

LAURA A. MILLER

Personal Information

Laura A. Miller
Professor of Mathematics
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Education

- 2004** **Doctorate of Philosophy in Mathematics**
The Courant Institute of Mathematical Sciences, New York University,
Department of Mathematics, New York, NY
- 1999** **Master of Science in Zoology**, Minor in Mathematics
Duke University, Department of Biology, Durham, NC
- 1995** **Bachelor of Arts in the Biological Sciences**, Honors in Biology
The University of Chicago, Chicago, IL

Professional Experience

- 2020-** **Professor of Mathematics, Adjunct Professor Biomedical Engineering,**
Joint Professor Animal and Comparative Biomedical Sciences
The University of Arizona, Tucson, AZ
- 2019-2020** **Professor of Biology**
The University of North Carolina, Chapel Hill, NC
- 2018-2019** **Professor of Biology and Mathematics**
The University of North Carolina, Chapel Hill, NC
- 2013-2017** **Associate Professor of Biology and Mathematics**
The University of North Carolina, Chapel Hill, NC
- 2015-2016** **Faculty Fellow, Statistical and Applied Mathematical Sciences Institute**
Program on Computational Neuroscience, RTP, NC
- Fall 2015** **Faculty Fellow, Institute of Arts and Humanities**
The University of North Carolina, Chapel Hill, NC
- 2007 – 2012** **Assistant Professor, Mathematics**
Adjunct Assistant Professor, Biology
The University of North Carolina, Chapel Hill, NC

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- 2004 – 2006** **Postdoctoral Research, the University of Utah**, Department of Mathematics, Salt Lake City, UT,
Advisor: Professor Aaron Fogelson
- 1999 – 2004** **Doctoral Dissertation Research, the Courant Institute of Mathematical Sciences**, New York University, New York, NY
Advisor: Professor Charles Peskin
- 1996 – 1999** **Master's Thesis Research, Duke University**, Department of Zoology, Durham, NC
Advisor: Professor Steven Vogel

Academic Awards and Grants

- 01/01/25-12/31/26** **University of Arizona Provost Investment Fund** (198,740). Enhancing Student Experience in STEM and Veterinary Science with Horses.
- 08/19/24-08/18/27** **NSF DMS Mathematical Biology (PI)**, Awarded (175,324). Collaborative Research: RUI: The fluid dynamics of organisms filtering particles at the mesoscale
- 01/15/23-01/14/27** **NSF IOS Physiological Mechanisms and Biomechanics (PI)**, Awarded (\$678,073). Collaborative Research: MUCUS: Measuring and Understanding the Cassiopea Use of Space.
- 05/01/22-04/31/25** **NSF DMS Mathematical Biology (co-PI, UA PI)**, Awarded (\$96,346). Collaborative Research: Using Uncertainty Quantification and Validated Computational Models to Analyze Pumping Performance of Valveless, Tubular Hearts.
- 04/01/20-03/31/27** **NSF DMS Research Training Program (co-PI)**, Awarded (\$1,999,997). RTG: Applied Mathematics and Statistics for Data-Driven Discovery.
- 05/01/20-4/30/23** **ARO Biomathematics (PI*)**, Awarded (\$276,265). Mathematical Models of the Individual and Collective Fluid Dynamics of Brine Shrimp Swimming. *PI transferred to Daphne Klotz upon move to University of Arizona.
- 04/01/20-3/31/25** **NSF LSAMP (UNC-PI*)**, Awarded (\$198,165). North Carolina Louis Stokes STEM Pathways and Research Alliance. *PI transferred to Samantha Pattenden upon move to University of Arizona.
- 7/15/19-6/30/22** **NSF CBET Fluid Dynamics (PI)**, Awarded (\$218,772). Collaborative Research: The leaky rake to solid plate transition on flow through biological filtering structures.
- 7/1/19-6/30/20** **CFE/Lenovo Instructional Innovation Grant (PI)**, Awarded (\$5,000). 3D scanning, photogrammetry, and CAD for multiphysics simulations of tissues, organs and organisms.

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- 3/15/19-3/14/22** **NSF DMS Mathematical Biology (PI)**, Awarded (\$160,860). Collaborative Research: The Physical Biology of Leaves in Wind and Waves.
- 2/15/18-1/31/23** **NIH NHLBI 1R01HL139880-02 (Investigator, PI J. Liu)**, Awarded, (\$2,005,110). Molecular Regulation of ventricular chamber maturation. 0.5 summer months awarded to Miller.
- 5/15/16-5/14/20** **NSF IOS Physiological Mechanisms and Biomechanics (co-PI, UNC PI)**, Awarded, (UNC Subcontract: \$217,187). A New Hypothesis for Cardio-respiratory Mechanics in Insects.
- 9/17/15 – 9/16/18** **ARO Biomathematics Staff Research (co-PI)**, Awarded, (\$238,273). Mathematical modeling of macrophyte-flow interactions and the resulting zooplankton distributions.
- 9/17/15 – 9/16/19** **NSF PHY Physics of Living Systems (PI)**, Awarded, (\$211,951). Collaborative Research: Flow and Nutrient Exchange Driven by Pulsating Coral.
- 7/1/15 – 6/30/18** **NSF CBET Fluid Dynamics (PI)**, Awarded, (\$213,625). UNS: Collaborative Research: Role of Bristled Wings for Flying and Swimming at Low Reynolds Numbers.
- 7/1/15 – 6/30/17** **American Heart Association (Investigator, PI J. Liu)**, Awarded, (\$154,000). Cardiac morphogenesis in zebrafish. 0.5 summer months awarded to Miller.
- 7/1/13 – 6/30/14** **UNC Interdisciplinary Initiatives Grant (PI)**, Awarded, (\$8,000). Developing an Introduction to Quantitative Biology.
- 9/1/12 – 8/31/18** **NSF DMS CAREER (PI)**, Awarded, (\$504,236). Mathematical modeling and experiments of neuromechanical pumping.
- 9/15/12 – 8/31/18** **NSF LSAMP, (UNC PI)**, Awarded (381,000.00). NC Louis Stokes Alliance for Minority Participation Phase V.
- 9/1/11 – 3/1/12** **NSF IOS Symposium Support (PI)**, Awarded (\$14,980). Combining experiments with modeling and computational methods to study animal locomotion (Charleston, January 3-7, 2012).
- 9/1/10 – 8/31/13** **NSF DMS Mathematical Biology Collaborative Research (PI)**, Awarded (\$205,131). New models and numerical methods for flexible wings, fins, and membranes.
- 8/15/10 – 8/14/15** **NSF EMSW21-RTG (co-PI)**, Awarded (\$1,199,980) Laboratory and mathematical fluid dynamics: Experiments, computation and modeling.

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- 7/1/09 – 6/30/12** **NSF Focused Research Group Grant (PI 2012-2013, co-PI 2009-2012),** Awarded (\$866,592). Advanced algorithms and software for problems in computational bio-fluid dynamics.
- 1/1/09 – 12/31/09** **UNC Junior Faculty Development Award (PI),** Awarded (\$7500). Funding to complete the renovation of the Fluids Lab wind tunnel.
- 1/1/06 – 12/31/11** **Burroughs Wellcome Fund Career Award at the Scientific Interface (PI),** Awarded (\$500,000). Postdoctoral and faculty research on evolutionary and developmental biofluid dynamics.
- 7/1/98 – 6/30/99** **Sigma Xi Research Grant (PI),** Awarded (\$500). Research on cattail shoot biomechanics.
- 7/1/97 – 6/30/98** **Explorer's Fund Research Grant (PI),** Awarded (\$1000). Research on the aerodynamics of seed dispersal in sea oats.

Key participant on the following grants

- 4/1/12 – 3/31/16** **NSF (Key Participant),** Awarded, (\$381,999.00). The UNC CAP (Computational Astronomy & Physics) REU Program: UNCCAPing Enthusiasm for Computational Careers
- 9/30/12 – 9/29/16** **NSF (Key Participant),** Awarded (\$552,182.00). WILD BLUE: Using fulldome technology to illustrate aeronautic principles

Bibliography

(† denotes undergraduate students, ‡ denotes graduate students, * denotes postdocs)

Books and Book Chapters (edited, not peer-reviewed)

- Cohen, B., Miller, L. O'Donnell, C., Ro, S., Wachs, B. and West, R. (2003). CAHSEE Success: Mathematics. New York: Kaplan, Inc.
- Miller, L. A. (2012). Vortex Formation in the Embryonic Heart. Subchapter in A. Kheradvar and G. Pedrizzetti (Eds.), *Vortex Formation in the Cardiovascular System*. New York, NY: Springer.

Refereed Publications

Submitted

1. Harrison, A. ‡, Strychalski, W., Hamlet, C., & Miller, L. A. An idealized model of extrusome ejection through the collapse of a capsule. Submitted to *Bulletin of Mathematical Biology*.
2. Fernandez, D. M. ‡, & Miller, L. A. (Submitted). Two-point dynamic suction pumping in tubular hearts. *Bulletin of Mathematical Biology*.
3. Senter, D. M. ‡, Jones, S. K., Hoover, A. P., and Miller, L. A. (Submitted). Three-dimensional flexible clap and fling in tiny insect flight. *Bulletin of Mathematical Biology*.
4. Santiago, M. *, Battista, N., and Miller, L. A. (Submitted). Using computational fluid dynamics to understand fluid-organism interaction. *Journal of Experimental Biology*.

Published/Accepted

5. Harrison, A. ‡, Strychalski, W., Hamlet, C., & Miller, L. A. (2025). Fluid dynamics of multiple fast-firing extrusomes. *Bulletin of Mathematical Biology*, **87**, 100. <https://doi.org/10.1007/s11538-025-01474-6>.
6. Santiago, M. *, Hoover, A. P., Connolly, A. †, and Miller, L. A. (2025). Emergent Kinematics and Flow Structure of Tension Driven Pulsing Xeniid Corals. *Bulletin of Mathematical Biology*, **87**, 133. <https://doi.org/10.1007/s11538-025-01493-3>.
7. Moin, Z. †, Miller, L. A., & Battista, N. A. (2024). Ratcheting fluid pumps: Using generalized polynomial chaos expansions to assess pumping performance and sensitivity. *Physics of Fluids*, **36**(12), 121919.
8. Santiago, M. *, & Miller, L. A. (2024). Interplay of elasticity and flow velocity on gorgonian feeding and implications for bioinspired design. *Annals of the New York Academy of Sciences*, 15250. <https://doi.org/10.1111/nyas.15250>.
9. Staples, A. E., Miller, L. A., Khatri, S., & Hossain, M. M. (2023). Editorial: Local hydrodynamics of benthic marine organisms. *Frontiers in Marine Science*, **10**, 1170230. <https://doi.org/10.3389/fmars.2023.1170230>.
10. Hamlet, C. H., Strickland, W. C., Battista, N., and Miller, L. A. (2023). Multiscale flow between the branches and polyps of gorgonians. *Journal of Experimental Biology*, **226**(5): jeb244520.
11. Talkington, A. M. ‡, Davis, R. B. *, Datto, N. C. †, Goodwin, E. R. †, Miller, L. A., and Caron, K. M. (2022). Dermal lymphatic capillaries do not obey Murray's Law. *Frontiers Cardiovascular Medicine*, **9**: <https://doi.org/10.3389/fcvm.2022.840305>.
12. Strickland, C. S., Battista, N. A., Hamlet, C. L., and Miller, L. A. (2022). Planktos: An agent-based modeling framework for computational fluid dynamics. *Bulletin of Mathematical Biology*, **84**: 72. <https://doi.org/10.1007/s11538-022-01027-1>.
13. Battista, N., Gaddam, M. G. ‡, Hamlet, C. L., Hoover, A. P., Miller, L. A., and Santhanakrishnan, A. (2022). The presence of a substrate strengthens the jet generated by upside down jellyfish. *Frontiers Marine Science*, **9**: <https://doi.org/10.3389/fmars.2022.847061>.
14. Santiago, M. ‡, Battista, N. A., Miller, L. A., and Khatri, S. (2022). Passive concentration dynamics incorporated into the library IB2d, a two-dimensional implementation of the immersed boundary method. *Bioinspiration & Biomimetics*, 1748-3190. <http://iopscience.iop.org/article/10.1088/1748-3190/ac4afa>
15. Miller, L. A. (2021). Fluid flow through a deep-sea sponge could inspire engineering designs. *Nature*, **595**(7868): 497-498. DOI:10.1038/d41586-021-01891
16. Hoover, A. P., Xu, N. Dabiri, J. O., Gemmell, B. J., Costello, J., Colin, S., and Miller, L. A. (2021). Neuromechanical wave resonance in jellyfish swimming. *Proceedings of the National Academy of Sciences*, **118** (11) e2020025118; DOI: 10.1073/pnas.2020025118.
17. Senter, D. M. ‡, Ray, D. R. †, Strickland, W. C., Thomas, S. G. †, Talkington, A. M. ‡, Miller, L. A., Battista, N. A. (2021). A Semi-Automated Finite Difference Mesh Creation Method for Use with Immersed Boundary Software Including IB2d and IBAMR. *Biomimetics and Bioinspiration*, **16**, 016008.
18. Samson, J. ‡, Ray, D. †, Porfiri, M., Miller, L. A., and Garnier, S. (2020). Collective pulsing in xeniid corals. Part I. Using computer vision and information theory to search for coordination. *Bulletin of Mathematical Biology*, **82**, Article number: 90.
19. Samson, J. ‡ and Miller, L. A. (2020). Collective pulsing in xeniid corals. Part II: Using computational fluid dynamics to determine if there is a benefit to coordinated pulsing. *Bulletin of Mathematical Biology*, **82**, Article number: 67.

20. Waldrop, L. D., He, Y., Battista, N. A., Neary, T., and Miller, L. A. (2020). Uncertainty quantification reveals the physical constraints on pumping by valveless, tubular hearts. *Royal Society Interface*, doi:10.1098/rsif.2020.0232.
21. Hamlet, C. L., Strychalski, W., and Miller, L. A. (2020). Fluid Dynamics of Ballistic Strategies in Nematocyst Firing. *Fluids*, 5(1), 20; <https://doi.org/10.3390/fluids5010020>.
22. Ozalp, M. K.‡, Miller, L. A., Dombroski, T.‡, Klotsa, D., Pasour, V., and Strickland, W. C. (2020). Experiments and Agent Based Models of Zooplankton Movement within Complex Flow Environments. *Biomimetics*, Jan 5;5(1). pii: E2. doi: 10.3390/biomimetics5010002.
23. Davis, A.†, Hoover, A. P., and Miller, L. A. Lift and Drag Acting on the Shell of the American Horseshoe Crab *Limulus Polyphemus*. (2019). *Bull Math Biol.*, doi: 10.1007/s11538-019-00657-2.
24. Samson, J. ‡, Miller, L. A., Ray, D. †, Shavit, U., Holzman, R., and Khatri, S. (2019). A novel mechanism of mixing by pulsing corals. *J. Exp. Biol.* 222: jeb192518 doi: 10.1242/jeb.192518.
25. Hoover, A. ‡, Porras, A.†, and Miller, L. A. (2019). Pump or coast: The role of resonance and passive energy recapture in medusan swimming performance. *Journal of Fluid Mechanics*, 863: 1031-1061.
26. Battista, N. A. ‡, Douglas, D. R.†, Lane†, A. N., Samsa‡, L. A., Liu, J. and Miller, L. A. (2019). Vortex Dynamics in Trabeculated Embryonic Ventricles. *J. Cardiovasc. Dev. Dis.*, 6(1), 6; <https://doi.org/10.3390/jcdd6010006>.
27. Strychalski, W., Bryant, S., Jadamba, B., Kilikian, E.*, Lai, X.*, Shahriyari, L.*, Segal, R., Wei, N.*, and Miller, L. A. (2018). Fluid dynamics of nematocyst prey capture. Special issue of the *Proceedings of the American Women in Mathematics*, Understanding Complex Biological Systems with Mathematics, 123-144.
28. Santhanakrishnan, A.*, Jones, S.‡, Dickson, W., Peek, M.†, Kasoju, V.‡, Dickinson, M. H., Miller, L. A. (2018). Flow structure and force generation on flapping wings at low Reynolds numbers relevant to the flight of tiny insects. *Fluids*, 3(45), doi:10.3390/fluids3030045
29. Ohdera, A. H., Abrams, M. J., Ames, C. L., et al. (2018). Upside-Down but Headed in the Right Direction: Review of the Highly Versatile *Cassiopea xamachana* System. *Front. Ecol. Evol.*, 09:| <https://doi.org/10.3389/fevo.2018.00035>
30. Samson, J.‡, Battista, N., Khatri, S., Miller, L. A. (2017). Pulsing corals: A story of scale and mixing. *BIOMATH*, 6: 1712169.
31. Battista, N. A. ‡ and Miller, L. A. (2017). Bifurcations in valveless pumping techniques from a coupled fluid-structure-electrophysiology model in heart development. *BIOMATH*, 6(2), 1711297 DOI: <http://dx.doi.org/10.11145/j.biomath.2017.11.297>
32. Battista, N. A. ‡, Strickland, C. S.*, Miller, L. A. (2017). IB2d Reloaded: a more powerful Python and MATLAB implementation of the immersed boundary method. *Mathematical Methods in the Applied Sciences*, <https://doi.org/10.1002/mma.4708>, 1–26.
33. Battista, N. A. ‡, Lane, A. N. †, Liu, J., Miller, L. A. (2017). Fluid Dynamics of Heart Development: Effects of Trabeculae and Hematocrit. *Math. Med. and Biol.* doi: 10.1093/imammb/dqx018.
34. Strickland, C.*, Miller, L. A., Santhanakrishnan, S.*, Hamlet, C. ‡, Battista, N. A. ‡, and Pasour, V. (2017). Three-Dimensional Low Reynolds Number Flows near Biological Filtering and Protective Layers. *Fluids*, 2, 62; doi:10.3390/fluids2040062.
35. Battista, N. ‡, Lane, A. †, and Miller, L. A. (2017). On the dynamic suction pumping of blood cells in tubular hearts. *Women in Mathematical Biology, Association for Women in Mathematics Series*, 211-231.
36. Sheldon, K. S., Zhao, L., Chuang, A. ‡, Panayotova, I. N., Miller, L. A., and Bourouiba, L. (2017). Revisiting the physics of spider ballooning. *Women in Mathematical Biology, Association for Women in Mathematics Series*, 163-178.

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37. Zhao, L., Sheldon, K. S., Chuang, A. ‡, Panayotova, I. N., Bourouiba, L., and Miller, L. A. (2017). Flying Spiders: Simulating and modeling the dynamics of ballooning. *Women in Mathematical Biology, Association for Women in Mathematics Series*, 179-210.
38. Miller, L. A. (2017). Biomechanics: The aerodynamics buzz from mosquitos. *Nature*, 544: 40–41, doi:10.1038/nature21904.
39. Strickland, C.*, Kristensen, N. P.*, and Miller, L. A. (2017). Inferring stratified parasitoid dispersal mechanisms and parameters from coarse data using mathematical and Bayesian methods. *Royal Society Interface*, 14(30), DOI: 10.1098/rsif.2017.0005.
40. Battista, N. ‡, Strickland, C*, and Miller, L. A. (2017). IB2d: An easy to use immersed boundary method in 2D, with multiple options for fiber-structure models with possible porosity, advection-diffusion, and/or artificial forcing. *Biomimetics and Bioinspiration*, 12(3): 036003.
41. Hoover, A. ‡, Griffith, B. G., Miller, L. A. (2017). Quantifying performance in the medusan mechanospace with an actively swimming three-dimensional jellyfish model. *Journal of Fluid Mechanics*, 813: 1112-1155.
42. Bucksch, A., Atta-Boateng, A., Azihou, A. F., Battogtokh, D., Baumgartner, A., et al. (2017). Morphological plant modeling: unleashing geometric and topological potential within the plant sciences *Frontiers in Plant Science* 8, 900.
43. Wu, J., Cheng, Y., and Miller, L. A. (2017). An iterative source correction based immersed boundary-lattice Boltzmann method for thermal flow simulations. *International Journal of Heat and Mass Transfer*, 115, 450-460.
44. Waldrop, L. D.*, Miller, L. A., and Khatri, S. (2016). A tale of two antennules: The performance of crab odor-capture organs in air and water. *Royal Society Interface*, 13(125): DOI: 10.1098/rsif.2016.0615.
45. Jones, S. K. ‡, Yun, Y. K. †, Hedrick, T. L., Griffith, B. E., Miller, L. A. (2016). Bristles reduce the force required to “fling” wings apart in the smallest insects. *Journal of Experimental Biology*, 219: 3759-3772.
46. Jones, S., ‡ Griffith, B., Hedrick, T. and Miller, (2015). Lift and drag based mechanisms of vertical force generation in tiny insect flight. *Journal of Theoretical Biology* 384: 105–120.
47. Hoover, A. ‡ and Miller, L. A. (2015). A numerical study of the benefits of driving jellyfish bells at their natural frequency. *Journal of Theoretical Biology*, 374: 13–25.
48. Battista, N. ‡, Baird, A. ‡, and Miller, L. A. (2015). A Mathematical Model and MATLAB Code for Muscle–Fluid–Structure Simulations. *Integr. Comp. Biol.* 10.1093/icb/icv102.
49. Lindsay D. Waldrop*, Stephen C. Adolph, Cecilia G. Diniz Behn, Emily Braley, Joshua A. Drew, Robert J. Full, Louis J. Gross, John A. Jungck, Brynja Kohler, Jennifer C. Prairie, Blerta Shtylla, and Laura A. Miller (2015). Using active learning to teach concepts and methods in quantitative biology. *Integr. Comp. Biol.* doi:10.1093/icb/icv097
50. Waldrop, L. D.* and Miller, L. A. (2015). The role of the pericardium in the valveless, tubular heart of the tunicate, *Ciona savignyi*. *J. Exp. Biol.* doi: 10.1242/jeb.116863
51. Waldrop, L. D.* and Miller, L. A. (2015). Large amplitude, short wave peristalsis and its implications for transport. *Biomechanics and Modeling in Mechanobiology*, 1-14.
52. Baird, A. ‡, Waldrop,* L., and Miller, L. A. (2015). JSMB Special Issue: Neuromechanical pumping: boundary flexibility and traveling depolarization waves drive flow within valveless, tubular hearts. *Japan Journal of Industrial and Applied Mathematics*, doi: 10.1007/s13160-015-0195-3.
53. Baird, A. ‡, King, T. †, and Miller, L. A. (2014). Numerical study of scaling effects in peristalsis and dynamic suction pumping. *Contemporary Mathematics* 628: 129-148.
54. Hamlet, C. ‡ and Miller, L. A. (2014). Effects of grouping behavior, pulse timing and organism size on fluid flow around the upside-down jellyfish, *Cassiopea* sp. *Contemporary Mathematics* 628: 173-190.

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55. Hedrick, T., Combes, S., and Miller, L. A. (2014). Recent developments in the study of insect flight. *Canadian Journal of Zoology* 10.1139/cjz-2013-0196.
56. Santhanakrishnan, A.*, Robinson, A.†, Lowe, A.†, Hedrick, T., and Miller, L. A. (2014). Clap and fling with porous wings. *J. Exp. Biol.* 217, 3898-3909.
57. Alben, S., Miller, L. A., and Peng, J.* (2013). Efficient kinematics for jet-propelled swimming. *Journal of Fluid Mechanics*. 733: 100-133.
58. Overman, R. E., Prins, J. F., Miller, L. A., Minion, M. L. (2013). Parallel and Distributed Processing Symposium Workshops & PhD Forum (IPDPSW), *IEEE 27th International*, 1126-1135
59. Miller, L. A., Goldman, D. I., Hedrick, T. L., Tytell, E. D., Wang, Z. J., Yen, J. and Alben, S. (2012). Using Computational and Mechanical Models to Study Animal Locomotion. *Integrative and Comparative Biology*. 52(5): 553-575.
60. Miller, L. A. and Alben, S. (2012). Interfacing Mathematics and Biology: A Discussion on Training, Research, Collaboration, and Funding. *Integrative and Comparative Biology*. 52(5): 616 - 621.
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62. Hamlet, C. L.‡ and Miller, L. A. Feeding currents of upside down jellyfish in the presence of background flow. *Bulletin of Mathematical Biology*. 74(11): 2547-2569.
63. Santhanakrishnan, A.*, Dollinger, M.†, Hamlet, C. ‡, Colin, S., and Miller, L. A. (2012). Flow structure and transport characteristics of feeding and exchange currents generated by upside-down *Cassiopea* jellyfish. *J. Exp. Biol.* 215: 2369-2381.
64. Hamlet, C. ‡, Miller, L. A., Rodriguez, T.†, and Santhanakrishnan, A.* (2012). The fluid dynamics of feeding in the upside-down jellyfish. *IMA Volumes in Mathematics and its Applications*.
65. Herschlag, G. ‡ and Miller, L. A. (2011). Reynolds number limits for jet propulsion: A numerical study of simplified jellyfish. *J. Theor. Biol.*, 285(1): 84-95.
66. Santhanakrishnan, A.* and Miller, L. A. (2011). Fluid dynamics of heart development. *Cell Biochemistry and Biophysics*, 61: 1-22.
67. Miller, L. A. (2011). Fluid dynamics of ventricular filling in the embryonic heart. *Cell Biochemistry and Biophysics*, 61: 33-45.
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69. Zhu, L., He, G., Wang, S., Miller, L., Zhang, X., You, Q., and Fang, S. (2011). An immersed boundary method based on the lattice Boltzmann approach in three dimensions, with application, *Computers & Mathematics with Applications*, 61: 3506-3518.
70. Santhanakrishnan, A.*, Nguyen, N.†, Gunderson, J. A.†, and Miller, L. A. (2009). Flow within models of the vertebrate embryonic heart. *J. Theor. Biol.*, 259: 449-454.
71. Miller, L. A. and Peskin, C. S. (2009). Flexible fling in tiny insect flight. *J. Exp. Biol.*, 212: 3076-3090.
72. Leiderman, K. M. ‡, Miller, L. A., and Fogelson, A. L. (2008). The effects of inhomogeneities on flow through the endothelial surface layer. *J. Theor. Biol.*, 252(2): 313-25.
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Invited Tutorials

1. Tutorial on Computational Modeling at the 8th International Cassiopea Workshop 2025, June 6-8, 2025, the Whitney Lab, Saint Augustine, Florida.
2. Miller, L. A. (2024, October 28 – November 1). Using computational fluid dynamics to understand marine systems. Tutorial presented at the AIMEC-NSF Joint Workshop for the Model Species Cassiopea: Molecular Analysis with Gridion and Fluidic Dynamics, Tohoku University's Onagawa Field Center, Japan.
3. Miller, L. A., & Khatri, S. (2024, May 25-31). *Computational fluid dynamics tutorial*. Tutorial presented at the Microscale Ocean Biophysics Meeting, Heron Island, Australia.
4. Miller, L. A. (2021). *Fluid-organism interactions: Mathematical and numerical approaches*. Tutorial presented at the Integrative Organismal Modeling of Movement (IOMM) Workshop Series, University of California, Irvine, CA. Retrieved from <https://cims.uci.edu/education-training/iomm/fluid-organism/>
5. Miller, L. A. (2021, May 21). The fluid dynamics of Cassiopea sp. Tutorial presented at the 4th International Cassiopea Workshop, Virtual Conference.

Invited Talks

6. Miller, L. A. and Genua, B. Systems Biomechanics of the Horse: Advancing Equine Athletic Research. Global Symposium on Racing, Loews Ventana Canyon Resort, Tucson, AZ. December 7-9, 2025.
7. Miller, L. A. How Applied Math Labs Shape Research (and Teaching). Mathematics Colloquium, University of Arizona, Tucson, AZ, October 2, 2025.
8. Miller, L. A. From Valveless Tubes to Extreme Athletic Hearts: Comparative Cardiovascular Fluid Dynamics and Extensions to Equine Biomechanics. Fall Seminar Series, Animal and Comparative Biomedical Sciences, University of Arizona, Tucson, AZ, September 15, 2025.
9. Miller, L. A. *Equine biomechanics*. Talk presented at the ATCO SpaceLab Speaker Series, Season 5, Episode 1. January 16, 2025.
10. Miller, L. A. *Flows around some species of soft corals*. Talk presented at the ISAAC-ICMAM Conference of Women in Mathematics 2024, Virtual Conference. November 27–29, 2024.
11. Miller, L. A. Flows around some soft corals. 2023 AMS Fall Southeastern Sectional Meeting. University of South Alabama, Mobile, AL, October 13-15, 2023.
12. Miller, L. A. Flows through soft corals and other cnidarians. Mathematical and Computational Biology, ICERM, Providence, RI, June 12-16, 2023.
13. Miller, L. A. Flows around some soft corals. 2nd SIAM Northern States Section Conference, Logan, UT, April 15-16, 2023.
14. Miller, L. A. Using computational fluid dynamics to understand muscle driven movement: Case studies in jellyfish and corals. Applied and Interdisciplinary Mathematics Seminar, University of Michigan, October 29, 2022.
15. Miller, L. A. and Hu, D. Fluid-Organism Interactions: Mathematical and Numerical Approaches. UCI Center for Integrative Movement Sciences (online). April 14, 2022.
16. Miller, L. A. Flow through the hairy appendages of small animals: The leaky rake to solid plate transition. SIAM Northern States Section Meeting, Logan, UT. *Cancelled twice due to the COVID-19 pandemic. Miller invited to give plenary at 2023 meeting.
17. Miller, L. A. Using computational fluid dynamics to understand the mechanics of jellyfish swimming and feeding. The BPPB Seminar (online), April 8, 2022.
18. Miller, L. A. Using computational fluid dynamics to understand muscle driven movement by soft tissues and bodies: Case studies in tubular hearts and jellyfish. University of Arizona BME Seminar, November 1, 2021.

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19. Miller, L. A. Flow through the hairy appendages of small animals: The leaky rake to solid plate transition. SIAM Northern States Section Meeting, Plenary Talk, October 15-17, 2021 (canceled due to COVID).
20. Miller, L. A. Flow through the hairy appendages of small animals: The leaky rake to solid plate transition. Arizona State University Math Bio Seminar, September 24, 2021.
21. Miller, L. A. Flow through the hairy appendages of small animals: The leaky rake to solid plate transition, Cornell Fluids Seminar, September 21, 2021.
22. Miller, L. A. The fluid dynamics of Cassiopea. The 2021 International Cassiopea Workshop. Online, May 20-23, 2021.
23. Miller, L. A. Using computational fluid dynamics to understand jellyfish swimming and feeding. Cold Place Seminar Series, May 17, 2021.
24. Miller, L. A. Using computational fluid dynamics to understand jellyfish swimming and feeding. Interdisciplinary online seminar series on Biocomotion. February 24, 2021.
25. Miller, L. A. Using computational fluid dynamics to understand muscle driven movement: Case studies in tubular hearts and jellyfish. Mathematical Biology Seminar, University of California at Davis, November 30, 2020.
26. Miller, L. A. Using computational fluid dynamics to understand muscle driven movement: Case studies in tubular hearts and jellyfish. Computational Seminar, Boise State University, November 5, 2020.
27. Miller, L. A. The aerodynamics of flight in the smallest insects. Ecology and Evolutionary Biology Seminar, University of Arizona, November 2, 2020.
28. Miller, L. A. Flow through the hairy appendages of small animals: The leaky rake to solid plate transition. JSNN Seminar, University of North Carolina at Greensboro, Greensboro, NC, April 17, 2020.
29. Miller, L. A. Flow through the hairy appendages of small animals: The leaky rake to solid plate transition. AMS Southeast Sectional Meeting, University of Virginia, Charlottesville, VA, March 13-15, 2020. *Cancelled twice due to the COVID-19 pandemic. Miller invited to give plenary at 2024 meeting.
30. Miller, L. A. Flow through the hairy appendages of small animals: The leaky rake to solid plate transition. Applied Mathematics Colloquium, University of Colorado at Boulder, Boulder, CO, February 14, 2020.
31. Miller, L. A. Flow through the hairy appendages of small animals: The leaky rake to solid plate transition. Mathematics Colloquium, University of Arizona, Tucson, AZ, January 23, 2020.
32. Miller, L. A. Using computational fluid dynamics to understand muscle driven movement and mesoscale exchange: Case studies in tubular hearts, jellyfish, and corals. Joint Mathematics Meeting, Denver, CO, January 16, 2020.
33. Miller, L. A. Using computational fluid dynamics to understand muscle driven movement and mesoscale exchange: Case studies in tubular hearts, jellyfish, and corals. Mathematical Biology Seminar, University of Arizona, Tucson, AZ, December 17, 2019.
34. Miller, L. A. My trajectory from mathematics to biology to mathematics and back to biology. American Women in Mathematics Seminar, Worcester Polytechnic Institute, Worcester, MA, September 27, 2019.
35. Miller, L. A. Using computational fluid dynamics to understand muscle driven movement and mesoscale exchange: Case studies in tubular hearts, jellyfish, and corals. Mathematics Colloquium, Worcester Polytechnic Institute, Worcester, MA, September 27, 2019.
36. Miller, L. A. Using computational fluid dynamics to understand muscle driven movement and mesoscale exchange: Case studies in tubular hearts, jellyfish, and corals. Applied Mathematics Colloquium, University of Colorado at Boulder, April 11, 2019.

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37. Miller, L. A. The dispersal of aerial plankton: Spider ballooning and flapping with bristled wings. Fluids Seminar, Brown University, November 13, 2018.
38. Miller, L. A. Pulsing Soft Corals are Novel Mesoscale Mixers. Biomathematics/Computational Biology Seminar, Department of Mathematics, Courant Institute, New York, New York, May 1, 2018.
39. Miller, L. A. Pulsing Soft Corals are Novel Mesoscale Mixers. Biomedical Engineering and Mechanics Seminar, Virginia Tech, Blacksburg, VA, April 25, 2018.
40. Miller, L. A. Using computational fluid dynamics to understand the neuromechanics of jellyfish swimming and soft coral pulsing. Fluid Mechanics Seminar, Department of Mechanical Engineering, Oklahoma State University, Stillwater, OK, February 2, 2018.
41. Miller, L. A. Using computational fluid dynamics to understand the neuromechanics of jellyfish swimming and soft coral pulsing. Dynamics Days, Boulder, CO, January 4-7, 2017.
42. Miller, L. A. Using computational fluid dynamics to understand the neuromechanics of jellyfish swimming and soft coral pulsing. Department of Mathematics, Colorado School of Mines, Denver, CO, November 17, 2017.
43. Miller, L. A. Using computational fluid dynamics to understand the neuromechanics of jellyfish swimming. Workshop on Sensory Motor Control of Animals and Robots, Mathematical Biology Institute, Ohio State University, Columbus, OH, November 13-17, 2017.
44. Miller, L. A. Aerodynamics of flight in the smallest insects and spiders. Theoretical Biology Seminar, Pennsylvania State University, State College, PA, October 31, 2017.
45. Miller, L. A. Aerodynamics of flight in the smallest insects and spiders. Mathematical Biology Seminar, Virginia Commonwealth University, Richmond, VA, October 26, 2017.
46. Miller, L. A. Aerodynamics of flight in the smallest insects and spiders. Newton Institute, Cambridge, U.K., September 18-22, 2017.
47. Miller, L. A. The fluid dynamics of feeding and exchange in soft corals and upside down jellyfish. Math Bio Alumni Conference, Salt Lake City, UT, July 14-15, 2017.
48. Miller, L. A. The fluid dynamics of feeding and exchange in soft corals and upside down jellyfish. Biomath 2017, International Conference on Mathematical Methods and Models in Biosciences and a School for Young Scientists. Skykya Camp, Kruger Park, South Africa, June 25-30, 2017.
49. Miller, L. A. A survey of fluid-structure interactions in organs and organisms at small scales. 2017 Workshop on the Mathematics of Hearing, The Fields Institute, Toronto, Canada, June 16, 2017.
50. Miller, L. A. The dispersal of aerial plankton. The 2017 Annual Meeting of the Research Coordination Network on Neuromechanics, Tulane University, New Orleans, LA, January 18, 2017.
51. Miller, L. A. Fluid dynamics of pulsing in Cnidarians: Consequences for swimming, feeding and exchange. Rutgers University, Department of Marine and Coastal Sciences Seminar, New Brunswick, NJ, November 28, 2016.
52. Miller, L. A. Using Computational Fluid Dynamics to Understand Organism Form, Function, and Behavior. GALCIT Colloquium, Caltech, Pasadena, CA, September 30, 2016.
53. Miller, L. A. The flight of the smallest insects. Summer Workshop for Women in Mathematics (SWIM), Department of Mathematics, Duke University, Durham, NC, June 16, 2016.
54. Miller, L. A. The flight of the smallest insects. Plenary talk, Frontiers in Applied and Computational Mathematics, NJIT, Newark, NJ, June 3, 2016.
55. Miller, L. A. and Newhall, K. Modeling the Muscular Response to Motor Neuron Spike-Trains. SAMSI CCNS: Transition Workshop, RTP, NC May 4-6, 2016.

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56. Miller, L. A. The flight of the smallest insects. Mathematics Department Colloquia, Clemson University, Clemson, SC, March 28, 2016.
57. Miller, L. A. The fluid dynamics of jellyfish swimming and feeding. UCSB Fluid Dynamics Seminar. Santa Barbara, CA, February 17, 2016.
58. Miller, L. A. The fluid dynamics of jellyfish swimming and feeding. Claremont Center for the Mathematical Sciences Seminar Series. Claremont, CA, February 15, 2016.
59. Miller, L. A. Reconfiguration of broad leaves to reduce drag and flutter. Investigative Workshop Morphological Plant Models. National Institute for Mathematical and Biological Synthesis. Knoxville, TN, September 4, 2015.
60. Miller, L. A. Reconfiguration of broad leaves to reduce drag and flutter. Environmental Sciences Seminar Series, MIT, Boston, MA, May 8, 2015.
61. Miller, L. A. Fluid Physics of Long Distance Dispersal. Program on Mathematical and Statistical Ecology Transition Workshop, Statistical and Applied Mathematical Sciences Institute, RTP, NC, May 4-6, 2015.
62. Miller, L. A. Electromechanical Pumping in Tubular Hearts. Applied and Computational Mathematics Seminar, University of California at Irvine, Irvine, CA, April 20, 2015.
63. Miller, L. A. Computational Modeling of Ecological Species. Workshop on Developing, Maintaining, and Employing Large Computational Frameworks for the Ecological Sciences. Statistical and Applied Mathematical Sciences Institute, RTP, NC, April 13-17, 2015.
64. Miller, L. A., Griffith, B. and Battista, N. A quantitative biology lab to compare simulations of crossbridge attachments to force-velocity and length-tension curves in skeletal muscle. SICB, Symposium on Leading Students and Faculty to Quantitative Biology through Active Learning, West Palm Beach, FL, Jan 3-7, 2015.
65. Miller, L. A. The fluid dynamics of jellyfish swimming and feeding. Applied Mathematics Seminar, University of Michigan, December 5, 2014.
66. Miller, L. A. The fluid dynamics of jellyfish swimming and feeding. University of California at Merced, Merced, CA, November 21, 2014.
67. Miller, L. A. The fluid dynamics of jellyfish swimming and feeding. University of Richmond, Richmond, VA, November 10, 2014.
68. Miller, L. A. The fluid dynamics of jellyfish swimming and feeding. Biomathematics / Computational Biology Colloquium, Courant Institute, New York City, NY, November 4, 2014.
69. Miller, L. A. The fluid dynamics of jellyfish swimming and feeding. Institute for Marine Sciences, Morehead City, NC, September 18, 2014.
70. Miller, L. A. Life at intermediate Reynolds numbers. Plenary speaker, Society of Mathematical Biology, Osaka, Japan, July 28-August 1, 2014.
71. Miller, L. A. Scaling effects during heart development. Mathematical Biology Institute, Workshop on Mathematics Guiding Bioartificial Heart Valve Design, Columbus, OH, October 28-31, 2013.
72. Miller, L. A. Life at intermediate Reynolds numbers. Microscale Interactions in Aquatic Environments, Les Houches, France, March 10-15, 2013.
73. Miller, L. A. The fluid dynamics of steering in box and moon jellyfish. 2013 Winter Workshop on Locomotion, Tulane University, New Orleans, LA, January 17-18, 2013.
74. Miller, L. A. Electromechanical pumping in the embryonic tubular heart. Mathematical Biology Seminar, University of Utah, November 7, 2012.
75. Miller, L. A. Aerodynamics of flight in the smallest insects. Frontiers in Applied and Computational Mathematics, NJIT, Newark, NJ, May 18-20, 2012.
76. Miller, L. A. Towards a complete neuromechanical model of pumping in tubular hearts. CTW: Tissue Engineering and Regenerative Medicine, Mathematical Biology Institute, Columbus, OH, April 30-May 4, 2012.

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77. Miller, L. A. Excitable tissues in fluids. MIT Women in Mathematics Seminar, Boston, MA, April 24, 2012.
78. Miller, L. A. Uncovering the aerodynamics of the smallest flying insects using numerical simulations and physical models. The 2012 Annual Meeting of the Society of Integrative and Comparative Biology, Charleston, SC, January 3-7.
79. Miller, L. A., Santhanakrishnan, A., Cooper, L., Hedrick, T. The aerodynamics of insect flight with bristled wings. Entomological Society of America, Reno, NV, November 12-16.
80. Miller, L. A. Excitable tissues in fluids. The 7th Annual UNC Greensboro RMSC Conference, Morning Plenary Lecture, Greensboro, NC, November 3, 2011.
81. Miller, L. A. Three-dimensional flow through a simplified model of the endothelial surface layer. The 2011 Annual Meeting of the Biophysical Society, Baltimore, MD, March 5-9.
82. Miller, L. A. How jellyfish can inspire mathematics: A case study of the feeding currents generated by upside-down jellyfish. The 2011 Joint Meetings of the American Mathematical Society and the Mathematical Association of America, New Orleans, LA, January 4-9.
83. Miller, L. A. Tradeoffs between swimming and feeding: The curious case of the upside down jellyfish. Natural Locomotion in Fluids and on Surfaces: Swimming, Flying, and Sliding. Institute for Mathematics and its Applications, University of Minnesota, Minneapolis, MN, June 1-5, 2010.
84. Miller, L. A. Flight of the smallest insects. Mathematical Biology Seminar, University of California at Davis, Davis, CA, January 2010.
85. Miller, L. A. The fluid dynamics of feeding and swimming in the upside down jellyfish, *Cassiopea xamachana*. Mathematical Biology Seminar, the Georgia Institute of Technology, Atlanta, GA, December 3, 2009.
86. Miller, L. A. Combining experiments with numerical simulation: A case study of the flight of tiny insects. The 2009 Cha Cha Days, the University of Central Florida, Orlando, FL, November 6-8.
87. Miller, L. A. Aerodynamics of flight in thrips. The Ecology and Evolution Seminar, Rutgers University, New Brunswick, NJ, September, 2009.
88. Miller, L. A. Swimming and flying somewhere between the microscale and macroscale. USC Mechanical Engineering Seminar, Los Angeles, CA, January 23, 2009.
89. Miller, L. A. Swimming, flying, and pumping fluid at intermediate Reynolds numbers. UCSD, Biomechanics Seminar, San Diego, CA, January 21, 2009.
90. Miller, L. A. Fluid dynamics of the embryonic heart. IUPUI, Mathematical Sciences Colloquium, Indianapolis, IN, October 17, 2008.
91. Miller, L. A. The fluid dynamics of heart development. UCSB, Applied Mathematics Seminar, Santa Barbara, CA, July 2008.
92. Miller, L. A. The fluid dynamics of the early embryonic heart. Tulane University, Center for Computational Science Seminar, New Orleans, LA, February 19, 2008.
93. Miller, L. A. Fluid dynamics of embryonic heart development. Complex Matter and Biophysics Seminar, NC State University, Raleigh, NC, September 18, 2007.
94. Miller, L. A. Fluid dynamics within the developing embryonic heart. Duke University, Applications of Analysis to Mathematical Biology, Durham, NC, May 23, 2007.
95. Miller, L. A. Fluid Dynamics and mechanosensing in the developing embryonic heart. NYU, Applications of Mathematics in Biology, Physiology, and Medicine, New York, NY, October 21, 2006.
96. Miller, L. A. The significance of intermediate Reynolds number flows to biological form and development. Washington University, Bioengineering Seminar, Seattle, WA, February 23, 2006.
97. Miller, L. A. The significance of intermediate Reynolds number flows to biological form and development. UC Boulder, Applied Math Seminar, Boulder, CO, February 21, 2006.

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98. Miller, L. A. The significance of intermediate Reynolds number flows to biological form and development. Duke University, Dept. of Mathematics Colloquium, Durham, NC, February 16, 2006.
99. Miller, L. A. The significance of intermediate Reynolds number flows to biological form and development. UNC-CH, Mathematics Seminar, Chapel Hill, NC, February 2006.
100. Miller, L. A. The significance of intermediate Reynolds number flows to biological form and development. University of Michigan, Applied and Interdisciplinary Mathematics Seminar, Ann Arbor, MI, February 2, 2006.
101. Miller, L. A. The significance of intermediate Reynolds number flows to biological form and development. U of Iowa, Mathematics Colloquium, Iowa City, IA, January 30, 2006.

Public Lectures and Presentations

1. Miller, L. A. Equine Research at Al Marah. 10th Annual Informed Arizona Equestrian Horse Symposium. Al Marah Equine Center, Tucson, AZ, January 24-25, 2026.
2. Miller, L. A. Equations in Motion: Modeling horses and riders. Everything is Math, the Leo Kent Hotel, Tucson, AZ, November 20, 2025.
3. Miller, L. A. and Genua, B. Systems Biomechanics of the Horse: Applying Tools from Mathematics and Engineering to Horses. Classical Dressage Series Symposium, Barbier Farms, Healdsburg, CA, September 22-25, 2025.
4. Miller, L. A. How do you know if your horse's gait is asymmetrical? Tools from science and engineering. Dressage Talk Educational Event, Tucson Dressage Club, April 2, 2025.
5. Miller, L. A. *Horses in motion: A history of the biomechanics of movement*. Talk presented at the Arizona Senior Academy, Tucson, AZ, January 27, 2025.

Abstracts Presented

6. Miller, L.A., Santiago, M., and Hoover, A. P. Flows Generated by Jellyfish with Prominent Oral Arms. Coupled Problems 2025, Sardinia, Italy, May 25-28, 2025.
7. Miller, L. A. Quantifying and mathematical modeling gait asymmetries in horses. Talk presented at the Society for Integrative and Comparative Biology Annual Meeting, Atlanta, GA, January 3–7, 2025.
8. Miller, L. A., & Santiago, M., & Hoover, A. *Flows generated by jellyfish with prominent oral arms*. Talk presented at the SIAM Conference on the Life Sciences (LS24), Portland, OR, June 10–13, 2024.
9. Miller, L. A., Santiago, M., and Hoover, A. P. Couple Fluid-Structure Interaction Simulations of the Jets Generated by Upside-Down Jellyfish, Coupled 2023, Chania, Crete, Greece, June 5-7, 2023.
10. Miller, L. A. Multiscale flow between the branches and polyps of gorgonians. Annual Meeting of the Society of Integrative and Comparative Biology, Austin, TX, January 3-7, 2023.
11. Glickenstein, D., Lin, K. and Miller, L. A. Applied Mathematics and Statistics for Data-Driven Discovery. SIAM Conference on Applied Mathematics Education, Pittsburgh, PA, July 14-15, 2022.
12. Miller, L. A. Electromechanical Pumping in Embryonic Heart Tubes. SIAM Conference on the Life Sciences, Pittsburgh, PA, July 11-14, 2022.
13. Miller, L. A. and Hamlet, C. L. Multiscale flow through the branches of gorgonians. Microscale Ocean Biophysics Meeting, Majorca, Spain, May 22-27, 2022.
14. Miller, L. A. Planktos: A software framework for simulating plankton in flows at the scale of millimeters to meters. The 2022 Ocean Science Meeting (online), February 28-March 4, 2022.

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15. Miller, L. A. Multiscale flow between the branches and polyps of gorgonians. The 2022 Annual Meeting of the Society of Integrative and Comparative Biology (SICB+), Phoenix, AZ, January 4-7, 2022.
16. Miller, L. A. Multiscale flow between the branches and polyps of gorgonians. The 2021 Annual Meeting of the American Physical Society Division of Fluid Dynamics, Phoenix, AZ, November 21-23, 2021.
17. Miller, L. A. Slow and fast airflow past saguaro and other cacti. The 2021 Annual Meeting of the Society of Mathematical Biology. Online, June 13-17, 2021.
18. Miller, L. A. Flexible clap and peel in the smallest insects. American Physical Society Division of Fluid Dynamics. Online Meeting, Chicago, IL, November 22-24, 2020.
19. Miller, L. A. Flow Through and Around Sea Fans. The 2020 Meeting of the Society for Industrial and Applied Mathematics Life Sciences. Online Session, Biological Fluid Mechanics, July 1, 2020.
20. Miller, L. A. Fluid dynamics of nutrient exchange through the branched arrays of sea fans and jellyfish oral arms. The 2019 Annual Meeting of the American Physical Society Division of Fluid Dynamics, Seattle, WA, November 23-26, 2019.
21. Miller, L. A. Immersed boundary simulations of a ballooning spider and dragline within a stratified fluid. The 2019 Meeting of the International Congress on Industrial and Applied Mathematics, Valencia, Spain, July 15-19, 2019.
22. Miller, L. A. Mathematics and Cassiopea. The 2019 International Cassiopea Workshop, Key Largo Marine Research Laboratory, Key Largo, FL, May 7-12, 2019.
23. Miller, L. A. Fluid transport and mixing in tubular insect hearts. The 2019 Annual Meeting of the Society of Integrative and Comparative Biology, Tampa, FL, January 3-7, 2019.
24. Miller, L. A. Fluid dynamics of the flapping wings of the smallest insects. American Physical Society Division of Fluid Dynamics, Atlanta, GA, November 18-20, 2018.
25. Miller, L. A. Uncertainty analysis applied to model peristalsis to understand evolution. Annual Meeting of the Society of Mathematical Biology, Sydney, Australia, July 8-12, 2018.
26. Miller, L. A. Flow and prey capture within the oral arms of upside down jellyfish. 2nd Annual International *Cassiopea* Workshop, Key Largo, FL, May 12-17, 2018.
27. Miller, L. A. Pulsing soft corals generate sustained upward jets and regions of strong mixing between their tentacles. American Physical Society Division of Fluid Dynamics, Denver, CO, November 19-21, 2017.
28. Miller, L. A. Inferring Stratified Parasitoid Wasp Wind Dispersal Mechanisms and Parameters from Coarse Data. The 2017 Meeting of the Society of Mathematical Biology, Salt Lake City, UT, July 17-20, 2017.
29. Miller, L. A. Feeding and exchange flows generated by Cassiopea. The First International Cassiopea Workshop, Key Largo, FL, May 13-17, 2017.
30. Miller, L. A. and Jones, S. The role of bristles in wing-wing interactions. The 2017 Annual Meeting of the Society of Integrative and Comparative Biology, January 4-8, 2017.
31. Miller, L. A. Passive aerial dispersal of insects and other arthropods. The 69th Annual Meeting of the APS Division of Fluid Dynamics, Portland, OR, November 20-22, 2016.
32. Miller, L. A. Hydrodynamics of long distance transport of zooplankton by draglines. Microscale Ocean Biophysics Meeting, Eilat, Israel, October 30 – November 4, 2016.
33. Miller, L. A. Insect flight with bristled wings. Joint Meeting of the Society for Mathematical Biology and the European Society for Mathematical and Theoretical Biology, Nottingham, UK, July 11-15, 2016.

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34. Miller, L. A. The fluid dynamics and electrophysiology of pumping in the embryonic chordate heart. The 8th International Bio-fluid Symposium. Caltech, Pasadena, CA, February 12-14, 2016.
35. Miller, L. A. Plant Leaves Reconfigure into Cone Shapes to Reduce Drag and Flutter. The 68th Annual Meeting of the APS Division of Fluid Dynamics, Boston, MA, November 22-24, 2015.
36. Miller, L. A., Hoover, A., and Battista, N. Kinematics and Fluid Dynamics of Jellyfish Maneuvering. The 67th Annual Meeting of the American Physical Society Division of Fluid Dynamics Meeting, San Francisco, CA, November 22-25, 2014.
37. Miller, L. A. Plant Leaves Reconfigure into Cone Shapes to Reduce Drag and Flutter. Society for Industrial and Applied Mathematics Life Sciences Meeting, Charlotte, NC, August 4-7, 2014.
38. Miller, L. A. Plant Leaves Reconfigure into Cone Shapes to Reduce Drag and Flutter. The Annual Meeting of the Society for Industrial and Applied Mathematics, Chicago, IL, July 7, 2014.
39. Miller, L. A. and Fovargue, L. Flow near the ctenes of ctenophores. Annual Meeting of the Society for Integrative and Comparative Biology, January 3-7, 2014.
40. Miller, L. A. reconfiguration of broad leaves into cones. 66th Annual Meeting of the APS Division of Fluid Dynamics, Pittsburgh, PA, November 24-26, 2013.
41. Miller, L. A. Rolling up with the flow to reduce drag. Seventh M.I.T. Conference on Computational Fluid and Solid Mechanics, Cambridge, MA, June 12 - 14, 2013.
42. Miller, L. A. Fluid dynamics of forward swimming and turning for jellyfish. Society of Integrative and Comparative Biology 2013 Meeting, San Francisco, CA, January 3-7, 2013
43. Miller, L. A. Fluid dynamics of forward swimming and turning for jellyfish. 65th Annual Meeting of the APS Division of Fluid Dynamics, San Diego, CA, November 18-20, 2012.
44. Miller, L. A. Rolling up with the flow to reduce drag. AMS Fall Southeastern Section Meeting, Tulane University, New Orleans, LA, October 13-14, 2012.
45. Miller, L. A. Reynolds Number Limits for Jellyfish Swimming. 2012 SIAM Conference on the Life Sciences, San Diego, CA, August 7-10, 2013.
46. Miller, L. A. Electromechanical Pumping in the Embryonic Tubular Heart. 2012 SIAM Conference on the Life Sciences, San Diego, CA, August 7-10, 2013
47. Miller, L. A., Hamlet, C., Baird, A., and Rodriguez, T. Excitable tissues in fluids. 48th Annual Technical Conference of Society of Engineering Sciences (SES 2011), Evanston, IL, October 12-14.
48. Miller, L. A. and Hamlet, C. Capturing prey with porous boundaries: A case study using upside down jellyfish. The 7th International Congress on Industrial and Applied Mathematics (ICIAM 2011), Vancouver, Canada, July 18-22.
49. Miller, L. A., Hamlet, C., and Santhanakrishnan, A. The fluid dynamics of particle capture in jellyfish with inspiration for filtration devices. Computational Methods for Coupled Problems in Science and Engineering IV – “Coupled Problems 2011.” Kos Island, Greece, June 20-22.
50. Miller, L. A., Hamlet, C., and Santhanakrishnan, A. Rolling up with the flow to reduce drag and flutter: A study of broad leaves. The 2011 Annual Meeting of the Society for Comparative and Integrative Biology, Salt Lake City, UT, January 3-7.
51. Miller, L. A., Hamlet, C., and Santhanakrishnan, A. Rolling up with the flow to reduce drag: A numerical and experimental study inspired by leaves. The 2010 Annual Meeting of the American Physical Society Division of Fluid Dynamics, Long Beach, CA, November 20-23.
52. Miller, L. A. Flow around primary cilia, microvilli, and glycocalyx. The 2010 Annual Meeting of the Society of Mathematical Biology, Rio de Janeiro, Brazil, July 26-29.
53. Miller, L. A. Flight of the smallest insects. The 2010 Annual Meeting of the Society of Mathematical Biology, Rio de Janeiro, Brazil, July 26-29.

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54. Miller, L. A. Aerodynamics of tiny insect flight with bristled wings. The 2010 Annual Meeting of the Society of Industrial and Applied Mathematics – Life Sciences, Pittsburgh, PA, July 12-15.
55. Miller, L. A., Santhanakrishnan, A., and Hamlet, C. The Fluid Dynamics of Feeding and Swimming in the Upside Down Jellyfish. The 16th U. S. National Congress of Theoretical and Applied Mechanics, State College, PA, June 27 – July 2, 2010.
56. Miller, L. A., Santhanakrishnan, A., Hedrick, T., and Robinson, A. Flying and Parachuting in the Smallest Flying Insects. The 2010 Annual Meeting of the Society of Integrative and Comparative Biology, Seattle, WA, January 3-6.
57. Miller, L. A., Santhanakrishnan, A., Hedrick, T., and Robinson, A. Flight of the Smallest Insects. The 2009 Annual Meeting of the American Physical Society Division of Fluid Dynamics, Minneapolis, MN, November 22-24.
58. Miller, L. A. Scaling effects and fluid dynamics in heart development. The 2009 Annual Meeting of the Society for Mathematical Biology, Vancouver, Canada, July 27-30.
59. Miller, L. A. and Santhanakrishnan, A. Diving wasps: Swimming and flying at very low Reynolds numbers. The 2009 Annual Meeting of the Society for Integrative & Comparative Biology, Boston, MA, January 3-7.
60. Miller, L. A., Shenoy, A. and Santhanakrishnan, A. Fluid-structure interaction and electrophysiology of the embryonic heart. The 61st Annual Meeting of the APS Division of Fluid Dynamics, San Antonio, TX, November 23-25, 2008.
61. Miller, L. A. The lower Reynolds number limit of flapping flight. 2008 SIAM Conference on Life Sciences, Montreal, Quebec, August 4-7.
62. Miller, L. A. Vortex formation in the embryonic heart. The 2008 Annual Meeting of the Society for Integrative & Comparative Biology, San Antonio, TX, January 2-6.
63. Miller, L. A. To make a valve you have to put your heart into it. The 2007 Annual Meeting of the Society for Integrative & Comparative Biology, Phoenix, AZ, January 3-7.
64. Miller, L. A. Clap and peel in insect flight with flexible and bristled wings. The 2006 Annual Meeting of the Society for Integrative & Comparative Biology, Orlando, FL, January 4-8.
65. Miller, L. A. Flexible fling and flight in the smallest insects. The 2005 SIAM Annual Meeting, New Orleans, LA, July 11-15.
66. Miller, L. A. and Peskin, C. S. Wing flexibility, clap and fling, and fling in the smallest insects. The 2005 Annual Meeting of the Society for Integrative and Comparative Biology, San Diego, CA, January 4-8.
67. Miller, L. A. and Peskin, C. S. Tiny insects, sticking vortices, and clap and fling. The 2004 Annual Meeting of the Society for Integrative and Comparative Biology, New Orleans, LA, January 5-9.
68. Miller, L. A. and Peskin, C. S. A numerical simulation of 2-D insect flight. The 2002 Meeting of the Society for Integrative and Comparative Biology, Anaheim, CA, January 2-6.
69. Miller, L. A. A mathematical model of insect flight: The immersed boundary method with fling. The 2000 Annual Meeting of the Society for Integrative and Comparative Biology, Chicago, IL, January 3-7.
70. Miller, L. A. Motion that isn't locomotion: The torsional and lateral dynamics of trees. The 1999 Annual Meeting of the Society for Integrative and Comparative Biology, Denver, CO, January 6-10.
71. Miller, L. A. Seed release by wind - induced inertial forces in the sea oat *Uniola paniculata*. The 1998 Annual Meeting of the Society for Integrative and Comparative Biology, Boston, MA, January 3-7.

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Teaching and Mentoring Record

2020-	Department of Mathematics, University of Arizona <i>Instructor:</i> see course list below.
2013-2020	Department of Biology, University of North Carolina <i>Instructor:</i> see course list below.
2007 – 2019	Department of Mathematics, University of North Carolina <i>Instructor:</i> see course list below.
2004 – 2006	Department of Mathematics, University of Utah <i>Instructor:</i> Mathematics for Life Sciences, Calculus III <i>Mentor:</i> IGERT Program in Mathematical Biology
1999 - 2004	Department of Mathematics, New York University <i>Instructor:</i> Mathematical Thinking <i>Teaching Assistant:</i> Computers in Medicine and Life Sciences, Mathematics in Medicine and Life Sciences, Advanced Calculus, Mathematical Statistics, Precalculus, Quantitative Reasoning
2002 - 2004	Kaplan, Inc., K-12 Mathematics Division <i>Mathematics Writer:</i> Wrote teacher's guides and practice tests.
2001 - 2002	Computer Science, the City College of New York <i>Instructor:</i> Decision Analysis (Applied Probability)
1996 - 1999	Department of Zoology, Duke University <i>Teaching Assistant:</i> Animal Physiology, Cell Biology, Plant Anatomy
1995 - 1996	Biological Sciences Division, the University of Chicago <i>Teaching Assistant:</i> Intro. Biol. for Mathematicians and Physicists.

UA Courses Taught

Spring 2026	ACBS 272: Introduction to Horsemanship
Fall 2025	MATH 481: Mathematical modeling of fluid flow through and around organs and organisms MATH 119A: Calculus for Life Sciences
Spring 2025	Humanities Seminar Program: Horses in Motion. March 20-April 24, 2025 (rescheduled for 2026).
Fall 2024	MATH 481: Mathematical modeling of fluid flow through and around organs and organisms
Spring 2024	MATH 223: Vector Calculus
Fall 2023	MATH 481: Mathematical modeling of fluid flow through and around organs and organisms
Spring 2023	MATH 577: Introduction to Theoretical Fluid Dynamics

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Fall 2022	MATH 581A: Methods of Applied Mathematics I MATH 481: Mathematical modeling of fluid flow through and around organs and organisms
Fall 2021	MATH 481: Mathematical modeling of fluid flow through and around organs and organisms
Spring 2021	MATH 499: Independent Study

UNC Courses Taught

Spring 2021	MATH 499: Independent Study
Spring 2020	BIOL 226/226L: Introduction to Quantitative Biology
Fall 2019	BIOL 064: First Year Seminar: Flow around and through organs and organisms
Spring 2019	MATH 60: First Year Seminar: Simulated Life MATH 762: Numerical PDE's II
Spring 2018	BIOL 226/226L: Introduction to Quantitative Biology MATH 769: Mathematical Modeling II
Spring 2017	BIOL 226/226L: Introduction to Quantitative Biology MATH 60H: First Year Seminar on Simulated Life
Fall 2016	MATH 768: Mathematical Modeling I
Spring 2015	BIOL 226/226L: Introduction to Quantitative Biology MATH 769: Mathematical Modeling II
Spring 2014	BIOL 290: Introduction to Quantitative Biology
Summer 2013	MATH 295: Summer Mathematics for the Chancellor's Science Scholars
Spring 2013	MATH 769: Mathematical Modeling II
Fall 2012	MATH 060: First Year Seminar: Simulated Life
Spring 2012	MATH 564: Mathematical Modeling MATH 060: First Year Seminar: Simulated Life
Spring 2011	MATH 662: Scientific Computing II (Numerical Linear Algebra)
Fall 2010	MATH 231: (Biocalculus section), Calculus I MATH 051: Freshmen Year Seminar: Math and Mechanics
Spring 2010	MATH 892: Special Topics in Numerical Analysis: Math Biology
Fall 2009	MATH 231: (Biocalculus section), Calculus I MATH 051: Freshmen Year Seminar: Math and Mechanics
Fall 2008	MATH 564: Mathematical Modeling MATH 590: Mathematical Biology

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Spring 2008	MATH 232: (Biocalculus section), Calculus II
Fall 2007	MATH 564: Mathematical Modeling
Spring 2007	MATH 232: (Biocalculus section), Calculus II

Graduate Students Advised

Christina Hamlet	Ph.D., Mathematics, May 2011. Current position: Associate Professor, Bucknell University. Research focused on feeding currents generated by jellyfish & computational fluid dynamics.
Austin Baird	Ph.D., Mathematics, August 2014. Current position: Research Professor, University of Washington. Research focused on understanding the pumping mechanism in the embryonic heart tube.
Alex Hoover	Ph.D., Mathematics, August 2015. Current position: Assistant Professor, Cleveland State University. Research focused on how jellyfish morphology and muscle affect swimming performance.
Shannon Jones	Ph.D., Bioinformatics and Computational Biology student, co-advised with Ty Hedrick, May 2016. Current position: Postdoctoral Fellow, Department of Applied Physical Sciences, UNC. Research focused on flow through flexible and bristled insect wings.
Nick Battista	Ph. D., Mathematics, August 2017. Current position: Research Scientist, Los Alamos National Laboratories. Research focused on how trabeculation changes intracardial flows in the vertebrate embryonic heart.
Julia Samson	Ph.D., Biology, August 2018. Current position: Postdoctoral Fellow, Max Planck Institute. Research focused on how upside down jellyfish mix ocean waters in sheltered mangrove swamps, bays, and estuaries.
Michael Senter	Ph.D., Mathematics, May 2021. Current Position: Research Scientist: SAS. Research focuses on the aerial dispersal of very small insects.
Anne Talkington	M.S. Mathematics, May 2019. Current Position: Assistant Professor, University of Buffalo. Research focused on flows through lymphatic capillaries, network design of the lymphatic system.
Kemal Ozalp	Ph.D., Biology, December 2022. Research focused on movement of plankton around and above vegetation, collective behavior, fluid dynamics of canopies.
Addie Harrison	Ph.D., Applied Mathematics, May 2025. Research focused on the fluid-structure interaction problem of nematocyst barbs puncturing prey.
Dunia Fernandez	Applied math graduate student. Research focuses on the fluid-structure interaction problem of blood flow in tubular, embryonic hearts.
Rebekah Saucier	Applied math graduate student. Research focuses on feeding flows through the oral arms of upside down jellyfish.

Postdoctoral Mentoring

Aki Odera	Ph.D. Biology. Current Position: Assistant Professor, Stony Brook University, Department of Biology. Research is focused on upside down jellyfish as a model organism for understanding the proliferation of jellyfish as a result of climate change.
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Matea Santiago	Ph.D., Applied Mathematics. Current Position: Assistant Professor, CSU Easy Bay, Department of Mathematics. Research is focused on immersed boundary simulations of flow around pulsing corals and past flexible plants and leaves with a focus on heat dissipation and gas exchange.
Fabian Santiago	Ph.D., Applied Mathematics. Work focused on applications of mathematics and statistics to data science with a focus on applications in epidemiology and policy.
Christopher Strickland	Ph.D., Mathematics. Current position: Associate Professor, University of Tennessee, Department of Mathematics. Research focuses on the aerial dispersal of parasitoid wasps and the aquatic dispersal of plankton through vegetative layers.
Lindsay Waldrop	Ph.D., Biology. Current position: Assistant Professor, Chapman University, Department of Biology. Research focuses on chemical capture in marine invertebrates.
Arvind Santhanakrishnan	Ph.D., Mechanical Engineering. Current position: Associate Professor of Mechanical Engineering, Oklahoma State University. Research focused on experiments in biological fluid dynamics.

Undergraduates Advised on Research Projects

2025	Savanna Saunders (Ecology and Evolution), Tashia Spiess (Racetrack Industry Program), Eli Williams (MCB), Isabelle Tillman (Data Science), Jenny Geng (Data Science).
2024	Citlali Ramirez (Mathematics), Savanna Saunders (Ecology and Evolution), Garrick Krautz (Animal Science), Cali Gillespie (Animal Science), Nadera Alami (Animal Science).
2023	Citlali Ramirez (Mathematics), Savanna Saunders (Ecology and Evolution)
2022	Hrithik Aghav (Mathematics/Mechanical Engineering), Alyssa Connolly (Biology), Citlali Ramirez (Mathematics), Kunal Shokeen (Physics).
2021	Jaclyn John (Physics), Hrithik Aghav (Mechanical Engineering), Tiancheng Xu (Mathematics)
2020	Sage Snider (Biology), Tenghao Huang (CS), Angela Nam (Marine Science), Ian Sapp (Biology), Clarisel Lozano (Biology), Colette Anikwue (Biology).
2019	Miles Hackett (BME), Maddie Braye (Mathematics), Sage Snider (Biology), Abinav Katuru (Exercise and Sports Science), Gloria Hope (Physics), Liam Pongracz (Biostatistics), Reagan Howell (Biology), Thomas Dix (Biology).
2018	Grace McLaughlin (Math and Biology), Alex Davis (Biology), Miles Hackett (BME), Dylan Ray (Mathematics), James Zak (Mathematics), Maddie Braye (Mathematics).
2017	Grace McLaughlin (Math and Biology), Alex Davis (Biology), Miles Hackett (BME), Dylan Ray (Mathematics), James Zak (Mathematics), Cody Marik (Biology), Hannah Frediani (Mathematics), Maddie Braye (Mathematics).
2016	Grace McLaughlin (Math and Biology), Andrea Lane (Biostatistics), Alex Davis (Biology), Mark Eyster (Math), Miles Hackett (BME)
2015	Grace McLaughlin (Math), Andrea Lane (Biostatistics), Antonio Porras (Math), Young Yun (Biology), Madeline Heater (Biology), Sami Cherikh

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	(Biology), Joe Smith (Computational Physics REU), Aaron Scheets (Computational Physics REU)
2014	Grace McLaughlin (Math), Joy Hill (Environmental Science), John Cruickshank (Biology), Andrea Lane (Biostatistics), Antonio Porras (Math), Young Yun (undecided), Ryan Laurenza (Math)
2013	Andrea Lane (Math), Helen Warner (Computational Physics REU), Steven Harrelson (Computational Physics REU), Sneha Gadi (Chemistry), Tiffany King (Math), Roger Fan (Math and Biology)
2012	Carol Knight (Computational Physics REU), Tiffany King (Math), Cheryl AbuMoussa (SMART), Maria Edwards (SMART), Sneha Gadi (Chemistry), Roger Fan (Math and Biology)
2011	Terry Rodriguez (Math), Audrey Lowe (Math), Steve Harberger (Math), Makani Dollinger (Chemistry), Megan Gyoerkoe (Marine Science), Tiffany King (Math), Roger Fan (Math), Johnny Reis (Math)
2010	Terry Rodriguez (Applied Math), Audrey Lowe (Math), Steve Harberger (Math), Makani Dollinger (Chemistry), Megan Gyoerkoe (Marine Science), Walt Rodgers (Marine Science)
2009	Jennifer Gunderson (Applied Science), David Harris (Applied Math), Taylor Tappe (Applied Science), Terry Rodriguez (Applied Math)
2008	Jennifer Gunderson (Applied Science), Amber Kerndodle (Chemistry), Nhi Nguyen (Chemistry), John Tappe (Applied Science)
2007	David Brandl (Math), Jennifer Gunderson (Applied Science), David Marron (Applied Math), Jennifer Smyla (Math)

Professional Service

Service to Discipline

Workshop / Symposium Organizer	Dynamics Days, University of Arizona, Tucson, AZ, January 9-11, 2026; Human-Agent Teaming and Horse and Human Partnership Workshop, University of Arizona, Tucson, AZ, January 10-15; AIMEC-NSF Joint Workshop for the Model Species Cassiopea: Molecular Analysis with Gridion and Fluidic Dynamics, October 28 - November 1, 2024 at Tohoku University's Onagawa Field Center (2024); Symposium on Systems Biomechanics of the Horse (2024); International Cassiopea Workshop (2020-present); Statistical and Applied Mathematical Sciences Institute, Programs on Mathematical and Statistical Methods in Ecology (2014-2015) and Computational Neuroscience (2015-2016).
Secretary	Society of Industrial and Applied Mathematics, Life Sciences, 2010-2012.
Program Officer	Society of Integrative and Comparative Biology, Division of Comparative Biomechanics, 2011-2013.
Working Group Leader	A Research Collaboration Workshop for Women in Mathematical Biology April, 2017, at MBI, the Ohio State University, Columbus, OH. A Research Collaboration Workshop for Women in Mathematical Biology June 22-25, 2015, at NIMBioS, University of Tennessee, Knoxville, TN.

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Chair/Vice Chair	American Physical Society Division of Fluid Dynamics Educational and Outreach Committee Vice Chair (2017) and Chair (2018).
Member	American Mathematical Society, Society for Industrial and Applied Mathematics, Society for Integrative and Comparative Biology, Association for Women in Mathematics, Society for Mathematical Biology, American Physical Society, Biophysical Society
Panelist	2009, 2011, 2012, 2013, 2017, 2018, 2020, 2025 NSF DMS; 2012, 2016 NSF IOS; 2015, 2020, 2023 NSF CBET; 2026 NSF PoLS
Editorial	Mathematical and Computational Fluids Section Editor for <i>Fluids</i> , Guest Editor for <i>Frontiers Physics</i> , Guest Editor for <i>Fluids</i>
Co-/Organizer	2026 SIAM LS Minisymposium, Biofluids Across Scales: Locomotion, Soft Actuation, and Hemodynamics 2021, 2022, 2023, 2024, 2025 International Cassiopea Workshop 2022 SIAM LS Minisymposium, “Mathematical Modeling of Embryonic Heart Physiology and Pathophysiology” 2021 SMB Minisymposium, “Fluid dynamics of swimming organisms.” 2018 SMB Minisymposium, “How mixing generates spatial gradients significant to signalling, waste removal, and the distribution of microorganisms.” 2017 SIAM Life Sciences, Organizing Committee 2016 SAMSI Workshop on Neuromuscular Control and Collective Behavior 2015 SAMSI Workshop on The Physical Ecology of Organism Mixing and Dispersal in Fluids 2105 SICB Symposium and Workshop on Leading Students and Faculty to Quantitative Biology through Active Learning 2014 SIAM Life Science Symposium on Biological Fluid Dynamics 2014 RCN Conference on Neuromechanics 2012 SICB Symposium and Associated Workshop on Combining Mathematical Models and Experiments to Understand Animal Locomotion 2011 ICIAM Minisymposium on Fluid-Structure Interaction Problems 2008 SIAM LS Minisymposium on Swimming, Flying and Pumping

University Service

Faculty Learning Communities	<i>University of Arizona - Faculty Learning Community</i> (Fall 2020) on student writing across the disciplines. <i>University of North Carolina - Keen Faculty Learning Community</i> (2019-2020). The goal of this FLC is to enhance classes to incorporate entrepreneurial minded learning. <i>Research Related Skills Course Faculty Learning Community</i> (2019-2020). The objective of this FLC is to develop a curriculum that prepares students to critically analyze scholarly literature and improve scholarly writing. <i>Makerspace Faculty Learning Community</i> (2018-2019). The goal of this FLC is to use the UNC Makerspace to enhance learning and making. <i>Finish Line Faculty Learning Community</i> (2017-2018). The FLC aims to improve outcomes for first generation students.
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Department Committees	<i>University of Arizona</i> – Associate Head for STEM Instruction (2023, 2024-2025), BME Assessment Committee (2025-), Mathematics Undergraduate Committee (2023-), Mathematics Climate and Diversity Committee (2021, Chair 2023-2025), Mathematics Department Colloquium (2022-2023), Graduate Committee (2021-2023), Mathematics Personnel Committee (2021-2023), Strategic Planning Committee (2021-2022), Quantitative Biology Steering Committee (2021-2025), Modeling and Computation Seminar (2020-2022), Mathematics, Applied Mathematics Graduate Admissions Committee (2021, 2024, 2025) <i>University of North Carolina</i> - Biology Department Curriculum Committee (2019-present), Mathematics Department Honors Advisor (2016-2018), Director of Graduate Studies, Mathematics (2013 – 2015), Mathematics Department Advisory Committee (2015-2016), Mathematics Department Undergraduate Committee (2010-2011 and 2016-2017), Mathematics Department Graduate Committee (2011-2015), Mathematics Department Diversity Liaison (2012-2013), Biology Department Quantitative Biology Committee Co-chair (2012-present), Biology Department Computer Committee (2012-present), UNC Applied Mathematics Seminar (2008-2009, 2011-2013)
University Committees	<i>University of Arizona</i> - 2022 Dean’s Strategic Planning Committee, SPFI Reviewer (2022-), SPFI Mentor (2022-) <i>University of North Carolina</i> - Steering Committee for Makerspace (2016-present), Steering Committee for Chancellor’s Science Scholars (2013-2014), internal HHMI International Graduate Student Fellowship Selection Committee (2012, 2013), Goldwater Scholarship Committee (2010-2016), UNC Interdisciplinary Graduate Fellowship Committee (2009)
Thesis Committees	<i>University of Arizona</i> - Applied Mathematics: Grace Lee, Dunia Fernandez, Addie Harrison, Rebekah Saucier, Akshita Sharma; Physics: Jesus Torres Burruel, Tanner Saadi, Ernesto Torres Burruel <i>University of North Carolina</i> - Mathematics: Wanda Strychalski, Brandon Lindley, Joyce Lin, Ke Xu, Matthew Moore, Amanda Traud, Jennifer Joyce Young, Longhua Zhao, Christina Hamlet, Lauren Fovargue, Sunyoung Bu, Shengqian Chen, Jessica Wehner, Brianna Fisher, Amber Bess Sallerson Jackson, Bo Zhang, James Martindale, Gregory Herschlag, Daniel Fovargue, Austin Baird, Anil Shenoy, Joan Pharr, Namdi Brandon, Chung-Nan Tzou, Alex Hoover, Nick Battista, Manuchehr Aminian, Holly Arrowood, Claudia Falcon, Wenhua Guan, Chung-nan Tzou, Claudia Falcon, Francesca Bernardi, Brian Adams, Mike Lee, Ben Vadala-Roth, Yanni Lai Biology: Pranav Khandelwal, Jeremy Greeter, Julia Samson, Ryan Shelton BCB: Natalie Stanley, Shannon Jones, Patrick McCarter
University Workshops	Participant in the 2010 UNC workshop: The Entrepreneurial Mindset — Maximizing Faculty Impact