

# Anna C. Nelson

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CONTACT INFORMATION	Department of Mathematics Duke University Physics 210, 120 Science Drive, Box 90320 Durham, NC 27708	Email: <a href="mailto:anelson@math.duke.edu">anelson@math.duke.edu</a> Website: <a href="http://annacnelson.github.io">http://annacnelson.github.io</a>
RESEARCH INTERESTS	Mathematical biology, dynamical systems, polymerization, cell physiology	
ACADEMIC APPOINTMENTS	<b>Duke University</b> , Durham, NC William W. Elliott Assistant Research Professor (postdoctoral position) Department of Mathematics Mentor: Maria-Veronica Ciocanel	2021 – present
EDUCATION	<b>University of Utah</b> , Salt Lake City, UT Ph.D., Mathematics Advisor: Aaron Fogelson  <b>Boise State University</b> , Boise, ID B.S., Applied Mathematics, <i>Summa Cum Laude</i> Minor: Computer Science	May 2021  December 2012
PUBLICATIONS & PREPRINTS	<ol style="list-style-type: none"><li>6. A. Kent, K. Leiderman, <b>A. C. Nelson</b>, S. Sindi, M. M. Stadt, L. Xiong, and Y. Zhang. “Studying the effects of oral contraceptives on coagulation using a mathematical modeling approach.” <i>Submitted</i>.</li><li>5. <b>A. C. Nelson</b> and A. L. Fogelson. “Towards understanding the effect of fibrinogen interactions on fibrin gel structure.” <i>Physical Review E</i>, 107(2):024415, 2023.</li><li>4. A. L. Fogelson, <b>A. C. Nelson</b>, C. Zapata-Allegro, and J. P. Keener. “Development of fibrin branch structure before and after gelation.” <i>SIAM Journal on Applied Mathematics</i>, 82(1), 2022.</li><li>3. <b>A. C. Nelson</b>, M. A. Kelley, L. M. Haynes, and K. Leiderman. “Mathematical models of fibrin polymerization: past, present, and future.” <i>Current Opinion in Biomedical Engineering</i>, 20 (100350), 2021.</li><li>2. <b>A. C. Nelson</b>, J. P. Keener, and A. L. Fogelson. “Kinetic model of two-monomer polymerization”. <i>Physical Review E</i>, 101(2), 2020.</li><li>1. J. L. Herlin, <b>A. C. Nelson</b> and M. Scheepers. “Using ciliate operations to construct chromosome phylogenies”. <i>Involve</i>, 9(1), 2016.</li></ol>	
GRANTS	<b>Seed Grant</b> , Duke Office for Faculty Advancement \$14,000 award for Faculty-Student (FaSt) Math Series to build bridges and community among students and faculty in the mathematics department. Grant aims include organizing events and programs such as faculty student book clubs, student professional development panels, workshops on mentorship training for faculty, and invited speakers.	February 2022 – March 2023
AWARDS	<b>Lewis Blake Award for Excellence in Teaching</b> , Mathematics, Duke University Annual postdoctoral award given for excellence in teaching  <b>NSF Research Training Grant Fellowships</b> DMS-2038056 DMS-1148230  <b>BioFire Scholar Award</b> , Mathematics, University of Utah Annual award to one graduate student in department; includes stipend, tuition, and travel.  <b>AWM Student Chapter Award for Scientific Excellence</b> One of four national awards given by the Association for Women in Mathematics while as Student Chapter Vice President.  <b>University Teaching Assistantship</b> , Graduate College, University of Utah Co-awarded for the mathematics Graduate Teaching Mentorship (GTM) program.	2023  2021 – 2023 2014 – 2015  2020  2020  2018 – 2019

## Travel awards

Duke University Arts & Science Travel Fund	2023
\$1000 to attend JMM 2024 in San Francisco CA	
AWM/NSF Travel Funding	2023
\$1500 to attend AWM Research Symposium in Atlanta GA	
AWM Travel Grant Award	2023
\$3500 to attend ICIAM 2023 in Tokyo, JP	
SIAM Early Career Travel Award	Spring 2023
\$650 to attend SIAM Dynamical Systems 2023 in Portland, OR	
MAA Project NExT Fellow	2021 – 2023
\$5000 to attend MAA Mathfest 2022 & 2023 and JMM 2023	
SIAM Student Travel Award	Spring, Summer 2020
\$650 to attend SIAM Annual 2020 & Life Sciences 2020 (cancelled due to COVID)	
University of Utah Graduate School Travel Award	Spring 2020
\$345 to attend JMM 2020 in Denver, CO	
University of Utah Mathematics Department Travel Award	Spring 2020
\$500 to attend JMM 2020 in Denver, CO	

## INVITED SEMINAR TALKS

<i>Biomath Seminar Series</i>	November 2023
NC State University, Raleigh NC	
<i>Mathematical Biology Seminar</i>	October 2023
University of Pennsylvania, Philadelphia PA	
<i>Mathematical Biology Seminar</i>	February 2023
Brandeis University (virtual)	
<i>Applied and Computational Mathematics Seminar</i>	November 2022
Tulane University, New Orleans, LA	
<i>Claremont Center for Mathematical Sciences Applied Math Seminar</i>	October 2022
Harvey Mudd College (virtual)	
<i>Mathematical Biology Seminar</i>	October 2021
University of California, Davis (virtual)	
<i>Mathematical Biology Seminar</i>	September 2021
Duke University, Durham NC	
<i>Mathematical Biology Seminar</i>	March 2021
Joint with University of British Columbia and University of Utah (virtual)	
<i>Boise State University Mathematics REU Program</i>	July 2019
Boise State University, Boise ID	

## INVITED & CONTRIBUTED CONFERENCE TALKS

<i>Joint Mathematics Meeting</i> , San Francisco, CA	January 2024
AWM Special Session on Women in Mathematical Biology	
<i>Joint Mathematics Meeting</i> , San Francisco, CA	January 2024
AMS Special Session on Dynamical Systems Modeling for Biological and Social Systems	
<i>AWM Research Symposium</i> , Clark Atlanta University, Atlanta, GA	September 2023
Early Career Researchers in Mathematical Biology and Differential Equations	
<i>MAA MathFest</i> , Tampa, FL	August 2023
Invited Paper Session on Frontiers in Differential Equations and Applications	
<i>SMB Annual Meeting</i> , The Ohio State University, Columbus OH	July 2023
Data-driven, modeling, and topological techniques in cell and developmental biology	
<i>SIAM Conference on Applications of Dynamical Systems</i> , Portland OR	May 2023
<i>AMS Spring Central Sectional Meeting</i> , University of Cincinnati, Cincinnati OH	April 2023
Special Session on Mathematical Modeling in Biosciences	
<i>Joint Mathematics Meeting</i> , Boston MA	January 2023
AMS Special Session on Modeling Collective Behavior in Biology	
<i>Southeastern-Atlantic Regional Conference on Differential Equations</i>	November 2022
NC State University, Raleigh NC	

<i>SIAM Conference on the Life Sciences</i> , Pittsburgh PA	July 2022
Mathematical Modeling of Blood Clotting and its Application Minisymposium	
<i>AWM Research Symposium</i> , University of Minnesota, Minneapolis MN	June 2022
Recent Advances in Mathematical Biology Special Session	
<i>SMB Annual Meeting</i> (virtual)	June 2021
Mathematical Modeling of Blood Clotting: From Surface-Mediated Coagulation to Fibrin Polymerization Minisymposium	
<i>SIAM Conference on the Life Sciences</i> (virtual)	June 2020
Mathematical and Computational Modeling of Blood Clotting Minisymposium	
<i>Joint Mathematics Meeting</i> , Denver CO	January 2020
AMS-AWM Special Session on Women in Mathematical Biology	
<i>AMS Fall Western Sectional Meeting</i> , UC Riverside, Riverside CA	November 2019
Special Session on Mathematical Modeling in Developmental Biology	

## WORKSHOPS & SHORT COURSES

Complex Social Systems	June 2023
Topological data analysis and resource coverage, opinion dynamics and disease spread	
AMS Mathematical Research Communities, Java Center, NY	
Sex differences in physiology: Mathematical modelling and analysis	March 2023
<i>Invited participant</i>	
Banff International Research Station, Banff, AB	
Collaborative Workshop for Women in Mathematical Biology:	June 2022
Mathematical Approaches to Support Women's Health	
<i>Invited participant, project co-lead</i>	
Institute for Mathematics and its Applications, Minnetonka, MN	
Workshop for Women in Mathematical Biology	May 2018
Institute for Mathematics and its Applications, Minneapolis, MN	

## SELECT POSTER PRESENTATIONS

AWM Research Symposium Poster Session, Minneapolis, MN	June 2022
AWM Graduate Student Poster Session at JMM (virtual)	January 2021
AWM Graduate Student Workshop at SIAM Annual (virtual)	July 2020
IMA Workshop for Women in Mathematical Biology, Minneapolis, MN	May 2018
Modeling Complex Fluids for Biological Applications, Salt Lake City, UT	May 2017

## MENTORSHIP

**SPIRE Fellows Postdoctoral Assistant and Faculty Mentor** 2021 – present  
Assists in organizing and running academic support/mentoring system for high achieving undergraduates from historically excluded backgrounds. Responsibilities include organizing monthly events for fellows and teaching First Year Seminar course titled "Being Human and Flourishing in STEM," which is a discussion-based course on identity and humanity in STEM.

### AWM Undergraduate Mentor

Paired with undergraduate students to meet monthly to discuss semester, future plans, and build community.

University of Utah

2019 – 2021

Duke University

2021 – present

### Undergraduate Research

Carson Dudley, Duke University

Spring 2022 – Spring 2023

Maycol Vilchez, University of Utah (with Aaron Fogelson)

Spring 2020

### Undergraduate Directed Reading Program, University of Utah

Spring 2019

Chase Stolworthy, use machine learning for predictions on voting data in Utah

**TEACHING  
EXPERIENCE**

**Duke University**

MATH 577, Mathematical Modeling (graduate course)	Spring 2023
BIOLOGY 218, Biological Clocks: How Organisms Keep Time	Fall 2022, Fall 2023
MATH 75, Being Human in STEM for First Year SPIRE Fellows	Spring 2022, Spring 2023
MATH 353/753, Ordinary and Partial Differential Equations	Fall 2021, Spring 2022

**University of Utah**

MATH 2250, Differential Equations and Linear Algebra	Spring 2019
MATH 1030, Intro to Quantitative Reasoning (online)	Summer 2018
MATH 1220, Calculus II	Spring 2018
MATH 1100, Business Calculus	Fall 2017
MATH 1050, College Algebra	Fall 2016, Spring 2017, Summer 2017 (online)
MATH 1030, Intro to Quantitative Reasoning	Spring 2016, Summer 2016 (online)

**Project NExT Fellowship**

2021 – 2023

Professional development program for early career mathematicians directed towards improving the teaching and learning of mathematics, fostering inclusivity in the mathematics community, and providing early career faculty strategies to engage in research, scholarship, and service opportunities.

**Mathematics Instructor Training Facilitator**, University of Utah

2017, 2018, 2019

Facilitated annual workshop for new teaching assistants in the mathematics department. Responsibilities include organizing/planning workshops, observing new teachers, and giving lectures on teaching pedagogy.

**SERVICE  
& OUTREACH**

**Service to the profession:**

<i>Co-organizer</i> , Minisymposium for AWM Research Symposium “Promoting children’s and women’s health with mathematical and computational approaches” Clark Atlanta University, Atlanta GA	September 2023
<i>Co-organizer</i> , Minisymposium for 10th ICIAM “Recent Advances in Modeling Complex Systems and Multiscale Problems in Mathematical Biology” Waseda University, Tokyo JP	August 2023
<i>Judge</i> , MAA MathFest Student Poster Session, Tampa FL	August 2023
<i>Co-organizer</i> , Invited Paper Session for MAA MathFest “Recent Advances in Mathematical and Computational Biology, Highlighting Contributions from Undergraduate Researchers.” Tampa FL	August 2023
<i>Assistant</i> , AMS Mathematical Research Communities Week 3 “Complex Social Systems” Beaver Hollow Conference Center, Java Center NY	June 2023
<i>Judge</i> , SIAM Dynamical Systems Red Sock Poster Session, Portland OR	May 2023
<i>Judge</i> , MAA MathFest Student Poster Session, Philadelphia PA	August 2022
<i>Co-organizer</i> , Minisymposium for SIAM Life Sciences “Mathematical Modeling of Blood Clotting and its Application” Pittsburgh PA	July 2022
<i>Co-organizer</i> , Minisymposium at SMB Annual Meeting “Mathematical Modeling of Blood Clotting: From Surface-Mediated Coagulation to Fibrin Polymerization” Virtual	June 2021
<i>Judge</i> , JMM Student Poster Session, Denver CO	January 2020
<i>Presenter</i> , Center for Science and Mathematics Education Exchange “Teacher Training & Community Building: From Graduate Student to Colleague” (joint with Kelly MacArthur, Rebecca Terry) University of Utah, Salt Lake City UT	November 2018

<i>Panelist, Utah Math TA Training</i> "Experienced graduate student panel" University of Utah, Salt Lake City UT	August 2016
<i>Panelist, Idaho Conference on Undergraduate Research</i> "Applying to grad school" Boise State University, Boise ID	July 2014

**Service to the university and department:**

<i>Presenter, Grad-Fac Seminar</i> "Mathematical modeling of polymerization processes in physiology" Department of Mathematics, Duke University	January 2023
<i>Co-organizer, Panel on Math Graduate School Admissions, FaSt Grant</i> Department of Mathematics, Duke University	November 2022
<i>Co-organizer, Faculty-Student Weekly Tea, FaSt Grant</i> Department of Mathematics, Duke University	February 2022 – present
<i>Co-organizer, Faculty-Student Math Book Club</i> Department of Mathematics, Duke University	February 2022 – May 2023
<i>Presenter, SPIRE Speaker Series</i> "Who can do math?" Duke University	August 2021
<i>Organizer, Biofluids research seminar</i> Organization of weekly research seminar for faculty, graduate students and postdocs Department of Mathematics, University of Utah	2020 – 2021
<i>Co-chair, AWM Speaker series committee</i> Invite and host mathematicians from underrepresented groups to give talks and socialize with department. Department of Mathematics, University of Utah	2020 – 2021
<i>Presenter, Graduate Student Colloquium</i> "The mathematics of bell-ringing" Department of Mathematics, University of Utah	February 2020
<i>Professional Development Committee, Graduate Student Advisory Committee</i> Organize monthly professional development events for grad students/postdocs Department of Mathematics, University of Utah	2018 – 2021
<i>Presenter, Undergraduate Math Colloquium</i> "On the rheology of cats: Are cats fluids?" Department of Mathematics, University of Utah	April 2018
<i>Presenter, Graduate Student Colloquium</i> "On the rheology of cats: Are cats fluids?" Department of Mathematics, University of Utah	November 2017
<i>Recruitment Committee, Graduate Student Advisory Committee</i> Coordinate prospective graduate student recruitment activities and schedule. Department of Mathematics, University of Utah	2016 – 2017
<i>Panelist, Utah Math TA Training</i> "Experienced graduate student panel" Department of Mathematics, University of Utah	August 2016
<i>Presenter, Graduate Student Colloquium</i> "Computing in the Natural World: <i>In vivo</i> and <i>in vitro</i> " Department of Mathematics, University of Utah	September 2015

**Service to promote diversity, equity, and inclusivity:**

<i>Panelist, GROW (Graduate Research Opportunities for Women)</i> "From day 1 to PhD" Duke University, Durham NC	October 2022
<i>Committee member, Diversity, Equity, and Inclusion Team</i> Department of Mathematics, Duke University	August 2022 – present

<i>Student mentor</i> , AWM Student Chapter Department of Mathematics, Duke University	2021 – 2022
<i>Co-chair</i> , AWM Speaker series committee Invite and host mathematicians from underrepresented groups to give talks and socialize with department. Department of Mathematics, University of Utah	2020 – 2021
<i>Panelist</i> , Society for Women in Mathematics (SWiM) “Graduate school panel” Department of Mathematics, Colorado School of Mines (virtual)	October 2020
<i>Vice President</i> , AWM Student Chapter Organize monthly student events for undergraduates and graduate students, organize outreach events on and off campus, and meet with job candidates. Department of Mathematics, University of Utah	2019 – 2020

**COMMUNITY  
OUTREACH**

<b>Volunteer</b> , Duke Math Circles with Durham Children’s Initiative Provide exploratory instruction for K-6 students Durham NC	August 2022 – present
<b>Presenter</b> , Girls Exploring Math, Duke University “Math: We $R_0$ afraid to use it!” Durham NC	June 2023
<b>Volunteer</b> , Defining Your Path – Field Trip Program University of Utah, Salt Lake City UT	February 2020
<b>Judge</b> , State of Utah Sterling Scholar Award, Mathematics Salt Lake City UT	January 2020
<b>Panelist</b> , Clayton Middle School – Career Fair Salt Lake City UT	January 2020
<b>Presenter</b> , Science Day at the U., University of Utah “Computing in Nature: Using DNA to solve math problems” University of Utah, Salt Lake City UT	November 2019
<b>Presenter</b> , Girls Full STEAM Ahead Camp “Math: We $R_0$ afraid to use it!” Leonardo Museum, Salt Lake City UT	July 2016

**WORK  
EXPERIENCE**

<b>Bioinformatics Summer Intern</b> Sera Prognostics, Salt Lake City, UT Developed R scripts to remove batch and technical effects in proteomic data to aid in preterm birth prediction.	May 2019 – August 2019
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**MEMBERSHIPS**

American Mathematical Society  
Association for Women in Mathematics  
Mathematical Association of America  
Society for Industrial and Applied Mathematics  
Society of Mathematical Biology