent Methods for Molecular Motors, Christopher Toseland and Natalia Fili Eds. Series: Experientia Supplementum, Vol. 105, Springer (2014).
77. L. Conway<sup>G/</sup>PD, J.L. Ross, "Kinesin Motor Transport is Altered by Macromolecular Crowding and Transiently Associated Microtubule-Associated Proteins," (2014) arXiv: <http://arxiv.org/abs/1409.3455>
78. M. Bailey<sup>G</sup>, L. Conway<sup>G</sup>, M.W. Gramlich<sup>PD</sup>, T.L. Hawkins, J.L. Ross, "Modern Methods to Interrogate Microtubule Dynamics," Integrative Biology, (2013). \*Chosen as an *iBiology HOT article*. doi: <http://dx.doi.org/10.1039/C3IB40124C>
79. J.D. Daiz-Valencia<sup>PD</sup>, M. Bailey<sup>G</sup>, J.L. Ross, "Purification and Biophysical Analysis of Microtubule-Severing Enzymes in vitro," Microtubules in Vitro, Methods in Cell Biology, Eds. J. Correia and L. Wilson, Chapter 13, Vol. 115 (2013).
80. D.J. Sharp and J.L. Ross, "Microtubule severing enzymes at the cutting edge," Journal of Cell Science, 125, 2561-2569 (2012). doi: <http://dx.doi.org/10.1242/jcs.101139>
81. J.L. Ross and R. Dixit, "Two color single molecule TIRF imaging and tracking of MAPs and motors," Microtubules in Vitro, Methods in Cell Biology, Eds. J. Correia and L. Wilson, Chapter 26, Vol. 95 (2010). doi: [http://dx.doi.org/10.1016/S0091-679X\(10\)95026-7](http://dx.doi.org/10.1016/S0091-679X(10)95026-7)
82. R. Dixit and J.L. Ross, "Microtubule dynamics instability and single molecule plus-tip tracking in TIRF," Microtubules in Vitro, Methods in Cell Biology, Eds. J. Correia and L. Wilson, Chapter 27, Vol. 95, (2010). doi: [http://dx.doi.org/10.1016/S0091-679X\(10\)95027-9](http://dx.doi.org/10.1016/S0091-679X(10)95027-9)
83. T. Hawkins<sup>PD</sup>, M. Mirigian<sup>UG</sup>, M.S. Yasar<sup>G</sup>, J.L. Ross, "Mechanics of Microtubules," Journal of Biomechanics, 43, 23-30 (2010). doi: <http://dx.doi.org/10.1016/j.jbiomech.2009.09.005>
84. J.L. Ross, M.Y. Ali, D.M. Warshaw, "Cargo transport: Molecular motors navigate a complex cytoskeleton," Current Opinion in Cell Biology, 20, 41-47 (2008). doi: <http://dx.doi.org/10.1016/j.ceb.2007.11.006>

#### **Other, Non-Peer Reviewed Invited Commentaries and Book Reviews:**

85. J.L. Ross, "Book review of: Introduction to Experimental Biophysics: Biological Methods for Physical Scientists," by Jay Nadeau Physics Today, (2012).
86. J.L. Ross, "Impacts of molecular motor traffic jams," a Commentary for the Proceedings of the National Academy of Science, USA, 109, 5911-5912 (2012). doi: <http://dx.doi.org/10.1073/pnas.120354210>

#### **Editorships:**

J.L. Ross, W. Marshall, Building the Cell with Powerful In Vitro Reconstitution Experiments. Commissioned by Elsevier, Sr. Editor Leslie Wilson, volume for the Methods in Cell Biology Series, Vol. 128 (2015).

#### **PROFESSIONAL ASSOCIATIONS**

American Association of Physics Teachers, Member, 2009-present.

American Society for Cell Biology, Member, 2003-present.  
Sigma Xi, Scientific Honors Society, Member, 2003-present.  
Biophysical Society, Member 2002-present.  
American Physical Society, Member, 2001-present.

Cover Art:



*Biophysical Journal*, **100**, Issue 10 (2011). *Biophysical Journal* invites any author to create original cover art. Along with my postdoctoral research assistant, Dr. J. Daniel Diaz-Valencia, we designed this cover art, which is an allegory for the results of our research on microtubule severing enzymes. The flies are wielding katana, the Japanese samurai sword after which our microtubule-severing protein, katanin, is named. They are cutting the red dragons that represent the microtubules of our system. Our data is represented in the background as art on the dojo wall. The cover art was also highlighted on the Biophysical Society Blog webpage: <http://biophysicalsociety.wordpress.com/2011/05/19/behind-the-cover-qa-with-bj-cover-artist-jennifer-ross/>

*Biophysical Journal*, **104**, Issue 7 (2013). *Biophysical Journal* invites any author to create original cover art. I personally designed this cover art, which is an allegory for the results of our research on microtubule mechanics. In this art, the microtubules are being likened to spaghetti noodles. We have different types in the jars on the counter with different intrinsic stiffnesses. The experimental method we use is to observe shape changes driven by thermal fluctuations, represented by the microtubules

in the pot of boiling water. We tested how stiffness is affected by adding binding proteins, spices, and small molecule chemotherapeutic drugs, tomato sauce. The cover art was also highlighted on the Biophysical Society Blog webpage: <http://biophysicalsociety.wordpress.com/2013/04/02/ross-lab-makes-microtubule-pasta-on-latest-biophysj-cover/>

Molecular Biology of the Cell, volume Building the Cell with Powerful In Vitro Reconstitution Experiments. Commissioned by Elsevier, Sr. Editor Leslie Wilson, volume for the Methods in Cell Biology Series, published 2015.

Biophysical Journal website, rotating banner, September 6, 2016. Biophysical Journal invited me to create this header to promote my perspective review article on the "Dark Matter of Biology." The image is my hand peeling back the cover of a cell to reveal an entire galaxy inside. Several other cells have already been peeled back. It is a metaphor for the unknown "dark matter" species that work inside the cell. *\*This paper was picked to be the first article in the Best of Biophysical Journal 2016!*

Cytoskeleton, **75**, Issue 12 (2018). Back cover of Cytoskeleton special issue on Novel Approaches to Imaging the Cytoskeleton. Cover images taken by Siddheshwari Advani, graduate student.

Soft Matter, **15**, (2019). Inside cover of Soft Matter for paper by undergraduate Bianca Edozie and graduate student Sumon Sahu. Cover images taken by Bianca Edozie and Sumon Sahu. Color indicates the angular orientation of the microtubules. Colored using ImageJ/FIJI OrientationJ plugin.

### **Publicity and News:**

**Syracuse College of Arts and Sciences News:** A&S Physicist Part of a Five-University Team Programming Biological Cells to Design Futuristic Materials

<https://thecollege.syr.edu/news-all/news-from-2021/as-physicist-part-of-a-five-university-team-programming-biological-cells-to-design-futuristic-materials/>

**Syracuse College of Arts and Sciences News:** Bringing Synthetic Material to Life

<https://thecollege.syr.edu/news-all/news-from-2021/bringing-synthetic-material-to-life/>

**Syracuse University News:** Student Profile of Hong Boem Lee, "Experiments and Experience"

<https://www.syracuse.edu/stories/hong-beom-lee-physics-mathematics-experiments/>

**Published OpEd:** "How NY can protect international students: Keep research going (Commentary)" at Syracuse.com, July 10, 2020.

<https://www.syracuse.com/opinion/2020/07/how-ny-can-protect-international-students-keep-research-going-commentary.html>

**Physics online article spotlights Ross Lab Research**, "Q&A: Examining a Cell's Shape-Shifting 'Bones'," story by Katherine Wright, for Physics online, January 2019.

<https://physics.aps.org/articles/v12/7>

**Ross interviewed for APS News**, "APS Membership Unit Profile: The Division of Biological Physics," story by Abigail Dove, APS News, December 2018.

<https://www.aps.org/publications/apsnews/201812/dbio.cfm>

**High School Intern Highlighted in Hampshire Gazette**, "Interns gain experience in life sciences, and a paycheck," story by BERA DUNAU, *Hampshire Gazette*, July 2018.

<https://www.gazettenet.com/Paid-internships-offer-opportunity-to-high-school-students-19092666>

**New Funding for Ross and Wadsworth Highlighted**, "UMass Amherst Biophysicist, Cell Biologist Team Up to Explore Mechanics of Cell Division" produced by UMass Amherst, July 2018.

<https://www.umass.edu/newsoffice/article/umass-amherst-biophysicist-cell-biologist>

**American Physical Society (APS) News Back Page Op-Ed**, "For SHE'S a Jolly Good Fellow?" co-authors Kerstin Nordstrom, Jacinta Conrad, and Karen Daniels, April 2018.

<https://www.aps.org/publications/apsnews/201804/backpage.cfm>

**Ross spotlighted by UMass Amherst as Woman in STEM Role Model**, produced by UMass Amherst. 2017. <https://www.umass.edu/researchnext/video/umass-women-science-biophysicist-jennifer-ross>

**Ross interviewed for NSF documentary on Biology**, produced by Richard Paul, rlpaulproductions, LLC, 2017. Markets broadcast: Minnesota, Wisconsin, Iowa, Massachusetts, California, Utah, Tennessee. <https://beta.prx.org/stories/210378>

**Ross Profiled in "Physics in Your Future" brochure from American Physical Society** produced by the Committee on the Status of Women, January 2016.

<http://www.aps.org/programs/women/reports/physicsfuture/>

**Ross Honored as Young Alum of the Month by Wellesley Underground**, February 2016,

<http://wellesleyunderground.com/post/139127681342/wus-february-2016-yaotm-is-jenny-ross-00>

**Ross picture from #Ilooklikeaphysicist twitter campaign used in article on diversity**, published online at Physics World, March 2016 <http://physicsworld.com/cws/article/print/2016/mar/10/surely-youre-not-biased>

**Ross gives public lecture at the Aspen Center for Physics**, recorded by Aspen Grassroots TV, 2013:

<http://grassrootstv.org/Show.aspx?ShowID=11734>

**Ross gives interview to promote public lecture**, on Aspen Grassroots TV 2013:

<http://www.grassrootstv.org/view?showID=11706>

**Ross Profiled in Biophysical Society Newsletter**, 2013:

<http://www.biophysics.org/Publications/Newsletter/PastIssues/February2013/BiophysicistinProfile/tabid/4470/Default.aspx>

**Ross Honored as UMass Spotlight Scholars**, 2013: <https://www.umass.edu/researchnext/serious-about-science>

**Ross Microscopy Highlighted on PhysOrg.com**, 2009: <http://phys.org/news182017431.html>

**Ross Microscopy Highlight at The Springfield Republican Newspaper**, 2009:

<http://www.masslive.com/hampfrank/republican/index.ssf?/base/news-24/1263889305254790.xml&coll=1>

**Ross and Wadsworth Microscopy Highlighted at the Daily Collegian**, 2009.

## PRESENTATIONS

*Invited Conference Lectures:*

1. **Upstate New York Soft Matter Symposium**, Rochester Institute of Technology, Keynote Speaker, October 2022.
2. **American Physical Society March Meeting**, Invited Speaker, March 2022.
3. **Statistical Biological Physics: From Single Molecule to Cell (ONLINE)**, Invited Speaker, International Centre for Theoretical Sciences, Tata Institute for Fundamental Research, December 2020.
4. **Dutch Biophysics Meeting**, Plenary Presentation, NH-Koningshof at Veldhoven, October 2019.
5. **Beyond the Cell Atlas**, Chan-Zuckerberg Biohub, San Francisco, CA October 2019.
6. **American Physical Society March Meeting**, Focus session: "Active Matter III," "Self-Organization of Microtubule Structures," Boston, MA March 2019.
7. **Biophysical Society Meeting**, Biophysics Between the Lines: Creating Quantitative Resources for Biology Courses, Baltimore, MD, 2019.
8. **Transport in Disordered Environments**, "Active Enzymes as Biological Active Matter," Princeton University, Princeton, NJ, January 2019.
9. **Stochastic Physics in Biology Gordon Research Conference**, "Active Enzymes as Biological Active Matter," Ventura, CA, January 2019.
10. **Frontiers in Soft Matter Research**, "Building a Cell with Microtubule Self-Organization," University of San Diego, September 2018.
11. **Conference for Undergraduate Research in the Natural Sciences**, Keynote speech, "Building a Cell from the Bottom Up" Bay Path University, Longmeadow, MA, April 2018.
12. **Materials Research Society**, "Self-Propelled Filaments, Droplets, and Proteins," Phoenix, AZ, April 2018.
13. **Fundamental Problems in Active Matter**, Aspen Center for Physics, "Microtubule Self-Organization Only Needs a Little Crosslinking and other tales...", January 2018.
14. **New England Society for Microscopy**, University of Massachusetts Amherst, "How does the cell organize its insides?" November 2017.
15. **Greater Boston Area Stat Mech Meeting**, Brandeis University, "Weak Transient Interactions Cause Strong Coupled Effects", October 2017.
16. **Bangalore Microscopy Course**, Invited Talk, "Weakly Interacting Species Big Effects on Long Distance Transport," National Centre for Biological Sciences, Bangalore, India, 2017.
17. **Physics and Biology of Proteins**, International Institute of Physics, Natal, Brazil, 2017. Canceled.
18. **Pennsylvania Muscle Institute Annual Symposium**, Mechanobiology of Contractile Systems - From Single Molecules to Cells, "Microtubule Severing Surprisingly Stymied," June 12, 2017
19. **Ordered is Different: New Forms of Organization in Soft Matter Physics, A Conference in Honor of Fyl Pincus**, Les Houches, France, 2017. Canceled due to family emergency.
20. **Biophysical Society Meeting**, Invited Symposium, "Microtubule Severing Surprisingly Stymied," New Orleans, LA 2017.
21. **Partners in Science Conference, Murdock Foundation**, Keynote Talk, "Building a Cell from the Bottom Up," San Diego, CA 2017.



22. **Nikon Imaging Center 25<sup>th</sup> Anniversary Symposium**, "Learning New Insights from Old Microscopy Tricks," Harvard Medical School, Cambridge, MA, 2016.
23. **Bangalore Microscopy Course**, Invited Talk, "Active Matter of Cytoskeletal Systems," National Centre for Biological Sciences, Bangalore, India, 2016.
24. **Micro and Nanomachines Conference**, Invited Talk, "Weak, Transient Coupling of Motors for Long Range Transport," Hannover, Germany, 2016.
25. **Boston Area Mitosis and Meiosis Meeting (BAMM)**, Invited Talk, "Microtubule Severing Surprisingly Stymied," Cambridge, MA, 2016.
26. **Bangalore Microscopy Workshop**, Invited Talk, "Microtubule Severing Surprisingly Stymied," Bangalore, India, 2015.
27. **Research Corporation for Science Advancement Board Meeting**, Invited Scientific Presenter, Tucson, AZ, 2015.
28. **Murdock Charitable Trust Research Conference**, Keynote Speaker, "Building a Cell with Amazing Undergraduate Research," Vancouver, WA, 2014.
29. **Gordon Research Conference on Physics Research and Education: The Complex Intersection of Biology and Physics**, Invited Speaker, "Optics for Biophysics: Training Design and Innovation Through Building a Light Microscope," Mt. Holyoke College, South Hadley, MA 2014.
30. **International Workshop on Multiscale Mechanobiology**, Invited Speaker and Discussion Leader, Hong Kong, China 2014.
31. **American Physical Society March Meeting**, Invited Session: Collective Motion Across Scales: From Proteins to Animals, "Biomimetic Phases of Microtubule-Motor Mixtures" Denver, CO 2014.
32. **Rocky Mountain Conference for Undergraduate Women in Physics (CUWiP)**, Invited Speaker, "Building the Cell: Results from Amazing Undergraduate Research," University of Utah, Salt Lake City, UT 2014.
33. **American Chemical Society**, Invited Symposium for Graduate Student Symposium Planning Committee, "Micron-scale organization Using Nano-Scale Molecular Motors," Indianapolis, IN 2013.
34. **Motile and Contractile Systems Gordon Conference**, "Microtubule Severing Enzymes Control Microtubule Dynamic Instability," New London, NH, 2013.
35. **Aspen Center for Physics, 2013 Hienz R. Pagles Public Lecture Series**, "What Physics Teaches Us about Cells" Aspen, CO 2013.
36. **New York Section of the American Physical Society**, Spring Symposium, "Reconstructing the Cell," Wells College, 2013
37. **American Physical Society**, Invited Session for the Federation on Education, "Optics for Biophysics: An Interdisciplinary Course for Physics and Life Science Students" Baltimore, MD 2013.
38. **British Societies of Cell Biology and Developmental Biology Joint Meeting**, "Remodeling the Cytoskeleton Through Severing" University of Warwick, Coventry, UK 2013.
39. **Biophysical Society Meeting**, Awards Symposium, "Microtubules, Motors, MAPS, and Mechanics: Exploring Physical Properties Using In Vitro Reconstitution," Philadelphia, PA 2013.



40. **American Physical Society, DPOLY Awards Symposium**, "Enhancing Biopolymer Dynamics through Destruction," Boston, MA 2012.
41. **Biophysical Society Meeting, Teaching Science Like We Do Science: Integrating Research and Education Workshop**, "Hands on Optics: Teaching Through Building a Microscope," San Diego, CA 2012.
42. **Aspen Center for Physics Winter conference: Growth and Form: Pattern Formation in Biology**, "Microtubule Network Remodeling Through Severing," Aspen, CO 2012.
43. **New England Society for Microscopy, Keynote**, "Single Molecule TIRF of Microtubule Regulators," Gordon College, Wenham, MA, December 2011.
44. **Mathematical Modeling of Intracellular Movements (MMiMo) Workshop for National Institute for Mathematical and Biological Synthesis (NIMBioS)**, "Controlling Microtubules Through Severing," Nashville, TN, October 2011.
45. **New England Complex Fluids Workshop**, "Controlling Microtubules Through Severing," Brandeis University, Waltham, MA, September 2011.
46. **Microscopy and Microanalysis National Meeting**, "Total Internal Reflection Fluorescence Microscopy to Study Microtubule Dynamics," Nashville, TN, August 2011.
47. **Banff International Research Station Workshop: Mathematical Biology of the Cell: Cytoskeleton and Motility**, "Controlling Microtubules through Severing," Banff, Alberta, Canada, August 2011.
48. **Cottrell Scholars Conference**, "Optics for Biophysics: an Interdisciplinary Course in Optics," Tucson, AZ, July 2011.
49. **Biophysical Society Meeting Symposium**, "To cut or not to cut?: physically regulating microtubule severing enzymes," Baltimore, MD, March 2011.
50. **American Association of Physics Teachers**, "Essential Optics Training for Life Science Students," Portland, OR, July 2010.
51. **Nanotechnology in the Health and Applied Sciences: Implications for Librarians and Researchers**, "Visualizing the Invisible," Amherst, MA, May 2010.
52. **New England Society for Microscopy & Connecticut Microscopy Society**, "Single Molecule Measurements and 'Super-Resolution' Microscopes," Marine Biology Laboratory, Woods Hole, MA, April 2010.
53. **Frontiers in Biophysics Symposium, Keynote**, "Building Complexity in Cytoskeletal Architecture," Simon Fraser University, Vancouver, British Columbia, Canada, March 2010. *\*This is an international invitation to be a keynote speaker.*
54. **Cells, Circuits, and Computation Conference**, "Building Complexity in Cytoskeletal Networks," Harvard University, January, 2010.
55. **Gordon Research Conference: Soft Matter Physics (Soft Meets Bio)**, "Building Complexity 1-2-3," New London, NH, August 2009.
56. **American Society for Cell Biology**, "Cytoskeletal Architecture Regulates Motor Activity," Building the Cell Session, San Francisco, CA, December 2008.
57. **American Chemical Society Meeting**, "Physics of Dynein/Dynactin: Flexible Form and Flexible Function," Philadelphia, PA, August 2008.

58. **Microtubule Dynamics Workshop 2008**, "Physics of Dynein/Dynactin: Flexible Form and Flexible Function," Surrey, England, UK, May 2008.
59. **Gordon Research Conference: Motile and Contractile Systems**, "Physics of Dynein/Dynactin: Flexible Form and Flexible Function," New London, NH, July 2007.
60. **Biophysical Society, Motility Subgroup**, "Dynein and Directionality," Salt Lake City, UT, February 2006.

*Invited Departmental Seminars and Colloquia:*

1. **University of Texas, San Antonio**, Physics Department Colloquium, October 2022.
2. **Syracuse University Biology Department Seminar**, October 2022.
3. **Augsburg University Sverdrup Convocation and Keynote Lecture**, April 2022.
4. **Saint Catherine's University**, Professional Development Seminar, April 2022.
5. **Rutgers Camden, Center for Computational and Integrative Biology Seminar**, April 2022.
6. **North Carolina State University, Department of Physics Colloquium**, October 2021
7. **University of Buffalo, Department of Physics Colloquium**, April 2021.
8. **Cal State Fullerton, Department of Physics Colloquium**, March 2021.
9. **Lehigh University, Department of Physics Colloquium**, November 2020.
10. **University Bristol, Department of Physics Biophysics and Soft Matter Seminar**, October 2020.
11. **Virginia Tech, Department of Physics Colloquium**, November 2019.
12. **Rochester Institute of Technology, Department of Physics Colloquium**, October 2019.
13. **SUNY Upstate, Department of Physiology and Cell Biology Seminar**, October 2019.
14. **University of North Carolina, Chapel Hill, Department of Applied Physics Colloquium**, "Self-Organization and Self-Propulsion of Biological Elements," March 2019.
15. **Williams College, Department of Physics Colloquium**, "Self-Organized Cellular Structures," December 2018.
16. **Syracuse University, Department of Physics Colloquium**, "Self-Organized Cellular Structures," October 2018.
17. **Northwestern University, Department of Physics Complex Systems Seminar**, "Transient Crosslinkers Tune the Patterns of Microtubule Filaments," May 2018.
18. **University of Colorado, Boulder, Department of Physics Colloquium**, "Weak Transient Interactions Cause Strong Coupled Effects November," November 2017.
19. **University of Massachusetts Amherst, Department of Physics Colloquium**, "Weak Transient Interactions Cause Strong Coupled Effects," October 2017.
20. **Tata Institute for Fundamental Research Mumbai, Biology Seminar**, "Weakly Interacting Species Big Effects on Long Distance Transport," September 2017.
21. **Georgetown University, Department of Physics Colloquium**, "Weak, Transient Interactions Cause Big Effects in Transport and Organization," November 2016.
22. **University of Chicago, MRSEC Chalk Talk**, "Weak, Transient Interactions Cause Big Effects in Transport and Organization," October 2016.

23. **University of Albany, Department of Biology Seminar**, "Microtubule Severing Surprisingly Stymied," October 2016.
24. **Smith College, Department of Physics Colloquium**, "Building the Cell with Undergraduate Research," September 2016.
25. **University of California, Santa Barbara, Center for Bioengineering Seminar**, "Weak, Transient Interactions and Strong Transport Effects," May 2016.
26. **University of California, Merced, Physics Colloquium**, "Building a Cell from the Bottom Up," April 2016.
27. **University of California, Santa Barbara, Physics Colloquium**, "Building a Cell from the Bottom Up," April 2016.
28. **University of San Diego, Biophysics Seminar**, "Building the Cell with Undergraduate Research," February 2016.
29. **Georgia Tech University, Department of Physics Colloquium**, "Building the Cell from the Bottom Up," November 2015.
30. **Georgia Tech University, Biophysics Seminar**, "Microtubule Severing Surprisingly Stymied," November 2015.
31. **Rice University, Biophysics Seminar**, "Microtubule Severing Surprisingly Stymied," October 2015.
32. **University of California, San Diego Bioengineering Seminar**, "Engineering a Cell," April 2015.
33. **Purdue University Biology Seminar**, "Microtubule Severing Surprisingly Stymied," April 2015.
34. **University of Washington Biophysical Chemistry Seminar**, "Building a Cell from Minimal Components," January 2015.
35. **Bucknell University Departmental Colloquium**, "Making Cells with Active Motor Mixtures," October 2014.
36. **University of Pennsylvania, Condensed Matter Seminar**, "Making Cells with Active Microtubule Mixtures," October 2014.
37. **Emory University, Physics Colloquium**, "Building a Cell from the Bottom Up," April 2014.
38. **Ohio State University, Biophysics Seminar**, "Building a Cell with Powerful In Vitro Reconstitution Experiments," March 2014.
39. **University of Michigan, Biomedical Engineering Seminar**, "Building a Cell Systematically from Molecules to Complexes to Networks," March 2014.
40. **Yale University, Physical and Engineering Biology Program Seminar**, "Condensed States of Biology: Building a Cell," November 2013.
41. **University of California, Santa Barbara, Neuroscience Research Institute Seminar**, "Building the Cell with Powerful Reconstitution Experiments" November 2013.
42. **University of Wisconsin, La Crosse, Department of Physics, Seminar**, "Building a Cell with Undergraduate Researchers", October 2013.
43. **University of Massachusetts Amherst, Department of Microbiology Seminar**, "Organizing a Cell," September 2013.
44. **Marine Biological Laboratory (MBL), Nikon Seminar**, "Microtubules, Motors, MAPs, and Active Matter," July 2013.

45. **University of Toronto, Missassauga, Department of Physics, Biological Physics Seminar,** "Reconstructing the Cell," March 2013.
46. **Wellesley College, Department of Physics Seminar,** "Reconstructing the Cell" February 2013.
47. **University of Chicago, Department of Biochemistry and Molecular Biology Seminar,** "Controlling Microtubules Through Severing," April 2012.
48. **Weslyan University, Department of Physics Colloquium,** "Remodeling Microtubule Networks Through Severing," February 2012.
49. **University of Utah, Department of Physics Colloquium,** "Controlling Microtubules Through Severing," November 2011.
50. **Brandeis University, Department of Physics Colloquium,** "Controlling Microtubules Through Severing," November 2011.
51. **University of Warwick Medical School, Centre for Mechanochemical Cell Biology Seminar,** "Controlling Microtubules Through Severing," Warwick, United Kingdom, July 2011.
52. **University of Massachusetts Medical Cell Biology Seminar,** "Controlling Microtubules Through Severing," May 2011.
53. **Harvard University, Squishy Seminar,** "Controlling Microtubules Through Severing," April 2011.
54. **Cornell University, Biophysics Colloquium,** "Controlling Microtubules Through Severing," April 2011.
55. **Notre Dame University, Department of Biology Seminar,** "New Insights into Microtubule Severing Revealed by Single Molecule Imaging," November 2010.
56. **University of Connecticut, Health Center, Center for Cell Analysis and Modeling Seminar** "Biophysics of Severing," May 2010.
57. **University of Vermont Medical Center, Molecular Biophysics Seminar,** "Single Molecule Studies of Microtubule Severing Enzymes," March 2010.
58. **Worcester Polytechnic Institute, Physics Department Colloquium,** "Building Complexity 1-2-3," November 2009.
59. **University of California, San Francisco, Biochemistry Seminar,** "Cytoskeletal Architecture Regulates Motor Activity," November 2009.
60. **University of Delaware, Department of Biology Seminar,** "Cytoskeletal Architecture Regulates Motor Activity," October 2009.
61. **Syracuse University, Department of Physics, Condensed Matter Seminar,** "Building Complexity 1-2-3," September 2009.
62. **Albert Einstein College of Medicine, Department of Physiology and Biophysics** "Physics of Dynein/Dynactin: Flexible Form and Flexible Function," May 2008.
63. **New York University, Department of Physics, Condensed Matter Seminar,** "Single Molecule Studies of Microtubule Motor Proteins," March 2006.
64. **Columbia University, Department of Physics, Condensed Matter Seminar,** "Single Molecule Studies of Microtubule Motor Proteins," March 2006.
65. **Washington University, Department of Physics, Condensed Matter Seminar,** "Single Molecule Studies of Microtubule Motor Proteins," February 2006.

66. University of Massachusetts, Department of Physics, Condensed Matter Seminar, "Single Molecule Studies of Microtubule Motor Proteins," February 2006.
67. University of West Virginia, Department of Physics, Condensed Matter Seminar, "Single Molecule Studies of Microtubule Motor Proteins," January 2006.
68. University of Illinois, Urbana-Champaign, Department of Physics, Condensed Matter Seminar, "Single Molecule Studies of Microtubule Motor Proteins," December 2005.
69. University of Pennsylvania, Single Molecule Symposium, "Direct Observations of Single Dynein-Dynactin Motility Along Microtubules *in vitro*," April 2005.
70. University of Pennsylvania, Institute for Medicine and Engineering Chalk Talk, "Direct Observations of Single Dynein-Dynactin Motility Along Microtubules *in vitro*," April 2005.
71. NEC, Biophysics Group Seminar, "Tau Induces Cooperative Taxol Binding to Microtubules," May 2004.
72. Harvard University, Department of Physics, Biophysics Seminar, "Tau Induces Cooperative Taxol Binding to Microtubules," May 2004.
73. University of Pennsylvania, Department of Physics, Condensed Matter Seminar "Macromolecular Diffusion Inside Microtubules," May 2003.
74. University of Pennsylvania, Department of Physics, Condensed Matter Seminar, "Mobility of Taxol Inside Microtubules," October 2002.

**Contributed Poster/Platform Presentations at Conferences:**

1. American Physical Society Meeting, (4 student talks: Chauhan, Ching, Krishnan, Lee<sup>UG</sup>; 1 invited talk: Ross), Chicago, IL, March 2022.
2. Biophysical Society Meeting, (2 student posters: Chauhan & Lee<sup>UG</sup>, Luna<sup>UG</sup>), San Francisco, CA, February 2022.
3. American Physical Society Meeting, Virtual Conference (2 student talks: Xu, Sahu), March 2021.
4. American Physical Society Meeting, (4 student talks: Shechter, Farhadi, Xu, Sahu; 1 undergraduate posters: Oster and Strain, 1 invited talk: Ross), Boston, MA, March 2019.
5. Biophysical Society Meeting, (2 student posters: Liudmila Belonogov, Sumon Sahu), Baltimore, MD, March 2019.
6. American Physical Society Meeting, (3 student talks: Shechter, Farhadi, Xu, 1 contributed talk: Ross), Los Angeles, CA, March 2018.
7. Biophysical Society Meeting, (2 student posters: Edozie, Fermino Do Rosario), San Francisco, CA, February 2018.
8. American Society for Cell Biology, (1 student poster: Advani), Philadelphia, PA, December 2017.
9. American Physical Society Meeting, (3 student talks: Shechter, Farhadi, Yadav), New Orleans, LA, March 2017.
10. Biophysical Society Meeting, (1 student talk: Labastide, 2 student posters: Tyler, Curtin), New Orleans, LA, February 2017.
11. American Physical Society Meeting, (1 student talk: Yadav), Baltimore, MD, March 2016.

12. **Biophysical Society Meeting**, (1 student talk: Stanhope, 5 student posters), Los Angeles, CA, February 2016.
13. **American Society for Cell Biology**, (1 student poster: Bailey), San Diego, CA, December 2015.
14. **American Physical Society**, (Ross 2 talks: 1 educational, 1 platform), San Antonio, TX, March 2015.
15. **Biophysical Society Meeting**, (2 student posters: Bailey), Baltimore, MD, February 2015.
16. **American Society for Cell Biology**, (1 student invited talk: Bailey), Philadelphia, PA, December 2014.
17. **American Physical Society**, (1 student invited talk), Denver, CO, March 2014.
18. **Biophysical Society Meeting**, (4 student posters), San Francisco, CA, February, 2014.
19. **American Physical Society**, (1 student platform talk), Baltimore, MD, March 2013.
20. **Biophysical Society Meeting**, (5 student posters, 1 platform session by student), Philadelphia, PA, February, 2013.
21. **Biophysical Society Meeting**, (3 student posters, 1 platform session by student), San Diego, CA, February, 2012.
22. **Banff International Research Station Workshop: Mathematical Biology of the Cell: Cytoskeleton and Motility**, "Microtubule Rigidity: What Doesn't It Depend On?" Banff, Alberta, Canada, August 2011. *Poster*.
23. **American Physical Society March Meeting**, "Single Molecule Studies Reveal New Mechanisms of Microtubule Severing," Dallas, TX, March 2011. *Talk*.
24. **Biophysical Society Meeting**, (5 student posters), Baltimore, MD, March, 2011.
25. **Aspen Single Molecule Biophysics Workshop**, "Single Molecule Studies of Microtubule Severing Enzymes," Aspen Center for Physics, Aspen, CO, January 2011.
26. **CMMI/NSF Grantees conference**, "Mechanics of Stable Microtubules," Atlanta, GA, January 2011. *Poster*.
27. **American Society for Cell Biology Meeting**, (5 student posters), Philadelphia, PA, December 2010.
28. **EMBO Conference Series: Microtubule Structure, Regulation, and Function**, "Single Molecule Studies of Microtubule Severing Enzymes," Heidelberg, Germany, June 2010. *\*\*Poster selected for a contributed talk*.
29. **Biophysical Society Meeting**, "Single Molecular Analysis of Drosophila Katanin-60 in vitro," 2010. *Poster*.
30. **American Society of Cell Biology Meeting**, "Motor Coordination Via Tug-Of-War Mechanism Drives Bidirectional Vesicle Transport," 2009. *Poster*.
31. **Gordon Research Conference, Motile and Contractile Systems**, "Bidirectional Motility of Vesicles in vitro: Kinesin's Tug-of-War with Dynein/Dynactin," 2007. *Poster*.
32. **Biophysical Society Platform Talk**, "Kinesin and Dynein-Dynactin at Intersecting Microtubules: Motor Number Affects Dynein but not Kinesin Function," Baltimore, MD, March 2007. *Talk*.
33. **American Society of Cell Biology**, "Bidirectional Motility of Vesicles In Vitro: Stochastic Switching vs. Regulated Runs?" 2007. *Poster*.
34. **Biophysical Society Meeting**, "Track Switching and Crossing by Microtubule Motors," 2006. *Talk*.



35. **American Society of Cell Biology**, "Distinct Response of Kinesin and Dynein to Microtubule Cross-Overs Illuminates Their Differential Cellular Functions," 2006. *Talk*.
36. **American Academy of Nanomedicine Conference, Baltimore, MD**, "Direct Observations of Single Dynein-Dynactin Motility Along Microtubules *in vitro*," August 2005. *Talk*.
37. **American Society of Cell Biology**, "Single Dynein-Dynactin Complexes Exhibit Bidirectional Motion *in vitro*," 2005. *Poster*.
38. **Gordon Research Conference, Motile and Contractile Systems**, "Direct Observation of Dynein-Dynactin Motility Along Microtubules *in vitro*," 2005. *Poster*.
39. **Muscle: Contractile Proteins Gordon Conference, New London, NH**, "Direct Observations of Single Dynein-Dynactin Motility Along Microtubules *in vitro*," July 2005. *Talk*.
40. **Gordon Research Conference, Muscle Contractile Proteins**, "Direct Observation of Dynein-Dynactin Motility Along Microtubules *in vitro*," 2005. *Poster*.
41. **American Physical Society March Meeting Talk**, "Tau Induces Cooperative Taxol Binding to Microtubules," 2004. *Talk*.
42. **American Physical Society March Meeting Talk**, "Mobility of Taxol Inside Microtubules," 2003. *Talk*.

## RESEARCH FUNDING

### Current:

Funding Agency and Project Title	Period Covered	Total Costs
National Science Foundation, <b>DMR, Condensed Matter Physics</b> , "Collaborative Research: DMREF: Living biotic-abiotic materials with temporally programmable actuation," (Lead PI: Anderson-Robertson, U. San Diego; co-PIs: Ross (Syracuse); Das (RIT), Rust (UChicago), Valentine (UCSB)) NSF DMR- 2118403	10/2021 – 09/2025	\$1.8M (\$358,653 to Ross)
National Science Foundation, <b>DMR, Condensed Matter Physics</b> , "Collaborative Research: Enzyme-Powered, Programmable Active Matter," (Lead PI: Ross, co-PI: Rogers, Brandeis, Ahmed, CalStateFullerton) NSF DMR-2004417	07/2020 – 06/2023	\$827,208 (\$293,596 to Ross)
National Science Foundation, <b>MCB, Cellular Dynamics</b> , "Spindle Flux and Mechanics," (Lead PI: Ross, co-PI: Wadsworth) NSF BIO-1817926	07/2018 – 06/2023	\$1,082,721
Keck Foundation, "Building an Artificial Motile Tissue through Self Organized Rhythmic Stiffening," (Lead PI: Anderson-Robertson, U.	07/2018 – 06/2021	\$1,000,000 (\$209,000 to Ross)

San Diego; co-PIs: Ross (Syracuse); Das (RIT), Rust (UChicago))		
CUSE grant: "Taking Syracuse University to the Next Level with Advanced Microscopy," (Lead PI: Ross, co-PIs: Hehnly, Ma)	06/2020 – 05/2022	\$28,000
National Institutes of Health, <b>NIGMS</b> , "Regulating Microtubule Severing Physically and Chemically," submitted through the R15 mechanism (PI: Ross)	07/2021 – 06/2024	\$450,000

**Past:**

Funding Agency and Project Title	Period Covered	Total Costs
University of Massachusetts, <b>Faculty Research Grant</b> , "Optical Tweezing to Measure Microtubule Flexibility"	06/2008 – 05/2009	\$30,000
University of Massachusetts, <b>Armstrong Fund for Science</b> , "Biomimetic Biophysics: Building a Complex Cytoskeletal Network <i>in vitro</i> ."	08/2008 – 07/2009	\$20,000
March of Dimes, <b>Basil O'Connor Starter Scholar Research Award</b> , "Microtubule Severing Proteins: Working Through Co-operativity or Road Signs?"	02/2009 – 01/2011	\$150,000
National Science Foundation, <b>Major Research Instrumentation Grant</b> , "Development of FPALM-STORM for Live Cell Single Molecule Microscopy." (Co-PI with Pat Wadsworth, UMass)	08/2009 – 07/2013 (current no cost extension)	\$684,000 (NSF) \$293,000 (UMass)
National Science Foundation, <b>Nano and Bio Mechanics</b> , Division of Civil, Mechanical, and Manufacturing Innovation "Physical Regulation of Microtubule Flexibility." (Co-PI with David Sept, UMich) <i>*Supplemental Funding induces:</i> \$46,220 for a minority postdoctoral researcher \$5,000 for a summer REU student \$6,098 for a summer REU student	09/2009 – 08/2013 (current no cost extension)	\$406,318
Research Corporation for Science Advancement, <b>Cottrell Scholars Award</b>	1/2011 – 12/2012	\$75,000
National Science Foundation grant to UMass, <b>MRSEC Seed</b> , Division of Materials Research, "Elucidating Nano-Scale Structures and Dynamics of Materials by Single-Molecule Imaging" (Co-PI with Ryan Hayward, UMass PSE)	01/2012 – 12/2014	\$50,000

National Science Foundation, <b>Biomaterials</b> , Division of Materials Research, "Controlling the Dynamics of a Model Filamentous Biopolymer" <i>*Supplemental Funding includes:</i> \$10,000 for summer research of minority faculty member from PUI NSF-DMR: 1207783	09/2012 – 08/2016	\$ 460,000
Mathers Foundation, <b>Research Grant</b> , "Building a Cell from the Ground Up"	09/2013 – 08/2017	\$395,000
National Science Foundation, <b>INSPIRE Award</b> , "Condensed Phases and Transitions of Cellular Patterns" (Lead-PI: Ross, co-PI: Margaret Gardel, UChicago) NSF-INSPIRE: 1344203	07/2013 – 09/2018	\$800,000 total \$400,000 (Ross) \$49,217 Supplement
National Institutes of Health, <b>NIGMS</b> , "Cellular Remodeling by Microtubule Severing" (Lead PI: David Sharp, AECOM, co-PI: Ross) 1-R01-GM109909-01	06/2014 – 05/2018	\$250,000/year (total) \$135,000/year (Ross)
Research Corporation for Science Advancement and Gordon and Betty Moore Foundation, <b>Scialog: Molecules Come to Life Award</b> , "Building an Artificial Motile Tissue Through Self-Organized Rhythmic Contractility" (equal co-PIs: Rae Robertson- Anderson, SDSU and Michael Rust, UChicago)	06/2015 – 09/2018	\$318,750 (total) \$106,250 (to Ross)
University of Massachusetts President's Science and Technology Grant, "Soft Quantum Biology Interface Center (SQuBI)" (Lead PI: Ross, co-PI: Tony Dinsmore)	06/2016 – 05/2018	\$125,000
University of Massachusetts, <b>Faculty Research Grant</b> , "Fundamental Research in Enzymes As Active Matter Systems"	06/2018 – 05/2019	\$15,000
Office of Naval Research, MURI Topic 4: Multi – Scale Response for Adaptive Chemical and Material Systems, "Specifically Triggerable Multi-Scale Responses in Organized Assemblies," (Lead PI: S. Thayumanavan, UMass Chemistry) DoD MURI 67455-CH-MUR	08/2015 – 08/2020	\$1.25 M/year (total) \$135,000/year (Ross)

**Pending:**

Funding Agency and Project Title	Period Covered	Requested Amount
National Science Foundation, <b>BIO, Systems and Synthetic Biology</b>	07/2022 – 06/2026	\$998,424 (to Syracuse)

"Organelle formation in synthetic cells driven by enzyme activity," (Lead PI: Ross, co-PIs: Schwarz (Syracuse); McManus (Bristol), Anderson (Bristol))

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## CLASSROOM TEACHING RECORD

Course Number	Course Title	Credits	Enrollment	Team Taught?
<b>Fall 2007</b>				
PHYS 850	Topics in Condensed Matter: Biophysics	3	10	Yes
<b>Spring 2008 (Teaching Release Semester)</b>				
MCB 641	Advanced Cell Biology (2 lectures)	3	15	Yes
<b>Fall 2008</b>				
PHYS 287	Thermodynamics, Wave Mechanics, and Optics	3	60	No
ChEng 640F	ICE Fundamentals of Cellular Engineering (2 lectures)	3	15	Yes
<b>Spring 2009</b>				
PHYS 553	Optics	4	12	No
<b>Fall 2009</b>				
PHYS 287	Thermodynamics, Wave Mechanics, and Optics	3	52	No
ChEng 640F	ICE Fundamentals of Cellular Engineering (2 lectures)	3	13	Yes
<b>Spring 2010</b>				
PHYS 553 BIO 577/578*	Optics for Biophysics	4	10 (9 Physics, 1 Bio)	No
<b>Fall 2010</b>				
PHYS 287	Thermodynamics, Wave Mechanics, and Optics	3	50	No
ChEng 640F**	ICE Fundamentals of Cellular Engineering (8 lectures, administrator)	3	22	Yes
<b>Spring 2011</b>				
PHYS 553 BIO 577/578*	Optics for Biophysics	4	14 (9 Physics, 5 Bio)	No
<b>Fall 2011</b>				
PHYS 287	Thermodynamics, Wave Mechanics, and Optics	3	39	No
<b>Spring 2012</b>				

PHYS 553 BIO 577/578*	Optics for Biophysics	4	12 (5 Physics, 7 Bio)	No
<b>Fall 2012, Maternity Leave</b>				
<b>Spring 2013</b>				
PHYS 606	Graduate Electrodynamics	3	8	No
<b>Fall 2013</b>				
PHYS 440	Intermediate Lab (M/W Section)	4	23	Yes
<b>Spring 2014</b>				
PHYS 131 (2 sections)	Physics 1 for Life Science Students with Lab	4	440 (220 per section)	Yes
<b>Fall 2014</b>				
PHYS 440	Intermediate Lab (M/W Section)	4	24	Yes
<b>Spring 2015</b>				
PHYS 131	Physics 1 for Life Science Students	4	99 (Team Based Learning)	No
<b>Fall 2015</b>				
Teaching release				
<b>Spring 2016</b>				
Sabbatical				
<b>Fall 2016</b>				
Teaching release				
<b>Spring 2017</b>				
PHYS 550 Bio 577/578*	Optics for Biophysics	4	10 (3 Biology, 7 physics)	No
PHYS 186	Freshman Colloquium	1	37	No
KIN 697MM	Cytoskeleton and Muscle Journal Club	1	4	No
<b>Fall 2017</b>				
PHYS 181	Freshman Mechanics, Physics 1 for Physics Majors Lab sections: Dujovne Honors section: Menon	4	80	No
PHYS 185	Freshman Colloquium	1	70	Yes (Dinsmore, Kastor)
<b>Spring 2018</b>				
PHYS 550 Bio 577/578*	Optics for Biophysics	4	9 (2 Biology, 7 physics)	No
PHYS 186	Freshman Colloquium	1	32	Yes (Kastor)

Fall 2018				
PHYS 181	Freshman Mechanics, Physics 1 for Physics Majors Lab sections: Hertel Honors section: Menon	4	86	No
PHYS 185	Freshman Colloquium	1		Yes (Dinsmore, Kastor)
Spring 2019				
Teaching release for Chancellor's Leadership Fellow				
Fall 2019				
Teaching Release – Syracuse University				
Spring 2020				
PHY 216	Freshman Electricity and Magnetism for Physics Majors and Honors	3	22	No
Fall 2020				
PHY 215	Freshman Mechanics for Physics Majors and Honors	3	26	Yes (Rudolph, instructor)
Fall 2021				
PHY 215	Freshman Mechanics for Physics Majors and Honors	3	17	No
Fall 2022				
PHY 215	Freshman Mechanics for Physics Majors and Honors	3	21	No
Spring 2023				
PHY 319	Astrobiology	3	18	No

\*This interdisciplinary optics course is unofficially cross-listed with BIO 577/578 in order to encourage Biology and Chemistry students to enroll in the course.

\*\*I was responsible for this interdisciplinary course.

## STUDENT MENTORING

### Postdoctoral Researchers:

	Student	Department	Period	Current Status
1	Juan Daniel Diaz-Valencia*	Physics (Ph.D. Molecular Biomedicine)	07/2009 – 12/2012	Researcher, Albert Einstein College of Medicine
2	Taviare Hawkins*	Physics (Ph.D. Physics)	05/2010 – 07/2012	Assistant Professor, University of Wisconsin, La Crosse
3	Michael Gramlich	Physics (Ph.D. Physics)	01/2011 – 12/2014	Postdoctoral Researcher, University of Washington, St. Louis



4	Leslie Conway	Physics (Ph.D. Molecular and Cellular Biology)	09/2013 – 06/2014	Tufts/Astra Zeneca Postdoctoral Researcher
5	Vikrant Yadav	Physics (Ph.D. Physics)	06/2015 – 06/2017	Postdoctoral Researcher, Yale University
6	Peker Milas	Physics (Ph.D. Physics)	09/2014 – 10/2014, 07/2015 – 11/2016	Postdoctoral Researcher
7	Joelle Labastide*	Physics (Ph.D. Chemistry)	09/2015 – 08/2017	AAAS Fellow
8	Leila Farhadi	Physics (Ph.D. Physics)	09/2020 – 05/2021	Postdoctoral Researcher, Harvard Medical School
9	Tara Finegan	Physics (Ph.D. Cell Biology)	05/2022 – 08/2022	Research Professor, University of Missouri

\*Dr. Diaz-Valencia is a Mexican man biologist. Dr. Hawkins is a Black woman physicist. Dr. Labastide is a Black woman chemist.

### Graduate Students:

	Student	Department	Thesis Type	Period	Current Status
1	Leslie Conway	Molecular & Cellular Biology*	Dissertation Chair	02/2009 – 08/2013	Postdoctoral Researcher
2	Megan Bailey	Molecular & Cellular Biology*	Dissertation Chair	09/2010 – 08/2015	Postdoctoral Researcher
3	Kasimira "Taki" Stanhope	Molecular & Cellular Biology*	5 <sup>th</sup> Year Master	09/2014 – 05/2016	Industrial Scientist, Bristol-Meyers Squibb
4	Corey Reed	Molecular & Cellular Biology*	5 <sup>th</sup> Year Master	09/2015 – 08/2016	Industrial Scientist, Waters Corp.
5	Madison Tyler	Molecular & Cellular Biology*	5 <sup>th</sup> Year Master	09/2016 – 08/2017	Kinesiology Department Advisor
6	Siddheshwari Advani	Molecular & Cellular Biology*	Dissertation Chair	12/2015 – 08/2018	Postdoc at Yale University
7	Leila Farhadi	Physics	Dissertation Chair	05/2015 – 08/2020	Postdoc
8	Jake Shechter	Physics	Dissertation Chair	05/2016 – 08/2020	Faculty at Wilbraham and Monson Academy
9	Mengqi Xu	Physics	Dissertation Chair	07/2017 – 09/2021	Candidate for PhD Postdoc at UPenn
10	Sumon Sahu	Physics	Dissertation Chair	05/2017 – 12/2021	Candidate for PhD
11	Bahar Rouvand	Physics	Rotation	01/2018 – 01/2020	Moved to Europe

12	Carline Fermino Do Rosario	Molecular & Cellular Biology	Dissertation Chair	05/2019 – present	Passed ORP
13	Kevin Ching	Physics	Advisor of Record	01/2020 – present	Passed qualifier
14	Prashali Chauhan	Physics	Advisor of Record	05/2021 – present	Passed qualifier
15	Mackenzie Naseery	Physics	Advisor of Record	05/2021 - present	Passed qualifier
16	Nimisha Krishnan	Physics	Advisor of Record	05/2021 - present	Passed qualifier
17	Ashley Scott	Bioengineering	Advisor of Record	09/2021 – present	Taking classes
18	Anthony Estrada	Physics	Rotation	06/2021 – present	Taking classes
19	Julia Bourdeau	Physics	Advisor of Record	06/2022 - present	Passed qualifier

**Undergraduate Thesis/Capstones:**

	Student	Department	Period	Current Status
1	Vitaliy Belyshev	Physics / PreMed	01/2008 – 05/2009	Medical School at UMass Med
2	Matthew Mirigian	Physics	09/2008 – 05/2010	Post-Baccalaureate at NIH
3	Lynn Liu	Biochemistry and Molecular Biology	12/2008 – 05/2011	Graduate Student at Yale University
4	Margaret Morelli	Middle Eastern Studies / PreMed	01/2008 – 05/2011	Medical School at Dartmouth
5	Soren Hough	Microbiology	09/2011 – 12/2013	Technician
6	Amanda Tan	Physics	01/2012 – 05/2014	UC Merced, Fall 2014
7	Corey Reed	Biochemistry and Molecular Biology	02/2013 – 05/2015	Currently in 5 <sup>th</sup> year Masters MCB
8	Julianne Flowers	Biochemistry and Molecular Biology	01/2013 – 05/2016	Working in the Healthcare profession, applying to medical school
9	Bianca Edozie	Biochemistry & Molecular Biology	09/2016 – 06/2019	Graduate Student, Molecular Engineering, University of Chicago
10	George Meltzer	Physics	05/2017 – 05/2018	Computer programmer
12	Nicholas Montagna	Physics	09/2018 – 05/2019	
13	Austin Morrissey	Biochemistry and Molecular Biology	01/2018 – 06/2019	Northwestern post- baccalaureate program
14	Benjamin Strain	Physics	09/2017 – 05/2020	Graduate student Brandeis University, Physics

15	Nicholas Sawyer	Biotechnology	09/2019 – 05/2020	Master's student Biotechnology program
16	Hong Boem Lee	Physics	03/2020 - present	

**Other Undergraduate Students:**

	Student	Department	University	Period
1	Matthew Webber	Physics	UMass	05/2008 – 05/2009
2	Laura Freeman	Biology	UMass	01/2008 – 05/2009
3	Ben Bromberg	Physics	UMass	10/2008 – 02/2009
4	Sara Klemencky	Physics	UMass	05/2009 – 08/2009
5	Sean Bethard	Biology	UMass	09/2009 – 12/2009
6	Quinn Slater	Biology	Mt. Holyoke College	05/2008 – 08/2008
7	Natasha Gutierrez	Biology	Mt. Holyoke College	05/2008 – 08/2008
8	Rebecca Adikes	Biology	Mt. Holyoke College	05/2008 – 08/2008
9	Michelle VanTieghem	Biology	Mt. Holyoke College	05/2008 – 08/2008
10	Kaitlin Brooke	Biology	Mt. Holyoke College	05/2009 – 08/2009
11	Elizabeth Ojukwu	Biology	Uconn	05/2009 – 08/2009
12	Mary Ojukwu	Biology	Uconn	05/2010 – 08/2010
13	Victoria Porter	Physics	UMass	02/2011 – 06/2012
14	Alex Song	Physics	Cornell	06/2011 – 08/2011
15	Josh Pringle	Physics	UMass	01/2012 – 06/2013
16	Peter Lucas	Biology	UMass	01/2013 – 06/2013
17	Kimberley Rouseau	Microbiology	UMass	09/2012 – 12/2013
18	Ashley Burner-Potts	Physics	UMass	02/2013 – 06/2013
19	Kasimira "Taki" Stanhope	Biochemistry and Molecular Biology	UMass	03/2013 – 08/2014
20	Gudfridur Moller	Physics	Mt. Holyoke College	01/2013 – 05/2013
21	Brandon Harris	Physics	University of Wisconsin, LaCrosse	06/2013 – 08/2013
22	Boris Stanchev	Physics	UMass	07/2013 – 08/2013
23	Byron Okwesili	Biochemistry and Molecular Biology	UMass	09/2013 – 05/2014
24	Kaylee Cortes	Communication Disorders	UMass	09/2013 – 05/2016
25	Theodore Kareta	Physics	UMass	01/2014 – 12/2014
26	Nicholas Blanch	Physics	UMass	01/2014 – 05/2014
27	Michael Jellison	Physics	UMass	01/2014 – 05/2014
28	Daniel Todd	Physics	UMass	01/2014 – 05/2017
29	Duy Doan	Physics	UMass	01/2014 – 05/2015
30	Samantha Cabral	Physics	UMass	01/2015 – 05/2016
31	Mark Cardellino	Biochemistry and Molecular Biology	UMass	01/2015 – 05/2016

32	Scott Erikson	Physics	University of Wisconsin, LaCrosse	06/2015 – 08/2015
33	Ashley Scott	Mechanical Engineering	Springfield Technical Community College	06/2015 – 08/2017
34	Zachary Taylor	Microbiology	UMass	09/2015 – 05/2017
35	Reilly Curtin	Biology	UMass	09/2015 – 05/2017
36	Colbie Chinowsky	Physics/Biology	Mt. Holyoke College	12/2015 – 08/2016
37	Luidmila Belonogov	Biochemistry & Molecular Biology	Springfield Technical Community College/ UMass	06/2016 – 03/2019
38	Deepak Mani	Engineering	University of Illinois, Urbana-Champaign	06/2016 – 08/2016
39	Mason Roullard	Biochemistry & Molecular Biology	UMass	09/2016 – 05/2017
40	Ian Merski	Biochemistry & Molecular Biology	UMass	09/2016 – 05/2017
41	Merc Kemeh	Biology	UMass	01/2016 – 12/2018
42	Carline Formino do Rosario	Biology	UMass	01/2017 – 08/2018
43	Thomas Scudder	Biochemistry & Molecular Biology	UMass	01/2017 – 05/2018
44	Daniel Sanchez Rosales	Physics	UMass	05/2017 – 08/2017
45	Lena Herbst	Microbiology	UMass	09/2017 – 06/2019
46	LeMarcus Grayson	Nutrician	UMass	07/2018 – 09/2018
47	Niko Marmanis	Physics	UMass	09/2017 – 05/2021
48	Ben Strain	Physics	UMass	01/2018 – 2020
49	Jonathan Pham	Physics	UMass	01/2018 – 05/2018
50	Linda Oster	Physics	UMass	01/2018 – 2022
51	Mackenzie Nassery	Physics	UMass	01/2018 – 12/2018
52	Anthony Englert	Physics	UMass	01/2018 – 09/2018
53	Erin Hardy	Biology	UMass	07/2018 – 06/2019
54	Liz Fedirko	Biochemistry & Molecular Biology	UMass	07/2018 – 09/2018
55	Aparajita Budithi	Physics	UMass	07/2018 – 09/2018
56	Nicholas Orekoya	Biochemistry & Molecular Biology	UMass	09/2018 – 05/2020
57	Tanios Abi-Saad	Physics	UMass	09/2018 – 05/2019
58	Jessica Sleater	Biology	Springfield College	06/2018 – 08/2018
59	Andrew Brooks	Physics	UMass	01/2019 – 05/2019
60	Sam Tipps	Biochemistry & Molecular Biology	UMass	09/2018 – 06/2019
61	Rucellie Jimenez	Physics	UMass	06/2019 – 05/2020

62	Ryan Quinn	Biochemistry & Molecular Biology	UMass	01/2018 – 06/2019
63	Arianna Kazemi	Biochemistry & Molecular Biology, Bioinformatics	UMass	09/2018 – 06/2019
64	Stephanie-Kayla Bien-Amie	Biotechnology	Syracuse University	09/2019 – 05/2021
65	Kavita Sarathy	Biotechnology	Syracuse University	09/2019 – 12/2021
66	Nicholas Sawyer	Biotechnology	Syracuse University	09/2019 – 05/2021
67	Kendra Kreienbrink	Physics	University of Wisconsin, LaCrosse	01/2020
68	<b>Hong Boem Lee</b>	<b>Physics</b>	<b>Syracuse University</b>	<b>02/2020 – present</b>
69	Sondre Norheim	Physics	Syracuse University	09/2020 – 12/2020
70	Alex Schimke	Physics	Syracuse University	07/2020 – 12/2020
71	Carina Boyce	Biology	Syracuse University	06/2021 – 05/2022
72	Diego Luna	Biotechnology	Syracuse University	06/2021 – 05/2022
73	Isabella Lamothe	Biology	Syracuse University	06/2021 – 09/2021
74	<b>Niaz Goodbee</b>	<b>Biology</b>	<b>Syracuse University</b>	<b>06/2021 – present</b>
75	<b>Nedine Abdelhamid</b>	<b>Biology</b>	<b>Syracuse University</b>	<b>06/2021 – present</b>
76	<b>India Aikens</b>	<b>Physics</b>	<b>Syracuse University</b>	<b>04/2021 – present</b>
77	<b>Ruell Branch</b>	<b>Physics</b>	<b>Syracuse University</b>	<b>06/2021 – present</b>
78	Nicolle Laines	Biophysical Sciences	Syracuse University	09/2021 – 05/2022
79	Tighe Gurtey	Physics	Syracuse University	09/2021 – 12/2021
80	Matthew Mahaney	Biology	Syracuse University	03/2022 – 09/2022
81	Shan Carter	Physics	Syracuse University	01/2022 – 05/2022
82	Will Quackenbush	Biology	Richmond University	06/2022 – 08/2022
83	Sophia Martin	Biology	Syracuse University	09/2021 – 05/2022
84	Keiana Mitchell	Biotechnology	Syracuse University	06/2022 – 08/2022
85	<b>Harper Cheng</b>	<b>Biotechnology</b>	<b>Syracuse University</b>	<b>06/2022 – present</b>
86	Karina Primeau	Health and Exercise Science	Syracuse University	06/2022 – present
87	Clayton Masters	Biology	Syracuse University	06/2022 – present
88	Jonathan Hernandez	Bioengineering & Biology	Syracuse University	06/2022 – present
89	Quan'Terrio Luke	Bioengineering & Neuroscience	Syracuse University	06/2022 – present
90	Dan Qiao	Physics	Syracuse University	06/2022 - present
91	Adam Perry	Environmental Science and Engineering	SUNY ESF	01/2023 - present
92	Duncan Hauber	Physics	Syracuse University	01/2023 - present
93	Mason Grieb	Physics	Syracuse University	01/2023 - present
94	Jadon Garafalo	Physics	Syracuse University	01/2023 - present
95	Devon Lamanna	Economics	Syracuse University	06/2022 – 05/2023

**Bold** = current undergraduates in the lab.

### High School Students:

	Student	High School	Current Status	Period
1	Amutha Muthukumar	Amherst Regional High School, Amherst, MA	University of Chicago	07/2011 – 01/2013
2	Ben Pitta	Hopkins Academy, Hadley High School, Hadley, MA	Colorado College	07/2011 – 08/2014
3	Valerie Willoqc	Amherst Regional High School, Amherst, MA	Tufts University	07/2013 – 08/2013
4	Brittany Zykoski	Monacan High School, Richmond, VA	University of Virginia	07/2013 – 08/2013
5	Leah Farmer	Girls, Inc.		07/2015
6	Alicia Millan	Girls, Inc.		07/2015
7	Miranda Pitta	Hopkins Academy, Hadley High School, Hadley, MA	Worcester Polytechnic Institute	07/2015 – 08/2017
8	Kelsey Weedon	Millbury High School	Currently in high school	06/2018-08/2018
9	Talia O'Shea	Pioneer Valley Chinese Immersion School	Wellesley College	06/2018-08/2019
10	Nava Chavan	Northampton High School	Wellesley College	06/2019 – 08/2019
11	Vera Staub	Northampton High School	Wellesley College	06/2019 – 08/2019
12	Aishah Sheika	Hopkins Academy, Hadley High School, Hadley, MA	Shah Maseehullah Academy	06/2019 – 08/2019
13	Imara Davis	Corcoran High School, Syracuse City Schools, Syracuse, NY	Syracuse University	06/2022 – 08/2022
14	Jylecia Rivera	Corcoran High School, Syracuse City Schools, Syracuse, NY	LaMoyne College	06/2022 – 08/2022
15	Anusha Saxona	Fayetteville-Manlius High School, Manlius, NY	In high school, expected graduation 2024	06/2022 – 08/2022
16	Esraa Al Masalmeh	Henninger High School, Syracuse City Schools, Syracuse, NY	In high school, expected graduation 2023	06/2022 – 08/2022
17	Abdullah Ganem	Institute of Technology at Syracuse Central, Syracuse City Schools, Syracuse, NY	In high school, expected graduation 2023	06/2022 – 08/2022
18	Muhammad Adnan	Henninger High School, Syracuse City Schools, Syracuse, NY	In high school, expected graduation 2023	06/2022 – 08/2022

**Other Graduate Student Committees:**

	<b>Student</b>	<b>Department</b>	<b>Thesis Type</b>	<b>Defense Date</b>
1	Nikhil Malvankar	Physics	Ph.D.	August 2010
2	Robert Augustine	Plant Biology	Ph.D.	May 2011
3	Zara Summers	Microbiology	Ph.D.	April 2011
4	Janel Titus* <sup>s</sup>	Molecular and Cellular Biology	Ph.D.	September 2012
5	Sai Balchand* <sup>s</sup>	Molecular and Cellular Biology	Ph.D.	August 2016
6	Gustavo Epalza	Chemistry	Ph.D.	TBD
7	Stuart Cane*	Molecular and Cellular Biology	Ph.D.	October 2015
8	Thomas Longyear	Kinesiology	Ph.D.	August 2016
9	Monifa Fahia	Molecular and Cellular Biology	Ph.D.	May 2017
10	Sheema Rahmanseresht	Physics	Ph.D.	May 2016
11	Alphan Aksoyoglu	Physics	Ph.D.	November 2016
12	Arash Manafirad	Chemistry	Ph.D.	TBD
13	Anna Ye	Molecular and Cellular Biology	Ph.D.	August 2017
14	Derek Wood	Physics	Ph.D.	January 2017
15	Christopher Meaden	Molecular and Cellular Biology	M.S.	May 2010
16	Karen Plevock	Molecular and Cellular Biology	M.S.	May 2010
17	Alyssa Gable* <sup>s</sup>	Molecular and Cellular Biology	M.S.	May 2011
18	Michael Woodward	Molecular and Cellular Biology	M.S.	May 2016
19	Matthew Unger	Kinesiology	M.S.	TBD
20	Dylan Barber	Polymer Science and Engineering	Ph.D.	TBD
21	Ethan Stanifer	Physics	Ph.d.	July 2020
22	Kuang Liu	Physics	Ph.D.	August 2020
23	Preeti Sahu	Physics	Ph.D.	August 2020
24	Sarah Zuraw	Physics	Ph.D.	August 2020
25	Rui Cao	Physics	Ph.D.	August 2020
26	Shahnewaz M. Emtiaz	Physics	Ph.D.	September 2020
27	Kyungeun Kim	Physics	Ph.D.	August 2022

\* Student committees for the Molecular and Cellular Biology Graduate Program are more involved than is typical in Physics. We meet 1-2 times per year, and have a lot of input on their theses and papers.

§ Students performed a large number of experiments in my laboratory using my total internal reflection fluorescence microscope for single molecule imaging. I also had high levels of interaction on their data analysis for their publications. I consider this contribution higher than typical for a student committee.

## SERVICE/OUTREACH CONTRIBUTIONS

### *Service/Outreach Funding Awards:*

#### Past:

Funding Agency and Project Title	Period Covered	Total Costs
Cottrell Scholars Collaborative, "Think and Do Tank" (Lead-PI: Ross; Co-PI James Martin, North Carolina State University)	07/2011 – 06/2015	\$25,000
UMass Mellon Mutual Mentoring Grant on a Peer-Mentoring group focused on Teaching Physics (Lead PI: Ross; Co-PIs Guy Blaylock and Heath Hatch, UMass Physics)	06/2012 – 05/2013	\$10,000
Cottrell Scholars Collaborative, "Teaching Assistant Workshop" member, (Lead-PI: Jordon Gerton, University of Utah)	07/2013 – 06/2015	\$25,000
National Science Foundation, REU Program, Division of Materials Research, "Biophysics and Soft Matter Research Traineeship (B-SMaRT)" (PI: Ross, co-PI: Taupier, STCC) DMR-1359191	03/2014 – 02/2018	\$230,000
Cottrell Scholars Collaborative, "Academic Leadership Training (ALT) Workshop" member, (Lead-PI: Rigoberto Hernandez, Johns Hopkins University)	07/2014 - present	\$25,000 \$25,000
Cottrell Scholars Collaborative, "National Collegiate Scholastic Association, a Cottrell Scholars Collaborative (NCSA-CSC)" member, (Lead-PI: Jeff Byers, Boston College)	07/2015 - present	\$25,000

#### Current:

Funding Agency and Project Title	Period Covered	Total Costs
Cottrell Scholars Collaborative, "Creating Interventions" member (Lead PIs: Tom Solomon, Bucknell College & Kirsten Perez, MIT)	07/2019 – 06/2022	\$25,000



**Professional Service:**

**Professional Teaching/Summer Schools:**

1. **Faculty, Bangalore Microscopy Course**, National Centre for Biological Sciences, Bangalore, India, September, 2015-2017.
2. **Lecturer, Boulder Summer School for Condensed Matter and Materials Physics (Boulder-2015): Soft Matter In and Out of Equilibrium**, University of Colorado, Boulder, July 6 - 31, 2015.
3. **Lecturer, 3rd Soft Matter Summer School: Polymer Science in Biology**, KAIS, Seoul, Korea, June 21-July 4, 2015.
4. **Instructor, Analytical and Quantitative Light Microscopy Course**, Marine Biological Laboratory, Woods Hole, MA, April - May 10, 2014-2017.

**Societies Service/ Meeting Organization:**

1. **Biophysical Society 2023 Annual Meeting Organizational Committee**, 2021 – 2023.
2. **Delbruck Prize Committee**, American Physical Society, Division of Biological Physics, 2021.
3. **DBIO Early Career Award Committee**, American Physical Society, Division of Biological Physics, 2021.
4. **Council Member, Biophysical Society**, 2018 – 2021. Elected in 2017.
5. **Chair, Cottrell Scholars Awardees Conference**, Tucson, AZ July 2017.
6. **Chair for the Division of Biological Physics**, elected in 2015 to serve a four-year term that cycles through the titles of Vice-Chair, Chair-Elect, Chair, and Past Chair. Vice-Chair is in charge of the DBIO/APS Fellowships. Chair-Elect is the Chair of the March Meeting Program Committee for DBIO, Chair is runs the awards and the meetings, Past Chair is in charge of the Nominations Committee.
7. **Co-Organizer, Cottrell Scholars Awardees Conference**, Tucson, AZ July 2016, 2015.
8. **Co-Organizer, New England Muscle and Motors Workshop**, Biophysical Society Networking Event, UMass Amherst, August 2015.
9. **Chair, Motility Subgroup Awards Committee, Biophysical Society**, April 2015 – present.
10. **Co-Organizer, Summer School on Soft Solids and Complex Fluids**, UMass Amherst, June 2015, 2016.
11. **President, New England Society for Microscopy**, 2014 – 2015 (President-Elect 2013 – 2014).
12. **Co-Organizer, University of Massachusetts Soft Matter Summer School**, June 2015.
13. **Member-at-Large for the Forum on Outreach and Engaging the Public (FOEP)**, for the American Physical Society, 2014 – 2017.
14. **Co-Organizer, New England Society for Microscopy Conference**, at University of Massachusetts Amherst, September 23, 2012 and October 2, 2014.
15. **Co-Chair and Abstract Co-Organizer, "Cytoskeleton Organization, Mechanics, and Motor Transport" minisymposia**, American Society for Cell Biology/International Federation for Cell Biology meeting, Philadelphia, PA, December 2014.

16. **Co-Organizer “Molecular Mechanics of Microtubules,”** at Molecular Biomechanics Track at the World Congress of Biomechanics, Boston, MA July 2014
17. **Co-Organizer of “Physics of Functional Biological Assemblies: Pushing, Pulling and Sensing, Summer Workshop,”** at Aspen Center for Physics, May-June 2013.
18. **Co-PI and Co-Leader of the Cottrell Scholars Collaborative Think and Do Tank.**
19. **Congressional Lobbyist for the American Physical Society,** Washington, DC, March 2012, February 2013.
20. **Secretary/Treasurer for the Division of Biological Physics,** for the American Physical Society, 2012-2016.
21. **Co-Chair, Motility Subgroup, Biophysical Society,** for Biophysical Society Meeting in 2011.

### **Review Boards/ Faculty Reviews:**

Served as an outside reviewer for 29 tenure and/or promotion cases.

External reviewer for departmental review California State University – Fullerton, April 2022.

### **Editorial and Advisory Boards**

**1. Member, Cottrell Scholar Program Committee (CSPC),** Research Corporation for Science Advancement. Jan 1, 2020 – Dec 31, 2022

*The main goal of this committee is to make recommendations on different aspects of the CS Program to support Cottrell Scholars effectively throughout their careers. I led a group working on methods to broaden participation and increase inclusivity in the CS community. The group had Black, Latinx, and LGBTQ CS members.*

**2. Reviews Editor, Physical Biology (IOP),** March 2019 – March 2021

*As reviews editor, I solicit new ideas for review articles, contact and help authors writing reviews. I am working to broaden the participation of Black and Latinx biophysicists in the journal through the reviews mechanism.*

**3. Review Editor, Frontiers in Biophysics,** a specialty section of Frontiers in Physics, Physiology and Molecular Biosciences, an open access, peer-reviewed journal, Switzerland.

*I serve as a reviewer as part of an interactive review process for these online, open-access journals. I am asked to review about 10-12 per year, but I only 2-3 that are close to my field of expertise.*

**4. Editorial Board Member, Biophysical Journal,** the society journal for the Biophysical Society, Group VI: Molecular Machines, Motors, and Nanoscale Biophysics, July 2014 – June 2017.

*I serve as the contact editor for papers submitted to the Biophysical Journal. I coordinate the reviewers and make editorial decisions for rejection or acceptance. I paid special attention to junior faculty, especially those from minoritized populations.*

**5. Scientific Advisory Board Member, arXiv,** electronic archive and distribution server for research articles, January 1, 2015 – December 31, 2017.

*[http://arxiv.org/help/scientific\\_ad\\_board](http://arxiv.org/help/scientific_ad_board) I work on special funding opportunities for arXiv.*

**6. Review Editor, Frontiers in Physics,** Biophysics and Soft Matter Physics, Special issue on Women in Physics.

*I edited solicited manuscripts from women in molecular and cellular biophysics and soft matter. I selected reviewers and decided on the manuscripts.*

### **Professional Development, Management and Leadership Training**

1. **Higher Education Resource Services (HERS) Academic Leadership Workshop for Women**, Bryn Mawr College, Bryn Mawr, PA, July 2018.
2. **Academic Leadership Training (ALT) Workshop**, Washington D.C., February 2016, 2017.
3. **University of Massachusetts Supervisory Management Training**, UMass Amherst, Fall 2014.

### **Diversity Workshops and Invited Presentations:**

1. **Syracuse University Research in Physics (SURPh) summer high school program**, a 6-week summer research program for Syracuse City School District physics students launched in 2022 with 13 students supported in stipends, meals, and transportation. The program had two weeks of bootcamps, 6 total weeks of research and professional development training, and a final poster session for students to present their work to friends, family, and administrators from the Syracuse City School District and Syracuse University.
2. **Northeastern ADVANCE New England Future Faculty Workshop**, on preparing women for the professoriate. I spoke about interviewing skills and critiqued CVs for participants, August 2017.
3. **Scientista Symposium, Microsoft NYC**, served on two panels: Leadership in Academia and Academic Advise. Scientista is an organization to encourage women to enter and stay in STEM fields. The Symposium is for all STEM fields and includes a poster presentation and workshops. April 8-9, 2017.
4. **Tufts University TEACRS Workshop, Tufts University**, on time management and laboratory management. as a professor. I gave a presentation in the morning and served on a panel. In the afternoon, I ran a workshop on laboratory management including setting expectations, laboratory rules, and general personnel management strategies. October 14, 2016.
5. **EUREKA Girls Inc. Summer Program, UMass Amherst, CNS**, on materials interacting with light, complex fluids, and the physics of baking with Chef Simon Stephenson, head chef of the UMass Bake Shop. 2013 – 2017.

### **Proposal Reviews:**

**Panel Reviewer**, Human Frontier Science Program, 2020 – 2023.

**Panel Reviewer**, National Science Foundation, 13 panels, reverse site visit panel.

**Panel Reviewer**, National Institutes of Health, *National Institute of Lung and Blood Diseases*, intramural panel reviewer, primary panelist.

**Ad Hoc Reviewer**, Department of Energy

**Ad Hoc Reviewer**, Human Frontier Science Program

**Ad Hoc Reviewer**, Research Corporation for Science Advancement

**Ad Hoc Reviewer**, German-Israeli Foundation

**Ad Hoc Reviewer**, National Science Foundation, SBIR program

**Ad Hoc Reviewer**, Czech Science Foundation

**Ad Hoc Reviewer**, India Alliance Fellowship, The Wellcome Trust.

Ad Hoc Reviewer, Netherlands Organization for Scientific Research.

Ad Hoc Reviewer, National Science Foundation, 3 reviews.

Ad Hoc Reviewer, Marion Milligan Mason Award for Women in the Chemical Sciences, AAAS

### Journal Reviews:

Reviewer, The Biophysicist (Biophysical Journal), from 2019.

Reviewer, Molecular Biology of the Cell (MBoC), from 2016.

Reviewer, Journal of American Chemical Society (JACS), from 2014.

Reviewer, Journal of Biochemistry, from 2014.

Reviewer, Nature Structural and Molecular Biology, from 2014.

Reviewer, Cell Reports, from 2014.

Reviewer, Physical Chemistry Chemical Physics, from 2014.

Reviewer, Nature Communications, from 2013.

Reviewer, Journal of Video Experiments (JOVE), from 2013.

Reviewer, Journal of Chemical Physics, from 2013.

Reviewer, Journal of General Physiology, from 2013.

Reviewer, Biomechanics and Modeling of Mechanobiology, from 2013.

Reviewer, Journal of Bioengineering, from 2012.

Reviewer, Journal of Biological Chemistry, from 2012.

Reviewer, Journal of Structural Biology, from 2012.

Reviewer, Traffic, from 2012.

Reviewer, Cell, from 2011.

Reviewer, PLOS One, from 2011.

Reviewer, Journal of Cell Biology, from 2010.

Reviewer, Cytoskeleton, from 2010.

Reviewer, Journal of Theoretical Biology, from 2010.

Reviewer, Molecular Biology of the Cell, from 2010.

Reviewer, Soft Matter, from 2010.

Reviewer, Proceedings of the Royal Society A: Mathematical, Physics, & Engineering Sciences, from 2009

Reviewer, Langmuir, from 2008

Reviewer, Ultramicroscopy, from 2008

Reviewer, Biochimica et Biophysica Acta (BBA) – Molecular Cell Research, from 2007

Reviewer, Biophysical Journal, from 2007

Reviewer, Proceedings of the National Academy of Sciences, USA, from 2006

*Service to Department, College, Interdisciplinary Institutes, Syracuse:*

1. Department of Physics, Department Chair, 2020 – present.
2. Department of Physics, Undergraduate Climate Committee, 2019 – 2020
3. Department of Physics, Faculty Advisor to Physics Graduate Organization, 2019 – present.
4. Bioinspired Institute, Focus Group Leader, Mechanics of Development and Disease, 2019 – 2020.
5. Department of Physics, faculty hiring committee co-chair for Cellular Biophysics and Advanced Imaging, 2019 – 2020.

***Service to Department & Interdisciplinary Graduate Programs, UMass:***

1. Department of Physics, Undergraduate Majors Curriculum Committee, 2017 – 2019.
2. Co-Director, Massachusetts Center for Autonomous Materials, 2016 – 2019. Co-director: Tony Dinsmore.
3. Department of Physics, Hiring Committee, Soft Matter Experiment Search 2017 – 2018.
4. Department of Physics AQAD Committee member, 2016-2017.
5. Polymer Science and Engineering hiring committee member, 2016-2017
6. Graduate Student Professional Development Series director, 2016-2017
7. Member, Graduate Student Orientation Committee, 2016 – 2018
8. Physics Teachers Workshop biweekly meetings, co-organizer with Hatch, 2012 – 2019.
9. Member Departmental Faculty Hiring Plan Development and Presentation Team, 2015-2016.
10. Molecular and Cellular Biology Graduate Program General Operations Committee (GOC), 2015 - 2019.
11. Co-leader for Physics Department Strategic Planning on Teaching, 2014 – 2015.
12. Personnel Committee member, 2007 – 2019. *All members of the Department of Physics serve on the Personnel Committee.*
13. Personnel Subcommittee member, 2007 – 2008 (Assistant Professor Representative), 2013 – 2015 (Associate Professor Representative), 2018-present (Full Professor Representative). *This committee reviews the Annual Faculty Reports and makes recommendations to the full Personnel Committee on major decisions of hiring and promotion.*
14. Biophysics Hiring Committee member, 2007 – 2008. *This committee was charged with hiring a biophysicist. We successfully hired Dr. Lori Goldner as a full professor.*
15. Condensed Matter Seminar Co-coordinator, Spring 2008, Spring 2013, Fall 2017. *Organized and hosted the Condensed Matter seminars that are every Thursday morning in the Department of Physics. Topics range from low temperature physics to biophysics theory and experiment.*
16. Women and Minorities in Physics Mentoring Group Coordinator, 2007 - 2010. *I started this group, which mentors women and minorities in the department about a variety of topics from negotiating and moving to the next level, to how to present your data, to dealing with science and family.*
17. Young Faculty Group Leader, 2010 – 2013. *I started and lead a group of new and young faculty in Physics to work with the department to make changes on departmental policies that affect young faculty.*

18. **Physics Department AQAD presenter**, 2010. *I presented to the panel about the Biological physics groups' goals for the next 5-10 years.*
19. **Graduate Program Evaluation**, 2011. *I served on two subgroups: the junior graduate student issues (led by Menon) and the senior graduate students (led by Svistinov). I contributed to developing an orientation for students, revamping the "Introduction to Research," and producing policy regarding NEAGEP interns.*
20. **Physics Department Graduate Admissions**, 2010, 2012, 2014, 2017.
21. **Physics Department Graduate Recruiting**, 2010 – present.
22. **Physics Department Graduate Student Advisor**, 2009 – 2014.
23. **Physics Department Publicity Committee**, 2013 – present.
24. **Molecular and Cellular Biology Graduate Program Graduate Admissions**, 2009, 2011.
25. **Physics Department Strategic Planning**, 2014 – 2015. *Along with Heath Hatch and Mark Tuominen, we convened and drafted the documents on teaching. I participated in the document on biophysics and condensed matter.*
26. **Physics Teachers Workshop Leader**, 2012 – present. *Along with Heath Hatch, we have been consistently running every-other-weekly meetings to make active changes to the physics department curriculum.*
27. **Organizer Soft/Bio Pls meeting**, 2012 – 2015. *Organize a weekly meeting for professors only to discuss science and current thoughts about recent development in our labs. Approximately 8-10 faculty participate.*

#### **Service to the College, UMass:**

1. **Natural Science and Mathematics Advisory Council presenter**, November 16, 2007.
2. **Fall Open House/Visit Day Laboratory**, October 30, 2010.
3. **Member of Working Group on Neurodegenerative Diseases.**
4. **Breakfast Host and Meeting with Mary Sano to Bridge Research on Neurodegenerative Diseases**, April 2, 2012.
5. **Girls Inc, EUREKA! Summer program workshop organizer and presenter**, 2013, 2014, 2015, 2016, 2017.
6. **Girls Inc, EUREKA! Internship host laboratory**, 2015.
7. **Research Intensives Summer Program for High School students**, 2013.
8. **College of Natural Sciences Advisory Council presenter**, April 2017.
9. **College of Natural Sciences "Big Ideas" Development think tank**, 2017.
10. **College of Natural Sciences Curriculum Committee representative**, 2017 – 2019.

#### **Service to the University:**

1. **Syracuse Women in Science and Engineering (WISE) Leadership Development Committee**. 2021 – present. *WISE is an essential organization to support women and under-represented students,*

postdocs, and faculty at Syracuse University. The Leadership Development Committee runs the Leadership grants and organizes one workshop per year.

2. **Public Engagement Project.** 2016 – present. The Public Engagement Project was founded in 2007 by social, behavioral, humanities, and life scientists at the University of Massachusetts Amherst who wanted to expand the engagement of scholars with the world outside the academy. I have been asked to join the committee as a representative from the STEM disciplines. My inclusion was based on my blogging efforts and other public engagement work.
3. **Institute for Cellular Engineering curriculum committee chair.** 2009 – 2012. The Institute for Cellular Engineering is an interdisciplinary IGERT and REU program funded by the NSF (PI: Susan Roberts, Chemical Engineering). The curriculum committee is in charge of organizing the Fundamentals of Cellular Engineering course, the student colloquium, and determining the requirements for a new certificate in Cellular Engineering. As chair (2010 – 2011), I ran the course and determine the seminars that will be ICE seminars each semester.
4. **“Frontiers of Cellular Imaging” Symposium committee member.** May 11, 2009. This symposium focused on cutting edge imaging techniques for living cells and tissues. I helped raise money from industrial partners and hosted speakers.
5. **Northeast Alliance for Graduate Education and the Professoriate participant.** 2007 – present. The Northeast Alliance for Graduate Education and the Professoriate (NEAGEP) is a multi-university NSF-funded program (PI: Sandy Peterson, Veterinary and Animal Sciences) to increase the participation of under-represented minorities in the Science, Technology, Engineering, and Mathematical Sciences. I speak and serve at recruiting weekends on campus. I give seminars to minority-serving institutions to recruit off campus and at conferences. For the past three years, I have given a presentation entitled, “Getting into Graduate School” for both the Recruiting weekend in the fall and the summer REU programs.
6. **Molecular and Cellular Biology admissions committee member.** 2008, 2011. The Molecular and Cellular Biology (MCB) Program is one of three interdisciplinary graduate programs for the graduate study in the life sciences.
7. **Molecular and Cellular Biology recruiting committee member.** 2008 – present. On the recruiting committee, we designed and printed a new brochure for the MCB program. I also represented the MCB program at various recruiting events including the Fall Graduate Preview hosted by the ICE and NEAGEP programs to recruit minority students to graduate study at UMass.
8. **Integrative Biophysics Cluster Hiring Proposal.** 2008. In 2008, faculty members were charged with proposing interdisciplinary cluster hires to enable the administration to determine the best course of action for the limited number of hires that could be afforded. I wrote the initial draft for the Integrative Biophysics Cluster between Physics, Chemistry, Biochemistry and Molecular Biology, and Biology. We were ultimately awarded two hires, two in Physics and two in Biology, as a result of that document. We have successfully recruited one new faculty member in physics and one in biology.

#### **Active Collaborations:**

1. Prof. Thayamanvan (Chemistry, UMass), Prof. Anthony Dinsmore (Physics, UMass), Prof. Nathan Gianneschi (Chemistry, UCSD), Prof. Nick Abbott (Chemistry University of Wisconsin), Prof. Juan

**dePablo (Chemistry, University of Chicago).** These are the co-PIs on the DOD MURI grant. I have worked closest with Thai and Dinsmore on vesicles. I have performed experiments in the Gianneschi lab on microtubules and using the Liquid Cell Transmission Electron Microscope. We have done some work with Abbott using his liquid crystal droplets as handles for an optical torque wrench.

2. **Prof. Michael Rust, Molecular Genetics and Cell Biology, University of Chicago.** Dr. Rust is a biologist working on the circadian clock proteins of cyanobacteria. These proteins are exciting and robust time keepers and we are working to use them in materials for timing of contractility. We are co-PIs on a grant from the KECK Foundation.
3. **Prof. Moumita Das, Physics, Rochester Institute of Technology.** Dr. Das is a theoretical physicist who works on models of fibrous materials with relevance to cytoskeletal networks. We are co-PIs on a grant from the KECK Foundation.
4. **Prof. Ajay Gopinathan, Physics, University of California, Merced.** Dr. Gopinathan is an expert in biophysics and soft matter theoretical work. He has been working on our work on motor and cargo motion in complex cytoskeletal networks.
5. **Prof. Rae Robertson-Anderson, Physics, University of San Diego.** Dr. Anderson is a biophysicist working on the material and rheological properties of networks of DNA and actin. She is an expert on optical trap force measurement to quantify the mechanical properties of fibrous networks. We are co-PIs on a grant from the KECK Foundation.
6. **Prof. Patricia Wadsworth, Biology, University of Massachusetts Amherst.** Dr. Wadsworth is a cell biologist studying cell division machinery. She is an expert in quantitative microscopy and cell manipulation. We are co-PIs on an NSF funded grant.
7. **Prof. Wylie Ahmed, Physics, California State University, Fullerton.** Dr. Ahmed is a trained bioengineer with expertise in statistical mechanics of non-equilibrium systems. He is an expert on optical trapping to measure the departure from equilibrium in active biological systems. We are co-PIs on an NSF-funded grant.
8. **Prof. Ben Rogers, Physics, Brandeis University.** Dr. Rogers is a trained chemical and bioengineer with expertise in colloidal systems that self-assemble and programmable matter. He uses DNA technology and DNA origami to create particles of various sizes and shapes. We are co-PIs on an NSF-funded grant.
9. **Prof. Megan Valentine, University of California, Santa Barbara.** Dr. Valentine is a PhD physicist specializing in biomaterials and adhesion. She has expertise in cytoskeleton, rheology, and optical tweezers measurements. We are co-PIs on an NSF-funded DMREF grant.