

Kathryn G. Link

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Education

University of Utah <i>Ph.D. in Mathematics,</i> Thesis Advisor: Dr. Aaron L. Fogelson, Department of Mathematics & Biomedical Engineering Thesis: Mathematical Models of Flow-Mediated Intravascular and Extravascular Blood Clotting	Salt Lake City, UT 2020
Bryn Mawr College <i>Bachelor of Arts, Mathematics,</i> Thesis Advisors: Dr. Victor Donnay & Dr. Sean Lavery Thesis: Mathematical Models of Flow-Mediated Intravascular and Extravascular Blood Clotting	Bryn Mawr, PA 2012

Academic and Professional Appointments

University of California, Davis <i>Research Postdoctoral Fellow, Department of Mathematics</i> <i>Krener Assistant Professor, Department of Mathematics</i>	Davis, CA 2021-Present 2020-2021
University of Utah <i>Research Assistant, Department of Mathematics</i> <i>Teaching Assistant, Department of Mathematics</i> <i>NSF RTG Fellow, Department of Mathematics</i>	Salt Lake City, UT 2016-2020 2015-2016 2014-2015
North Carolina State University - Department of Applied Mathematics <i>Research Assistant, Center for Research in Scientific Computation (CRSC)</i>	Raleigh, NC 2012-2014

Upcoming Activities

Presentations

- Joint Mathematics Meetings, January 6, 2022**
Invited presentation in AWM Special Session: Women in Mathematical Biology
- Claremont Center for the Mathematical Sciences, April 4, 2022**
Invited presentation in CCMS Applied Math Seminar
- AWM Research Symposium, June 2022**
Co-organizers of session: Recent Advances in Mathematical Biology

Workshops

- Mechanics of Life Workshop - Flatiron Institute, (POSTPONED: May 2022)**
Poster presenter and workshop participant
- IMA Collaborative Workshop for Women in Mathematical Biology, June 20-24th 2022**
Approaches to Support Women's Health, participant as woman researcher

Publications

Articles in press

- 2021 C.K. Buhler, R.S. Terry, **K.G. Link**, and F.R. Adler. "When does adaptive therapy work? Comparing cancer treatment strategies across mathematical models and outcome objectives." *Mathematical Biosciences and Engineering*, 18.5 (2021): 6305-6327. <https://doi.org/10.3934/mbe.2021315>.
- 2020 **K.G. Link**, N.A. Danes, M.G. Sorrells, K. Leiderman, K.B. Neeves, A.L. Fogelson. "A mathematical model of platelet aggregation in an extravascular injury under flow." *Multiscale Model. Simul.*, 2020;18(4), 1489-1524. <https://doi.org/10.1137/20M1317785>.
- 2020 **K.G. Link**, M. T. Stobb, D. M. Monroe, A. L. Fogelson, K.B. Neeves, S.S. Sindi, and K. Leiderman. "Computationally Driven Discovery in Coagulation." *Arterioscler Thromb Vasc Biol.* 2020;40. <https://doi.org/10.1161/ATVBAHA.120.314648>.

- 2019 **K.G. Link**, M.T. Stobb, M.G. Sorrells, M. Bortot, K. Ruegg, M. J. Manco-Johnson, J.A. Di Paola, S.S. Sindi, A.L. Fogelson, K. Leiderman, K.B. Neeves, "A mathematical model of coagulation under flow identifies factor V as a modifier of thrombin generation in hemophilia A. *JTH* 2019;18(2):306-317. <https://doi.org/10.1111/jth.14653>.
- 2018 **K.G. Link**, M.T. Stobb, J.A. Di Paola, K.B. Neeves, A.L. Fogelson, S.S. Sindi, K. Leiderman, "A local and global sensitivity analysis of a mathematical model of coagulation and platelet deposition under flow." *PLOS ONE* (2018), 13(7): e0200917. <https://doi.org/10.1371/journal.pone.0200917>.
- 2016 H.T. Banks, S. Hu, **K. Link**, E.S. Rosenberg, S. Mitsuma, and L. Rosario, "Modeling Immune Response to BK Virus Infection and Donor Kidney in Renal Transplant Recipients." *Inverse Problems in Science & Engineering* (2016), 24(1): 127-152. <https://doi.org/10.1080/17415977.2015.1017484>.
- 2015 H.T. Banks, B.E. Banks, **K. Link**, J.A. Rosenheim, C. Ross, and K.A. Tillman, "Model Comparison Tests to Determine Data Information Content." *Applied Mathematical Letters* (2015), 43, 10-18. <https://doi.org/10.1016/j.aml.2014.11.002>.
- 2014 H.T. Banks, D.F. Kapraun, **K.G. Link**, W.C. Thompson, C. Peligero, J. Argilaguuet, A. Meyerhans, "Analysis of Variability in Estimates of Cell Proliferation Parameters for Cyton-Based Models Using CFSE-Based Flow Cytometry Data." *Journal of Inverse and Ill-posed Problems* (2014), 23(2) 135-171, <https://doi.org/10.1515/jiip-2013-0065>.
- 2013 T. Huffman, **K. Link**, J. Nardini, L. Poag, K. Flores, H.T. Banks, B. Blasco, J. Jungfleisch, J. Diez, "A Mathematical Model of RNA3 Recruitment in the Replication Cycle of Brome Mosaic Virus." *International Journal of Pure and Applied Mathematics* (2013), 89(2) 251-274, <https://doi.org/10.12732/ijpam.v92i1.3>.
- 2011 H.T. Banks, S. Hu, M. Joyner, A. Broido, B. Canter, K. Gayvert, **K. Link**, "A comparison of computational efficiencies of stochastic algorithms in terms of two infection models." *Mathematical Biosciences & Engineering* (2011), 9(3) 487-526. <https://doi.org/10.3934/mbe.2012.9.487>.

Press

- 2021 Featured in *AWM News* article: *Dissertation Prize Winner Biography*
- 2020 Featured in *UC Davis Mathematics News* article: *New KAP Biography*

Fellowship and Grants

- 2021 **Mathematical Sciences Postdoctoral Research Fellowship, DMS 1502851**
Multiscale Modeling and Simulation of Flagellar Movement (PI), Duration: 7/1/2021–6/30/2024
 Award Amount: \$150,000
- 2019 **NSF RTG Fellow (RTG-1148230)**
University of Utah, Duration: 2014-2015, 2019
 Award Amount: \$50,000

Selected Awards

- 2020 **AWM Dissertation Prize**
 Award Amount: \$500
- 2012 **EPaDeL Student Mathematical Paper Prize**
Guinea Work Disease (Dracunculiasis): Opening a mathematical can of worms

Travel Awards

- 2021 **UCD Postdoctoral Travel Award**
 Award Amount: \$400
- 2019 **SIAM Northern States Session**
 Award Amount: \$500
- 2019 **ISTH Early Career**
 Award Amount: \$2500
- 2018 **IMA Workshop for Women in Mathematical Biology**
 Award Amount: \$500

Presentations

Invited Talks

2022 **Joint Mathematics Meetings (JMM)**

Invited talk Flagellar Waveforms in Viscoelastic Fluids and their Emergent Properties
AWM Special Session on Women in Mathematical Biology, January 2022

2021 **Society of Mathematical Biology (SMB)**

Invited talk Viscoelastic Fluids and Emergent Properties of Flagellar Waveforms
MS09-MFBM: Emergent behavior across scales: locomotion, mixing, and collective motion in active swimmers, July 2021

2020 **SIAM Life Sciences (LS20)**

Invited talk Platelet plug formation in flow-mediated extravascular blood clotting.
MS81 Mathematical and computational modeling of blood clotting, July 2020

Contributed Talks

2020 **Joint Mathematics Meetings (JMM)**

Platelet Plug This Hole: A mathematical model of flow-mediated platelet accumulation in an extravascular injury.
AMS Contributed Paper Session, January 2020

2019 **SIAM Northern States Annual Meeting (NSS19)**

A reduced order mathematical model of platelet aggregation in an extravascular injury and the effects of soluble agonist-dependent platelet activation., September 2019

2019 **International Society of Thrombosis and Hemostasis (ISTH) 2019 Congress**

A mathematical model of flow-mediated coagulation identifies FV as a modifier of thrombin generation in hemophilia A.
Oral Communication Session: Common Pathway, July 2019

2019 **International Society of Thrombosis and Hemostasis (ISTH) 2019 Congress**

Using a mathematical model of platelet aggregation in an extravascular injury to investigate modifiers of primary hemostasis.
Oral Communication Session: Platelet Structure and Function, July 2019

2019 **Undergraduate Student Colloquium**

Instability in Aesthetics: the fluid dynamics of painting.
Department of Mathematics, University of Utah, April 2019

2016 **Graduate Student Colloquium**

The physics of beer tapping.
Department of Mathematics, University of Utah, Spring 2016

2015 **Graduate Student Colloquium**

The complement system: friend or foe?
Department of Mathematics, University of Utah, Fall 2015

2014 **Mathematics and Biology: Young Investigators International Workshop**

Modeling Dynamics of the Immune Response of Renal Transplant Recipients.
Pierre and Marie Curie University, Paris 6, April 2014

Posters

2020 **SIAM Annual Meeting (A20)**

A Mathematical Model of Platelet Accumulation in an Extravascular Injury with Force-Mediated Bond Formation and Breaking.
AWM Workshop Poster Session, July 2020

2018 **Gordon Research Conference (GRS/GRC) Hemostasis**

A Model of Flow-Mediated Platelet Accumulation in an Extravascular Injury.
Poster Session, July 2018

2018 **IMA Workshop for Women in Mathematical Biology**

A fluid-phase model of alternative pathway initiation of the complement system.
Poster Session, March 2018

2016 **Modeling Complex Fluids and Gels for Biological Applications, University of Utah**

Towards an Ordinary Differential Equation Model of Bleeding.
Poster Session, May 2016

Workshops

- 2019 **WPI STEM Faculty Launch**
Invited Participant
Worcester Polytechnic Institute, Worcester, MA, October 2019
- 2018 **IMA Workshop for Women in Mathematical Biology**
Presenter and Participant
Institute for Mathematics and Its Applications, University of Minnesota, Minneapolis, MN, March 2019

Teaching

Experience

- Spring 2021 **Instructor**, Ordinary Differential Equations (Remote), [MAT 119B, UC Davis, 40 students]
Winter 2021 **Instructor**, Applied Linear Algebra (Remote), [MAT 167, UC Davis, 70 students]
Summer 2019 **Instructor**, Online Trigonometry, [Math 1060, U. Utah, 40 students]
Fall 2019 **Teaching Assistant**, Calculus for Biologists Lab, [Math 1170, U. Utah, 20 students]
2015 - 2016 **Instructor**, Business Algebra [Math 1090, U. Utah, 60 students]
2015 - 2019 **Graduate Student Tutor**, T, Benny Rushing Mathematics Center, University of Utah, Fall 2015, Spring 2016, Summer & Fall 2019

Pedagogical Training

- 2021-present **Pedagogy Hangout**, Department of Mathematics, UC Davis
Participant in weekly discussion among math faculty on best practices for remote learning
- 2020-present **Center for Educational Excellence Workshops**, UC Davis
Continually attending numerous single day workshops on teaching pedagogy hosted through the CEE

Service

Mentoring

- 2019-2021 **Undergraduate Mentor**
Mentoring undergraduates through the national AWM Mentor Network
Association for Women in Mathematics
- 2021 **Undergraduate Research Advisor, Summer REU 2021**
Mathematical Modeling of Swimming, Manuscript in Preparation.
Developed computational methods that solve equations describing coupled mechanics of swimmers and the surrounding fluid.
- 2020-present **Undergraduate Research Advisor**
Mathematical modeling of the rumen and enteric fermentation, Manuscript in Preparation.
Katarina Merk is scheduled to graduate with a B.S. in Mathematics from the UC Davis with an honors thesis submission.
- 2019-2021 **Undergraduate Research Advisor**
Mathematical Modeling of Adaptive Therapy in Prostate Cancer, Resulted in publication
Cassie Buhler graduated May 2019, B.S. in Math, University of Utah. Ph.D. Candidate in Business Analytics at Drexel University.
- 2019-2020 **Undergraduate Research Advisor**
The role of tissue-factor pathway inhibitor (TFPI) isoforms in blood clotting models.
Belle Barnes completed her honors thesis and graduated in December 2020 with a B.S. in Mathematics, University of Utah.
- 2017-2018 **High School Research Advisor**
Exploring the Transmission and Strategic Intervention of Dengue Fever Compartment Mathematical Modeling.
University of Utah Spring Research Poster Session

Conferences and Seminars Organized

- 2022 **AWM Research Symposium**
Co-organizer of Special Session: Recent advances in mathematical biology
Department of Mathematics, University of Minnesota, July 2022
- 2021-present **UC Davis Mathematical Biology Seminar**
Co-organizer of weekly mathematical biology seminar
Department of Mathematics, University of California, Davis
- 2019 **Minisymposium Organizer, SIAM Northern States Annual Meeting**
Co-organizer of two-part minisymposium series titled The versatility of mathematical modeling in biology
Department of Mathematics, University of Wyoming, September 2019

Service and Outreach

- 2022 **Judge**
Judge for poster award
JMM AWM Graduate Student Poster Session, January 2022
- 2018-2020 **Committee member**
Evaluator of teaching and research mentorship evaluations for faculty promotions
Retention, Promotion, Tenure, and Hiring (RPTH), Department of Mathematics, University of Utah
- 2018-2019 **Co-chair**
Representative of graduate student cohort, reviewer of curriculum forms for Academic programs office
Graduate Student Association Committee (GSAC), Department of Mathematics, University of Utah
- 2018-2019 **Committee member**
Evaluator of undergraduate course objectives and communicator of course changes to graduate student instructors
College of Science Curriculum Committee, University of Utah
- 2018-2020 **Judge**
Judge for poster award of +150 research posters during spring and summer semesters
Undergraduate Research Symposia, University of Utah
- 2018-2020 **Organizer**
Gender and Sexuality Workshop (GSW) for Faculty, Postdocs, and Graduate Students of Mathematics
LGBT Resource Center, University of Utah
- 2015-2020 **Volunteer**
Graduate Student Recruitment
Department of Mathematics, University of Utah

Journals Refereed:

- o Int J Numer Method Biomed Eng, Bull. Math. Biol, Curr. Opin. Biomed. Eng.