# Christopher E. Miles

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**CURRENT POSITION**

**Assistant Professor** 2021-
Department of Mathematics,
NSF-Simons Center of Multiscale Cell Fate (CMCF) Research,
University of California, Irvine.

**PAST POSITION(S)**

**Cathleen Synge Morawetz Postdoctoral Fellow** 2020-2021
**Courant Instructor** (Assistant Professor) 2018-2020
Courant Instute of Mathematical Sciences, New York University

**EDUCATION**

**University of Utah**, Salt Lake City, UT
Doctor of Philosophy (Ph.D.) in Mathematics 2018
Advisor: James P. Keener

**Lafayette College**, Easton, PA
Bachelor of Science (B.S.) in Electrical & Computer Engineering 2013
Bachelor of Science (B.S.) in Mathematics
*summa cum laude*

**PUBLICATIONS**

**IN PROGRESS**

1. F. Renda, **C.E. Miles**, V. Magidson, I. Tikhonenko, R. Fisher, A. Mogilner, A. Khodjakov, "Mechanisms of chromosomal biorientation on the mitotic spindle," *submitted*.
2. **C.E. Miles**, J. Zhu, A. Mogilner, "Formation of bipolar spindle structures in multi-centrosomal cancer cells," *submitted*. bioRxiv: 10.1101/2021.11.17.469054v1.

**PUBLISHED**

9. E.S. Welf, **C.E. Miles**, J. Huh, M.K. Driscoll, T. Isogai, J. Noh, A.D. Weems, A. Mogilner, G. Danuser, "A unified role for membrane-cortex detachment during protrusion initiation," *Developmental Cell* **55**(6), 723-736, 2020.
8. F. Renda, V. Magidson, I. Tikhonenko, **C.E. Miles**, R. Fisher, A. Mogilner, A. Khodjakov, "Effects of malleable kinetochore morphology on measurements of intrakinetochore tension," *Open Biology* **10**: 200101, 2020.
7. S.D. Lawley, A.E. Lindsay, **C.E. Miles**, "Receptor organization determines the limits of single-cell source location detection," *Physical Review Letters* **125**, 018102, 2020.
6. S.D. Lawley, **C.E. Miles**, "Diffusive search for diffusing targets with fluctuating diffusivity and reactivity," *Journal of Nonlinear Science* **29**, 2955–2985, 2019.
5. S.D. Lawley, **C.E. Miles**, "How receptor surface diffusion and cell rotation enhance association rates,"*SIAM Journal on Applied Mathematics* **79**(3), 1124-1146, 2019.
4. O. Osunbayo, **C.E. Miles**, B.J. Reddy, J.P. Keener, M.D. Vershinin, "Complex nearly immotile behavior of microtubule-associated cargos," *Soft Matter* **15**-8, 1847-1852, 2019.
3. **C.E. Miles**, S.D. Lawley, J.P. Keener, "Analysis of non-processive molecular motor transport using renewal reward theory," *SIAM Journal on Applied Mathematics* **78**(5), 2511–2532, 2018.
2. **C.E. Miles**, J.P. Keener, "Jump locations of jump-diffusion processes with state dependent rates," *Journal of Physics A: Mathematical & Theoretical* **50**, 2017.

1. **C.E. Miles**, J.P. Keener, "Bidirectionality from cargo thermal fluctuations in motor-mediated transport," *Journal of Theoretical Biology*, **424**:37-48, 2017.

#### PROCEEDINGS

1. **C.E. Miles**, I. Jouny, G. Gordon, "Exploring the connection between matroids and network coding theory," *47th Annual Conference on Information Sciences and Systems (CISS)*, 1(6):20-22, 2013.

#### BOOK CHAPTERS

1. **C.E. Miles**, A. Mogilner, "Collective molecular motor transport," pp. 195-208, in *Case Studies in Computational and Systems Biology*. P. Kraikivski, (Ed.) Springer, 2021.

#### MEDIA

1. "Student Feature: Christoper Miles", invited contribution on SIAM DSWeb online magazine, 2021. `https://dsweb.siam.org/The-Magazine/Article/student-feature-christopher-miles`

## PRESENTATIONS

#### TALKS (∗=ONLINE)

| | |
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| *University of Pennsylvania Mathematical Biology Seminar* | Nov. 2021 |
| *AMS Southeast Sectional Meeting*∗ | Nov. 2021 |
| *Claremont College Consortium Applied Math Seminar* | Nov. 2021 |
| *CMCF 2021 Annual Meeting* | Oct. 2021 |
| *University of Melbourne Mathematical Biology Seminar*∗ | Sept. 2021 |
| *Society of Mathematical Biology (SMB) Annual Conference*∗ | June 2021 |
| *Biodynamics Days at Le Havre University*∗ | June 2021 |
| *SIAM Conference on Applied Dynamical Systems*∗ | May 2021 |
| *UBC Mathematical Biology seminar*∗ | May 2021 |
| *AMS/MAA Joint Mathematics Meetings (JMM)*∗ | Jan. 2021 |
| *UC Davis Mathematical Biology seminar*∗ | Nov. 2020 |
| *SIAM Conference on the Mathematics of Data Science*∗ | May. 2020 |
| *NJIT Mathematical Biology Seminar* | Sept. 2019 |
| *International Congress of Applied and Industrial Mathematicians (ICIAM)* | July 2019 |
| *SIAM Conference on Applied Dynamical Systems* | May 2019 |
| *Tulane Probability & Stochastics Seminar* | Feb. 2019 |
| *AMS/MAA Joint Math Meetings (JMM)* | Jan. 2019 |
| *CIMS Biomath/Computational Bio Seminar* | Nov. 2018 |
| *Tulane Probability & Stochastics Seminar* | Sept. 2017 |
| *Society of Mathematical Biology (SMB) Annual Conference* | July 2017 |
| *IEEE Region 2 Student Activities Conference*<br>**runner-up for best undergraduate paper** | April 2013 |
| *National Conference on Undergraduate Research (NCUR)* | April 2013 |
| *8th Annual UNCG Regional Mathematics & Statistics Conference*<br>**runner-up for best undergraduate paper** | Nov. 2012 |

**POSTERS**

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| *Mitotic spindle: From living and synthetic systems to theory*∗ | March 2021 |
| *Gordon Research Conference (GRC) on Stochastic Physics in Biology* | May 2017 |
| *SIAM Conference on Applications of Dynamical Systems* | May 2017 |
| *SIAM Conference on the Life Sciences*<br>**graduate student poster award** | July 2016 |
| *NIMBioS Undergraduate Research Conference* | Nov. 2013 |
| *AMS/MAA Joint Mathematics Meetings (JMM)* | Jan. 2013 |

## HONORS & FUNDING

Cathleen Synge Morawetz Postdoctoral Fellowship — 2019-2020
Awarded annually to an outstanding Courant Instructor

SIAM Early Career Travel Award — 2019
International Congress on Industrial and Applied Mathematics (ICIAM)

SIAM Early Career Travel Award — 2018
SIAM Conference on Applied Dynamical Systems

Science Communication Fellow — 2018-2019
Natural History Museum of Utah

NSF Research Training Group Grant (RTG) in mathematical biology — 2013, 2016
Provided to stimulate interdisciplinary research in the field of mathematical biology (Utah)

Wesley S. Mitman Prize in Mathematics — 2013
Awarded to the graduate most outstanding in mathematics (Lafayette)

Finley W. & Ethelwyne H. Smith Electronic Engineering Prize — 2013
Awarded to the electrical engineering graduate with the highest cumulative grade point average (Lafayette)

Benjamin F. Barge Oratorical Prize — 2013
Awarded for writing and pronouncing during their thesis defense in the best manner (Lafayette)

## TEACHING

### Full Instructor

Department of Mathematics, University of California Irvine

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|---|---|
| Math 3D: Intro to Differential Equations (online) | Fall 2021 |

Department of Mathematics, New York University

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|---|---|
| Math-UA 121: Calculus I (online) | Fall 2020 |
| Math-UA 234: Mathematical Statistics | Fall 2019, Spring 2020 |
| Math-UA 234: Mathematical Statistics (online) | Spring 2021 |
| Math-UA 211: Math for Economics I | Spring 2019 |
| Math-UA 123: Calculus III | Fall 2018 |

Department of Mathematics, University of Utah

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|---|---|
| Math 3150: Partial Differential Equations | Summer 2018 |
| Math 3140: Vector Calculus & Partial Differential Equations | Summer 2016 |
| Math 1321: Accelerated Engineering Calculus II | Spring 2016 |
| Math 2250: Differential Equations & Linear Algebra | Fall 2015 |
| Math 1320: Engineering Calculus II | Spring 2015 |
| Math 1310: Engineering Calculus I | Fall 2014 |

### Lab Instructor

Department of Mathematics, University of Utah

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|---|---|
| Math 1180: Probability & Statistics for Biologists (R programming) | Spring 2017 |
| Math 1170: Calculus for Biologists (R programming) | Fall 2016 |

**ADVISING**

*Amy Rhee* 2021
Advised NYU undergraduate on developing statistical causal inference techniques for time-series data.

*Selena Gupta* 2020
Co-advising NYU biology PhD student on using machine learning to study mitotic trajectories.

*Laura Sun, Mengjian Hua, Mian Wang* 2020
Advised a team of NYU undergraduate students on using functional data analysis to study collective behavior.

*Eric Pons* 2019
Advised NYU undergraduate on simulation and modeling of queueing networks.

*Jessica Guo* 2018
Advised NYU undergraduate funded by NYU DURF grant on project exploring models of actin growth.

**OUTREACH & EXPOSITION**

*Proud to be First Advocate* Fall 2019
Official advocate and participant mentor in program for first generation college students at NYU

*Scientist in the Spotlight* July 2018
General audience research talk at Natural History Museum of Utah

*NSF INCLUDES workshops for incarcerated youth* Sept. 2017
Developed and facilitated workshops about zombie infections

*Science Day at the U* 2016, 2015
Interactive workshop for local high school students about dynamical systems, the Monty Hall problem

*Leonardo Musuem of Utah's Pi Day* May 2016
General audience research talk title "Biology's frenemy: randomness"

*College of Science's Nerd Night* May 2016
General audience research talk titled "Motor math"

**WORKSHOPS ATTENDED**

*Inclusive teaching seminar* **(certificate awarded)** Spring 2020
Office of Global Inclusion, Diversity, and Strategic Innovation, NYU.

*Convergence Accelerator team meeting* Aug. 2019
NSF-Simons Center for Multisale Cell Fate

*Cell Modeling Hackathon* Jan. 2019
Quantitative Cell Biology Network (QCBNet) Workshop

*Agent-Based Modeling* July 2018
AMS Mathematical Research Community (MRC)

**SERVICE**

**Peer reviewer**, *J. Nonlinear Science, Chaos, Biophysical J., Research in the Mathematical Sciences, Bull. Mathematical Biology, Molecular Biology of the Cell.*

**Co-organizer**, *UCI Applied & Computational Math Seminar*, Dept. of Math., UCI 2021
**Co-organizer**, *Minisymposium on data-driven modeling*, SIAM Dynamical Systems 2021
**Co-organizer**, *Special Session on Agent-Based Modeling*, AMS/MAA JMM Jan. 2018
**Poster judge**, *MAA Undergraduate Poster Session*, AMS/MAA JMM Jan. 2018
**Organizer (webmaster)**, *SMB Annual Conference*, Salt Lake City, Utah July 2017
**Co-chair**, Graduate student advisory committee, Dept. of Math., Univ. of Utah 2016-2017
**Member**, Retention, promotion & tenure committee, Dept. of Math., Univ. of Utah 2015-2016
**Science fair judge**, The McGillis School, grades 6-8 2015

Updated on 11/21/2021