

## Sean D. Lawley

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CONTACT INFORMATION      University of Utah      (801) 585-1633  
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Salt Lake City, UT, 84112-0090

RESEARCH INTERESTS      Mathematical Biology, Probability and Stochastic Processes, Applied Mathematics

EMPLOYMENT      **University of Utah**  
Associate Professor, 2021-present  
Assistant Professor, 2016-2021  
Research Assistant Professor, 2014-2016

EDUCATION      **Duke University**  
Ph.D., Mathematics with Certificate in College Teaching, May 2014  
Advisors: Jonathan C. Mattingly and Michael C. Reed  
M.A., Mathematics, 2011  
**Carnegie Mellon University**  
B.S., Computational Finance, 2009

GRANTS AND AWARDS      

- NSF DMS-2325258, 2023-2026: eMB: Collaborative Research: Stochasticity in ovarian aging and biotechnologies for menopause delay, \$594,570 (\$333,589 to Utah). PI: SD Lawley. co-PI: J Johnson (University of Colorado School of Medicine).
- NSF DMS-1944574, 2020-2025: CAREER: How diffusion, dimension, geometry, and redundancy affect cellular dynamics, \$450,000 (Sole PI). Funded by DMS/Mathematical Biology and MCB/Cellular Dynamics and Function.
- NSF DMS-1814832, 2018-2023: Diffusion in stochastic environments: analysis and biological applications, \$250,000 (Sole PI).
- SIAM Activity Group on Life Sciences Early Career Prize, 2018.
- NSF DMS RTG-1148230: Research training in mathematical and computational biology, \$2,496,299 (co-PI 2016-2020).
- L.P. and Barbara Smith Award for Teaching Excellence, 2013.

PUBLICATIONS AND PREPRINTS      (\* denotes undergraduate student co-author, \*\* denotes graduate student co-author)

- submitted 78. S Linn\*\*, SD Lawley. Hitting probabilities for fast stochastic search. *Submitted*.
77. A Cengiz\*\*, SD Lawley. Modifying the narrow escape time for imperfect reactions. *Submitted*.
76. S Linn\*\*, SD Lawley, BR Karamched, ZP Kilpatrick, K Josić. Fast decisions reflect biases, slow decisions do not. *Submitted*. (arXiv:2401.00306).
75. SD Lawley. Competition of many searchers. Invited book chapter in “The Target Problem,” editors: DS Grebenkov, R Metzler, G Oshanin. (arXiv:2310.02157).
- in press 74. CE Plunkett\*\*, SD Lawley. Boundary homogenization for partially reactive patches. *Multiscale Modeling and Simulation*, in press.
73. D Gomez, SD Lawley. First hitting time of a one-dimensional Lévy flight to small targets. *SIAM Journal on Applied Mathematics*, in press. (arXiv:2307.06274).

- 2024 72. HR Tung, SD Lawley. Understanding and quantifying network robustness to stochastic inputs. *Bulletin of Mathematical Biology*, 86(55), 2024.
71. H Kim, SD Lawley. Cover times of many diffusive or subdiffusive searchers. *SIAM Journal on Applied Mathematics*, 84(2), 2024. (arXiv:2308.13417).
70. J Johnson, SD Lawley, JW Emerson, K Oktay. Modeling delay of age at natural menopause with planned tissue cryopreservation and autologous transplantation. *American Journal of Obstetrics & Gynecology*, 2024.
69. H Kim, SD Lawley. Cover times of many random walkers on a discrete network. *Physical Review E*, 109(1), 2024 (arXiv:2310.07905).
68. SD Lawley, MD Sammel, N Santoro, J Johnson. Mathematical recapitulation of the end stages of human ovarian aging. *Science Advances*, 10(2), 2024.
67. ED Clark\*\*, SD Lawley. How drug onset rate and duration of action affect drug forgiveness. *Journal of Pharmacokinetics and Pharmacodynamics*, 2024.
- 2023 66. S Linn\*\*, SD Lawley. First passage times under frequent stochastic resetting. *Physical Review E*, 108(2), 2023.
65. SD Lawley. Extreme statistics of superdiffusive Lévy flights and every other Lévy subordinate Brownian motion. *Journal of Nonlinear Science*, 33(53), 2023. (arXiv:2103.07851).
64. SD Lawley, J Johnson. Slowest first passage times, redundancy, and menopause timing. *Journal of Mathematical Biology*, 86(90), 2023.
63. SD Lawley, J Johnson. Why is there an “oversupply” of human ovarian follicles? *Biology of Reproduction*, 108(5), 2023.
62. CE Plunkett\*\*, SD Lawley. Boundary homogenization for patchy surfaces trapping patchy particles. *Journal of Chemical Physics*, 158(9), 2023.
- 2022 61. AM Alexander\*\*, SD Lawley. Inferences from FRAP data are model dependent: a subdiffusive analysis. *Biophysical Journal*, 121(20), 2022.
60. J Johnson, JW Emerson, SD Lawley. Recapitulating human ovarian aging using random walks. *PeerJ*, 10:e13941, 2022.
59. S Linn\*\*, SD Lawley. Extreme hitting probabilities for diffusion. *Journal of Physics A: Mathematical and Theoretical*, 55(34), 2022. (arXiv:2110.11277).
58. ED Clark\*\*, SD Lawley. Should patients skip late doses of medication? A pharmacokinetic perspective. *Journal of Pharmacokinetics and Pharmacodynamics*, 2022.
57. SD Lawley, HF Nijhout, MC Reed. Spiracular fluttering decouples oxygen uptake and water loss: a stochastic PDE model of respiratory water loss in insects. *Journal of Mathematical Biology*, 84(40), 2022.
56. NP McAllister\*, SD Lawley. A pharmacokinetic and pharmacodynamic analysis of drug forgiveness. *Journal of Pharmacokinetics and Pharmacodynamics*, 2022.
55. ED Counterman\*, SD Lawley. Designing drug regimens that mitigate nonadherence. *Bulletin of Mathematical Biology*, 84(20), 2022. (arXiv:2108.08358).  
*Awarded 2023 Lee A. Segel Best Student Paper Prize of the Society for Mathematical Biology.*
- 2021 54. AM Alexander\*\*, SD Lawley. Reaction-subdiffusion equations with species-dependent movement. *SIAM Journal on Applied Mathematics*, 81(6), 2021. (arXiv:2104.11151).
53. Y Bakhtin, T Hurth, SD Lawley, JC Mattingly. Singularities of invariant densities for random switching between two linear ODEs in 2D. *SIAM Journal on Applied Dynamical Systems*, 20(4), 2021. (arXiv:2009.01299).
52. ED Counterman\*, SD Lawley. What should patients do if they miss a dose of medication? A theoretical approach. *Journal of Pharmacokinetics and Pharmacodynamics*, 2021. (arXiv:2102.05442).

51. G Handy, SD Lawley. Revising Berg-Purcell for finite receptor kinetics. *Biophysical Journal*, 120(11), 2021. (arXiv:2101.05956).
50. SD Lawley. Extreme first passage times of piecewise deterministic Markov processes. *Nonlinearity*, 34(5), 2021. (arXiv:1912.03438).
49. CE Plunkett\*\*, SD Lawley. Bimolecular binding rates for pairs of spherical molecules with small binding sites. *Multiscale Modeling and Simulation*, 19(1), 2021. (arXiv:2002.11703).
48. SD Lawley. The effects of fast inactivation on conditional first passage times of mortal diffusive searchers. *SIAM Journal on Applied Mathematics*, 81(1), 2021. (arXiv:2003.05515).
- 2020 47. SD Lawley. Extreme first passage times for random walks on networks. *Physical Review E*, 102(6), 2020. (arXiv:2008.04496). *Promoted by the editors as an 'Editor's Suggestion' featured article.*
46. SD Lawley. Subdiffusion-limited fractional reaction-subdiffusion equations with affine reactions: solution, stochastic paths, and applications. *Physical Review E*, 102(4), 2020. (arXiv:2008.09949).
45. SD Lawley. Anomalous reaction-diffusion equations for linear reactions. *Physical Review E*, 102(3), 2020. (arXiv:2008.11579).
44. SD Lawley. Extreme statistics of anomalous subdiffusion following a fractional Fokker-Planck equation: Subdiffusion is faster than normal diffusion. *Journal of Physics A: Mathematical and Theoretical*, 53(38), 2020. (arXiv:2004.14994).
43. JB Madrid\*\*, SD Lawley. Competition between slow and fast regimes for extreme first passage times of diffusion. *Journal of Physics A: Mathematical and Theoretical*, 53(33), 2020. (arXiv:2004.05414).
42. SD Lawley, AE Lindsay, CE Miles. Receptor organization determines the limits of single-cell source location detection. *Physical Review Letters*, 125(1), 2020.
41. SD Lawley, V Shankar. Asymptotic and numerical analysis of a stochastic PDE model of volume transmission. *Multiscale Modeling and Simulation*, 18(2), 2020. (arXiv:1812.11680).
40. SD Lawley, MC Reed, HF Nijhout. Spiracular fluttering increases oxygen uptake. *PLOS ONE*, 15(5), 2020.
39. P Murphy\*\*, PC Bressloff, SD Lawley. Interaction between switching diffusivities and cellular microstructure. *Multiscale Modeling and Simulation*, 18(2), 2020.
38. SD Lawley. Distribution of extreme first passage times of diffusion. *Journal of Mathematical Biology*, 80(7), 2020. (arXiv:1910.12170).
37. PC Bressloff, SD Lawley, P Murphy\*\*. Effective permeability of a gap junction with age-structured switching. *SIAM Journal on Applied Mathematics*, 80(1), 2020.
36. SD Lawley. Universal formula for extreme first passage statistics of diffusion. *Physical Review E*, 101(1), 2020. (arXiv:1909.09883).
35. SD Lawley, JB Madrid\*\*. A probabilistic approach to extreme statistics of Brownian escape times in dimensions 1, 2, and 3. *Journal of Nonlinear Science*, 2020. (arXiv:1907.07515).
- 2019 34. SD Lawley. Boundary homogenization for trapping patchy particles. *Physical Review E*, 100(3), 2019.
33. SD Lawley, CE Miles. Diffusive search for diffusing targets with fluctuating diffusivity and gating. *Journal of Nonlinear Science*, 29(6), 2019.
32. SD Lawley, CE Miles\*\*. How receptor surface diffusion and cell rotation increase association rates. *SIAM Journal on Applied Mathematics*, 79(3), 2019.
31. SD Lawley, JB Madrid\*\*. First passage time distribution of multiple impatient particles with reversible binding. *Journal of Chemical Physics*, 150(21), 2019. *Promoted by the editors as an 'Editor's pick' featured article.*
30. SD Lawley, JP Keener. Electrodiffusive flux through a stochastically gated ion channel. *SIAM Journal on Applied Mathematics*, 79(2), 2019.

29. PC Bressloff, SD Lawley, P Murphy\*\*. Protein concentration gradients and switching diffusions. *Physical Review E*, 99(3), 2019.
28. G Handy\*\*, SD Lawley, A Borisyuk. Role of trap recharge time on the statistics of captured particles. *Physical Review E*, 99(2), 2019.
- 2018 27. SD Lawley. Blowup from randomly switching between stable boundary conditions for the heat equation. *Communications in Mathematical Sciences*, 16(4), 2018.
26. CE Miles\*\*, SD Lawley, JP Keener. Analysis of non-processive molecular motor transport using renewal reward theory. *SIAM Journal on Applied Mathematics*, 78(5), 2018.
25. PC Bressloff, SD Lawley, P Murphy\*\*. Diffusion in an age-structured randomly switching environment. *Journal of Physics A: Mathematical and Theoretical*, 51(31), 2018.
24. SD Lawley. A probabilistic analysis of volume transmission in the brain. *SIAM Journal on Applied Mathematics*, 78(2), 2018.
23. G Handy\*\*, SD Lawley, A Borisyuk. Receptor recharge time drastically reduces the number of captured particles. *PLoS Computational Biology*, 14(3), 2018.
22. Y Bakhtin, T Hurth, SD Lawley, JC Mattingly. Smooth invariant densities for random switching on the torus. *Nonlinearity*, 31(4), 2018.
- 2017 21. PC Bressloff, BR Karamched\*\*, SD Lawley, E Levien\*\*. Diffusive transport in the presence of stochastically gated absorption. *Physical Review E*, 96(2), 2017.
20. SD Lawley, JP Keener. Rebinding in biochemical reactions on membranes. *Physical Biology*, 14(5), 2017.
19. PC Bressloff, SD Lawley. Hybrid colored noise process with space-dependent switching rates. *Physical Review E*, 96(1), 2017.
18. PC Bressloff, SD Lawley. Mean first passage times for piecewise deterministic Markov processes and the effects of critical points. *Journal of Statistical Mechanics: Theory and Experiment*, 063202, 2017.
17. PC Bressloff, SD Lawley. Temporal disorder as a mechanism for spatially heterogeneous diffusion. *Physical Review E - Rapid Communication*, 95(6), 2017.
16. PC Bressloff, SD Lawley. Residence times of a Brownian particle with temporal heterogeneity. *Journal of Physics A: Mathematical and Theoretical*, 50(19), 2017.
15. PC Bressloff, SD Lawley. Dynamically active compartments coupled by a stochastically-gated gap junction. *Journal of Nonlinear Science*, 27(5), 2017.
- 2016 14. SD Lawley, JP Keener. Including rebinding reactions in well-mixed models of distributive biochemical reactions. *Biophysical Journal*, 111(10), 2016.
13. PC Bressloff, SD Lawley. Diffusion on a tree with stochastically-gated nodes. *Journal of Physics A: Mathematical and Theoretical*, 49(24), 2016. *Named to the journal's 'Highlights of 2016' collection.*
12. SD Lawley. Boundary value problems for statistics of diffusion in a randomly switching environment: PDE and SDE perspectives. *SIAM Journal on Applied Dynamical Systems*, 15(3), 2016.
11. SD Lawley, J Best, MC Reed. Neurotransmitter concentrations in the presence of neural switching in one dimension. *Discrete and Continuous Dynamical Systems - Series B*, 21(7), 2016.
- 2015 10. PC Bressloff, SD Lawley. Stochastically gated diffusion-limited reactions for a small target in a bounded domain. *Physical Review E*, 92(6), 2015.
9. PC Bressloff, SD Lawley. Escape from subcellular domains with randomly switching boundaries. *Multiscale Modeling and Simulation*, 13(4), 2015.
8. SD Lawley, M Tuft\*, HA Brooks\*\*. Coarse-graining intermittent intracellular transport: Two- and three-dimensional models. *Physical Review E*, 92(4), 2015.

7. SD Lawley, JP Keener. A new derivation of Robin boundary conditions through homogenization of a stochastically switching boundary. *SIAM Journal on Applied Dynamical Systems*, 14(4), 2015.
6. PC Bressloff, SD Lawley. Escape from a potential well with a randomly switching boundary. *Journal of Physics A: Mathematical and Theoretical*, 48(22), 2015.
5. PC Bressloff, SD Lawley. Moment equations for a piecewise deterministic PDE. *Journal of Physics A: Mathematical and Theoretical*, 48(10), 2015. Chosen by editors as '**Publisher's pick**' featured article.
4. SD Lawley, JC Mattingly, MC Reed. Stochastic switching in infinite dimensions with applications to random parabolic PDE. *SIAM Journal on Mathematical Analysis*, 47(4), 2015.
- 2014 3. SD Lawley, JC Mattingly, MC Reed. Sensitivity to switching rates in stochastically switched ODEs. *Communications in Mathematical Sciences*, 12(7), 2014.
2. SD Lawley, J Yun\*, M Gamble, M Hall, MC Reed, HF Nijhout. Mathematical modeling of the effects of glutathione on arsenic methylation. *Theoretical Biology and Medical Modelling*, 11(20), 2014.
- 2011 1. SD Lawley, M Cinderella\*, M Hall, M Gamble, HF Nijhout, MC Reed. Mathematical model insights into arsenic methylation. *Theoretical Biology and Medical Modelling*, 8(31), 2011.

TALKS

University of California, Riverside PDE and Applied Math Seminar Riverside, USA (remote seminar)	May 2024
University of Notre Dame Applied Math Seminar Notre Dame, USA	April 2024
University of Pittsburgh Mathematical Biology Seminar Pittsburgh, USA	April 2024
New Jersey Institute of Technology Mathematical Biology Seminar Newark, USA	March 2024
University of Pennsylvania Mathematical Biology Seminar Philadelphia, USA	March 2024
Duke University Mathematical Biology Seminar Durham, USA	March 2024
Florida Institute of Technology Mathematical Sciences Colloquium Melbourne, USA	February 2024
University of Florida College of Medicine Lab for Systems Medicine Seminar Gainesville, USA	February 2024
Florida State University Math Bio Seminar Tallahassee, USA	February 2024
Tulane University Applied Math Seminar New Orleans, USA	February 2024
Rice University Center for Theoretical Biological Physics Seminar Houston, USA	January 2024

University of Houston Mathematical Biology Seminar Houston, USA	January 2024
Texas A&M University Stochastic Processes Seminar College Station, USA	January 2024
Texas A&M University Mathematical Biology Seminar College Station, USA	January 2024
University of Arizona Quantitative Biology Colloquium Tempe, USA	January 2024
Arizona State University Mathematical Biology Seminar Tempe, USA	January 2024
University of California, Irvine Applied and Computational Mathematics Seminar Irvine, USA	January 2024
Washington State University Mathematical Biology Seminar Pullman, USA (remote seminar)	October 2023
HBCU-MBCU (Historically Black Colleges and Universities Math Bio Colloquium for Undergrads) Remote colloquium livestreamed to several HBCUs	September 2023
ICIAM Minisymposium: Stochastic modeling in cell biology Tokyo, Japan	August 2023
Society for Mathematical Biology Annual Meeting Lee Segel Plenary Session Columbus, USA	July 2023
University of Pennsylvania Mathematical Biology Seminar Philadelphia, USA	April 2023
Math Bio Workshop on Stochastic Spatial Dynamics Logan, USA	April 2023
University of Minnesota Mathematical Biology Seminar Minneapolis, USA (remote seminar)	September 2022
Duke University Mathematical Biology Seminar Durham, USA (remote seminar)	April 2022
University of New Mexico Applied Math Seminar Albuquerque, USA (remote seminar)	April 2022
Brandeis University Mathematical Biology Seminar Boston, USA (remote seminar)	October 2021
Dalhousie University Mathematics & Statistics Colloquium Halifax, Canada (remote colloquium)	September 2021

New Trends in Localized Patterns in PDEs Vancouver, Canada (remote meeting)	May 2021
SIAM Dynamical Systems Minisymposium: The interplay between dynamics and data science Portland, USA (made a virtual conference due to COVID-19)	May 2021
Indiana University Probability Seminar Bloomington, USA (remote seminar)	April 2021
ICMC Summer Meeting on Differential Equations Sao Carlos, Brazil (made a virtual conference due to COVID-19)	February 2021
University of Houston Mathematics Department Colloquium Houston, USA (remote colloquium)	January 2021
SIAM Life Sciences Minisymposium: Multiscale Modeling for Rules of Life Orange County, USA (minisymposium cancelled due to COVID-19)	June 2020
Mathematical and Computational Methods in Biology Mathematical Biosciences Institute, Ohio State University Columbus, USA (made a virtual conference due to COVID-19)	May 2020
University of Notre Dame Applied Math Seminar Notre Dame, USA (postponed due to COVID-19)	April 2020
Workshop on Differential Equations and Applications in Biology Orlando, USA (cancelled/postponed due to COVID-19)	March 2020
Utah State University Applied Math Seminar Logan, USA	January 2020
AMS Special Session: Multi-Scale Modeling of Complex Biological Systems Riverside, USA	November 2019
New Jersey Institute of Technology Applied Mathematics Colloquium Newark, USA	September 2019
SIAM Dynamical Systems Minisymposium: Advances in reaction diffusion systems Snowbird, USA	May 2019
Conference on Recent Advances in Pure and Applied Stochastics New Orleans, USA	March 2019
Tufts University Mathematics Colloquium Boston, USA	March 2019
Washington State University Mathematics Colloquium Pullman, USA	January 2019
University of Neuchâtel Mathematics Colloquium Neuchâtel, Switzerland	December 2018
Workshop on Advanced asymptotics in PDEs, probabilistic methods	September 2018

in statistical physics for extreme statistics, and rare events  
Pisa, Italy

Colorado State University Applied Math Seminar Fort Collins, USA	September 2018
SIAM Life Sciences Minisymposium: Agent-based Modeling in the Life Sciences Minneapolis, USA	August 2018
AMS Special Session: Biomathematics - Progress and Future Directions Portland, USA	April 2018
SIAM Dynamical Systems Minisymposium: Random Dynamics in Microbiology Snowbird, USA	May 2017
University of California, Irvine Applied and Computational Mathematics Seminar Irvine, USA	March 2017
Tulane University Probability and Statistics Seminar New Orleans, USA	November 2016
University of Alberta Applied Mathematics Institute Seminar Edmonton, Canada	November 2016
University of Alberta Mathematical Biology Seminar Edmonton, Canada	October 2016
AIMS Conference special session: Randomness meets life Orlando, USA	July 2016
Frontier Probability Days Salt Lake City, USA	May 2016
Stochastic and deterministic dynamics in networks workshop Mathematical Biosciences Institute, Ohio State University Columbus, USA	February 2016
University of Utah Special Colloquium Salt Lake City, USA	February 2016
University of Arizona Special Colloquium Tucson, USA	January 2016
JMM Minisymposium: Probability meets dynamics in biology Seattle, USA	January 2016
University of Utah Joint Applied Math/Math Biology/Stochastics Seminar Salt Lake City, USA	December 2015
University of Idaho Center for Modeling Complex Interactions Seminar Moscow, USA	November 2015
University of Colorado Boulder Applied Mathematics Seminar Boulder, USA	November 2015



University of British Columbia Stochastic Dynamics Seminar Vancouver, Canada	September 2015
AMMCS-CAIMS Minisymposium: Topics in mathematical neuroscience Waterloo, Canada	June 2015
SIAM Life Sciences Minisymposium: Mathematical questions in neural dynamics Charlotte, USA	August 2014
Duke University Probability Seminar Durham, USA	December 2013
University of Utah Mathematical Biology Seminar Salt Lake City, USA	October 2013
SIAM Dynamical Systems Minisymposium: Stochastic dynamics on neuronal networks Snowbird, USA	May 2013

TEACHING

**Current postdocs**

Hwai-Ray Tung

**Current PhD students**

Anil Cengiz (University of Utah, expected graduation 2025)

Samantha Linn (University of Utah, expected graduation 2025)

Tory Richardson (University of Utah, expected graduation 2026)

**Former PhD students**

Elias Clark (University of Utah, graduated 2023)

Jacob Madrid (University of Utah, graduated 2023)

Claire Plunkett (University of Utah, graduated 2023)

Amanda Alexander (University of Utah, graduated 2022)

**Courses**

*Introduction to Undergraduate Research*, University of Utah Spring 2023

*Applied Complex Variables*, University of Utah Spring 2019

*Introduction to Applied Mathematics*, University of Utah Fall 2018 and Fall 2020

*Topics in Probability: Stochastic Processes*, University of Utah Spring 2018 and Spring 2022

*Introduction to Partial Differential Equations*, University of Utah Fall 2017 and Fall 2023

*Mathematical Biology I (PhD level)*, University of Utah Fall 2022

*Mathematical Biology I*, University of Utah Fall 2016 and Fall 2019

*Mathematical Biology II*, University of Utah Spring 2016, Spring 2017, and Spring 2020

<i>Introduction to Probability</i> , University of Utah	Fall 2021 and Fall 2015
<i>Differential Equations and Linear Algebra</i> , University of Utah	Fall 2014
<i>Math in Genetics and Genomics</i> , Duke University	Spring 2014 and Spring 2013
<i>Laboratory Calculus I</i> , Duke University	Fall 2011
Mathematics Education Committee, University of Utah	2017-2020
University Mathematics Education Steering Committee, University of Utah	2017-2018
University Advisory Council on Teacher Education, University of Utah	2017-2020
<b>Undergraduate research mentored</b>	
Alex Gilsoul (University of Utah, class of 2026) Mentored on a project on medication nonadherence.	Fall 2023
Guang Yang (University of Utah, class of 2023) Mentored on a project on fractional differential equations.	Summer 2022
Brian Bettinson (University of Utah, class of 2022) Mentored on a project on computational pharmacokinetic modeling.	Fall 2021
Noel McAllister (University of Utah, class of 2022) Mentored on a project on pharmacokinetic and pharmacodynamic modeling. Our work was accepted to the <i>Journal of Pharmacokinetics and Pharmacodynamics</i> .	Spring and summer 2021
Eiljah Counterman (University of Utah, class of 2024) Mentored on a project on stochastics in pharmacokinetics. Our work was published in the <i>Journal of Pharmacokinetics and Pharmacodynamics</i> and the <i>Bulletin of Mathematical Biology</i> .	Academic year 2020-2021
Emma Coates (University of Utah, class of 2021) Mentored on a semester long project on extreme first passage times on discrete networks.	Fall 2020
Taylor Yates (University of Utah, class of 2020) Mentored on a semester long project on extreme first passage theory.	Fall 2019
Hannah Choi (University of Utah, class of 2018) Mentored on a project applying first passage processes to ecological questions.	Academic year 2017-2018
Chong Wang (University of Utah, class of 2018) and Bo Zhu (University of Utah, class of 2018) Mentored both students on a summer long project using branching processes to study cancer progression.	Summer 2017
Jacob Madrid (University of Utah, class of 2017) Mentored on a project testing recently developed mathematical techniques for incorporating spatial-temporal correlations into well-mixed models.	Fall 2016
Jacob Madrid (University of Utah, class of 2017) Mentored on a project developing a new stochastic simulation algorithm for diffusion in the presence of a partially absorbing boundary.	Summer 2016
Daniel Armstrong (University of Utah, class of 2016) Mentored on a semester long project modeling neurite growth.	Spring 2016
Marie Tuft (University of Utah, class of 2015) Mentored on a yearlong honors thesis project modeling virus trafficking. Our work was published	Academic year 2014-2015

in *Physical Review E*.

Oliver Richardson (University of Utah, class of 2017) Academic year 2014-2015  
Mentored on a yearlong project modeling learning on neural networks.

Braden Schaer (University of Utah, class of 2015) Academic year 2014-2015  
and Anand Singh (University of Utah, class of 2016)  
Mentored both students on a yearlong project modeling diffusion of neurotransmitters.

Adela Yang (Bowdoin College, class of 2016) Summer 2014  
and Ana Martinez (Northeast Texas Community College, class of 2015)  
Mentored both students during a mathematical biology workshop held at Duke University.  
Project title: *Analysis and applications of phylogenetic trees*.

Jina Yun (Duke University, class of 2015) Summer 2013  
Co-mentored with two Duke University professors. Our work modeling arsenic detoxification was published in *Theoretical Biology and Medical Modelling*.

Andrew Gao (Duke University, class of 2016) Summer 2013  
Co-mentored during a mathematical biology REU on a cancer modeling project.  
Project title: *Modeling the inhibition of angiogenesis*.

Charnelle Bland (Emory University, class of 2014) Summer 2012  
and Kirsten Bell (Wheaton College, class of 2015)  
Mentored both students during a mathematical biology workshop held at Duke University.  
Project title: *Arsenic poisoning in Bangladesh and mathematical experimentation*.

Priyanka Nadar (Mary Baldwin College, class of 2012) Summer 2011  
Co-mentored during a mathematical biology workshop held at Duke University.  
Project title: *Mathematical insights into arsenic poisoning in Bangladesh*.

Molly Cinderella (Duke University, class of 2012) Summer 2010  
Co-mentored with two Duke University professors. Our work modeling arsenic poisoning in Bangladesh was published in *Theoretical Biology and Medical Modelling*.

### **Graduate committee work**

Amanda Alexander (Chair) (Oral exam Summer 2020)  
Jacob Madrid (Chair) (Oral exam Summer 2020)  
Claire Plunkett (Chair) (Oral exam Fall 2020)  
Elias Clark (Chair) (Oral exam Spring 2022)  
Cory Rindlisbacher (MSMT defense Spring 2022)  
Alex Beams (Oral exam Spring 2021)  
Cody Fitzgerald (PhD defense Spring 2021)  
Anna Nelson (PhD defense Spring 2021)  
Kees Mcgahan (Oral exam Spring 2020)  
Rebecca Terry (PhD defense Fall 2020)  
Liz Fedak (PhD defense Summer 2020)  
Hyunjoong Kim (PhD defense Spring 2020)  
Samantha Hill (PhD defense Spring 2020)  
Kiersten Utsey (PhD defense Spring 2020)  
Patrick Murphy (PhD defense Spring 2020)  
Gaoyang (Bridget) Fan (PhD defense spring 2020)  
Gregory Handy (PhD defense Spring 2019)  
Andrew Watson (Oral exam Spring 2019)  
Jessica Humphrey (MSMT defense Summer 2019)  
Dave Winkler (MSMT defense Summer 2019)  
Brooke Blair Cope (Chair) (MSMT defense Summer 2019)

Ethan Levien (PhD defense Spring 2018)  
Heather Brooks (PhD defense Spring 2018)  
Ben Hardisty (PhD defense Fall 2017) (biology department)

### **Other teaching experience**

Led journal club for first and second year graduate students, University of Utah, Spring 2015 and Spring 2016.

Instructor for real analysis qualifying exam review, Duke University, August 2012 and 2011.

Teaching assistant for *Laboratory Calculus and Functions I*, Duke University, Fall 2009.

Teaching assistant for *Integration, Differential Equations and Approximation*, Carnegie Mellon University, Spring 2009.

Teaching assistant for *Differential and Integral Calculus*, Carnegie Mellon University, Fall 2008.

### SERVICE

### **Reviewer for**

Annals of Applied Probability, 2018, 2015  
Biophysical Journal, 2021, 2019  
Biophysical Reports, 2021  
Bulletin of Mathematical Biology, 2023, 2022, 2022, 2021, 2020  
Cambridge University Press, 2020  
Chaos: An Interdisciplinary Journal of Nonlinear Science, 2022  
Chaos, Solitons & Fractals, 2017  
Chemical Engineering Science, 2022  
Chemical Physics Letters, 2022  
Discrete and Continuous Dynamical Systems - Series B, 2021, 2017, 2016, 2013  
European Journal of Applied Mathematics, 2021  
The European Physical Journal B, 2020  
International Journal of Bifurcation and Chaos, 2018  
International Journal of Environmental Research and Public Health, 2020  
Journal of Computational Science, 2023  
Journal of Chemical Physics, 2023, 2022, 2022, 2021, 2020, 2019  
Journal of Engineering Mathematics, 2020  
Journal of Mathematical Biology, 2022, 2021, 2016, 2015  
Journal of Nonlinear Science, 2019, 2018  
Journal of Physics A: Mathematical and Theoretical, 2022, 2021, 2021, 2020, 2020  
Journal of Physics Communications, 2018  
Journal of Statistical Mechanics: Theory and Experiment, 2023, 2022, 2021  
Journal of Statistical Physics, 2022  
Journal of Theoretical Biology, 2019, 2017  
Journal of Theoretical Probability, 2022  
Knowledge-Based Systems, 2021  
Mathematical Medicine & Biology, 2023  
Mathematical Biosciences, 2024, 2022, 2017  
Mathematical Biosciences and Engineering, 2019  
Mayo Clinic Proceedings: Digital Health, 2023  
Molecules, 2023  
Multiscale Modeling and Simulation, 2020, 2020, 2016  
Nature Communications, 2022  
New Journal of Physics, 2020  
Nonlinear Analysis: Hybrid Systems, 2019  
Numerical Methods for Partial Differential Equations, 2020

Physical Review E, 2023, 2023, 2022, 2022, 2022, 2022, 2022, 2021, 2020  
Physical Review Letters, 2024, 2023, 2022, 2022, 2021, 2021  
Physica A, 2022, 2020  
Physica Scripta, 2023, 2021  
PLOS Computational Biology, 2024, 2023  
PLOS ONE, 2019  
Proceedings of the Royal Society A, 2021, 2016  
Reproductive Sciences, 2024  
Research in the Mathematical Sciences, 2020  
SAGE Open Medicine, 2022  
Scientific Reports, 2024, 2021, 2016  
SIAM Journal on Applied Dynamical Systems, 2020, 2018  
SIAM Journal on Applied Mathematics, 2023, 2022, 2022, 2021, 2020, 2020, 2019, 2017, 2016  
SIAM Journal on Mathematical Analysis, 2021  
Soft Matter, 2022  
Springer Mathematics, 2015  
Statistics and Probability Letters, 2019  
Symmetry, 2020

Chair Theses Standards Committee (2020-2021).  
Assistant Organizer for American Mathematical Society Math Research Community, June 2018.  
Mathematics Education Committee, 2017-2020.  
University Mathematics Education Steering Committee, 2017-2018.  
University Advisory Council on Teacher Education, 2017-2018.  
University Undergraduate Council, 2019-2020.  
Center for Science and Mathematics Education Hiring Subcommittee, 2018-2019.  
Transformative Excellence Program (TEP) Committee, 2017-2018.  
Instructorship Committee, 2017-2018.  
Colloquium and Distinguished Lecture Committee, 2016-2020.  
College of Science Day Committee, 2016-2019.  
Faculty Advisor to the University of Utah chapter of Sigma Phi Epsilon, 2014-2016.  
Lectures to middle school math students, Northwest Middle School, Salt Lake City, UT, May 2015.  
Lectures to high school math students, Riverside High School, Durham, NC, May 2013 and 2014.  
Lectures to middle school math students, Central Middle School, Melbourne, FL, November 2010.