

Colleen C. Mitchell
Mathematics

Abbreviated Curriculum Vitae with Previous 5 Years

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EDUCATION AND PROFESSIONAL HISTORY

Higher Education

2003	PhD , Department of Mathematics, Duke University Thesis: Mathematical Properties of Time Windowing in Neural Systems Advisor: Michael C Reed
2001	MA , Department of Mathematics, Duke University
1998	BS , Mathematics and Biology, Magna cum laude, Duke University

Professional and Academic Positions

2012 - Present	Associate Professor of Mathematics , University of Iowa
2005 – 2012	Assistant Professor of Mathematics , University of Iowa
2005 – 2006	NSF Mathematical Sciences Postdoctoral Research Fellow , University of Iowa
2003 – 2005	NSF Mathematical Sciences Postdoctoral Research Fellow , Boston University

TEACHING

2011 Collegiate Teaching Award
2020 UI VA Outstanding Faculty Advocate Award
2022 President and Provost Award for Teaching Excellence

Recent Innovations in Teaching

Design & Implementation of New Courses

Jan 2020 –	MATH:1260: PokeMath , Design new GE (QFR) course. This course uses elements of the game Pokemon Go® to introduce students to the core practice of applied mathematics. 2024 update: This year I am supervising TA, Kit Fynaardt as he leads the course. We have gained some media attention for its innovation and appeal to a broad audience.
Jan 2021 -	MATH:5750: Mathematical Biology . Collaborated with colleagues in mathematical biology to create a new graduate sequence. Designed and taught the first five-week module in mathematical models of metabolism and cellular physiology. 2024 updates: Revised and expanded my module to 8 weeks, adding mini-projects, more in depth coding activities, epidemiology and reaction diffusion equations.

Jan 2023 -

MATH:1440: Mathematics of the Biological Sciences. Total course redesign as part of the Hawkeye Introductory Courses. This large lecture course serves as a fundamental prerequisite in the curriculum for all biological majors. Incorporated major pedagogical improvements to increase student engagement and success. Designed and implemented team based exploratory activities to foreground the connections of mathematics to chemistry and biology. 2024 update: Team taught this course recently with Dr. Farthing and worked closely with CFT particularly on TA mentoring.

Courses Taught at the University of Iowa (past 3 years)

Term	Course#	Title	Final Enrollment
Spring 2024	MATH:5760	Mathematical Biology II	8
	MATH:2550	Engineering Math III	28
	MATH:1260	Pokemath (Course supervisor)	39
	MATH:7990 AMCS:7990	Reading and Research	2
Fall 2023	MATH:1560	Engineering Math II (Co-teach)	199
	MATH:1440	Math for the Biological Sciences (Co-teach)	321
	MATH:7990 AMCS:7990	Reading and Research	2
Summer 2023	MATH:7990 AMCS:7990	Reading and Research	3
Spring 2023	MATH:1440	Math for the Biological Sciences (Major course revision)	198
	MATH:1260	Pokemath (Course Supervisor)	28
	MATH:7990 AMCS:7990	Reading and Research	3
Fall 2022	MATH:1860	Calculus II (2 sections)	110
	MATH:5750	Mathematical Biology I	9
	MATH:7990 AMCS:7990	Reading and Research	3
Summer 2022	MATH:7990 AMCS:7990	Reading and Research	4
Spring 2022	MATH:1260	Pokemath	28
	MATH:7990 AMCS:7990	Reading and Research	4
	MATH:7400	Practicum in college teaching	1
Fall 2021	MATH:2560	Engineering Math IV (2 sections)	80

Term	Course#	Title	Final Enrollment
	MATH:5750	Mathematical Biology I	7
	MATH:7990 AMCS:7990	Reading and Research	2
Summer 2021	MATH:7990 AMCS:7990	Reading and Research	4

Recent Student Mentoring

BS - Directed Individual/Independent Study

February 2020 - August 2020 Davis, Nyah

PhD - Advisor

2022 - Present Christian, Claire; Math. Expected comprehensive exam Summer 2024

Claire is working on a model for the regulation of the transcription of alpha and beta myosin chains.

2022 - Present Fynaardt, Kitrick; Math. All But Dissertation. Expected completion Spring 2026.

Kit is working on analysis of the non-standard delay differential equation with evolving delay which we derived from our model of mitochondrial fission.

2022 - Present Mason, Garrett; AMCS. Expected comprehensive exam Fall 2024.

Garrett is working on the asymptotic reduction of our model for competitive inhibitor stimulation.

2020 - 2024 Guppy, Breanna; AMCS.

Currently a postdoc in Taylor Lab here at UI.

2019 - 2023 Leinheiser, Anna; AMCS

Currently a postdoc in Grueter Lab here at UI.

2018 - 2023 Polenberg, Alex; AMCS

Currently a data analyst.

2018 - 2023 Riley, Mitchell; AMCS

Currently a postdoc in the Welsh Lab here at UI.

PhD - Co-advisor

2018 - 2019 Mohammed, Ruqiah; *Completed PhD*. Co-advised by Dr. Bruce Ayati (Mathematics).

PhD Committee Member

2019 - 2023 Buchanan, Jane (Molecular Medicine)

SCHOLARSHIP

Recent Publications

Riley, M (Recent PhD student), Mitchell, C., Ernst, S., and Welsh M. (2024) A Model for Stimulation of Enzyme Activity by a Competitive Inhibitor Based on the Interaction of Terazosin and Phosphoglycerate Kinase 1. *PNAS* 112(9) e 2318956121.

Ponce, J., Coen, G., Spitler, K., Dragisic, N., Martins, I., Hinton, A., Mungai, M., Tadinada, S., Zhang, H., Oudit, G., Song, L.-S., Li, N., Sicinski, P., Strack, S., Abel, D., Mitchell, C., Hall, D., Grueter, C. (2020). Stress-Induced Cyclin C Translocation Regulates Cardiac Mitochondrial Dynamics. *Journal of the American Heart Association*, 9(7), e014366.

Sole mathematician on the project.

Publications In Progress

Leinheiser, A. (Recent PhD Student), Mitchell, C., Rooke, E., Strack, S., and Grueter, C. *A dynamical systems model for the total fission rate in Drp1-dependent mitochondrial fission*. Submitted.

Polenberg, A. (Recent PhD student) , Mitchell, C., Grueter, C., Braun, T. *Genome Wide Association Study in Doberman Dilated Cardiomyopathy*. Submitted.

Guppy, B. (Current PhD student), Mitchell, C. Taylor, E. *Parameter Estimation and Identifiability in Kinetic Flux Profiling Models of Metabolism*. Submitted.

Minerath, R., Vaske, A., Leinheiser, A., Hall, D., Mitchell, C., and Grueter, C. *Targeting Mediator Kinase Attenuates Cardiac Hypertrophy by Regulating Enhancer Utilization*. Draft complete, plan to submit Summer 2024 to *Circulation Research Letters*.

Mitchell, C., Riley, M., Leinheiser, A., Grueter, C. *A Coagulation-Fragmentation Model for Fission and Fusion in Mitochondrial Networks*. In draft, to submit Fall 2024.

Grants and Contracts

Recent External Grants Funded

Jul 2021 - Jan 2023 *A Computational Genomic Investigation of Doberman DCM*. DPCA Health Research Grant. Award amount: (\$20,000.00). Colleen Mitchell (PI), Chad Grueter (Co-PI), Terry Braun (Co-PI).

Jul 2017 - Jun 2023 *UI Sloan Center of Exemplary Mentoring*
Funded by Alfred P Sloan Foundation. Award amount: (\$80,000.00).
Investigator/s Raul Curto (Principal Investigator), Colleen Mitchell (Co-Principal, Center Director).

Jan 2014 - Jun 2017 *UI Sloan Center of Exemplary Mentoring*

Funded by Alfred P Sloan Foundation. Award amount: (\$1,052,500.00).
 Investigator/s Phil Kutzko (Principal Investigator), Colleen Mitchell (Co-Principal, Center Director), Tonya Peoples (Co-Principal), Raul Curto (Co-Principal).

SERVICE

Department

2023-Present	Teaching Excellence Committee
2023 - 2024	Instructional Track Faculty Hiring Committee
2021 - 2024	Enrollment Committee
2022 - 2024	Committee for Diversity and Inclusion, Member
2018 - 2022	Committee for Diversity and Inclusion, Chair, subcommittee for events and communications
2018 - 2022	Dept Secretary
2019 - 2021	Hiring Committee
2021 (Spring)	Graduate Committee
2019-Present	Graduate Student Writing Group, Organizer

University

2020 - Present	Math Platoon, Director.
2014 - 2023	UI Sloan Center of Exemplary Mentoring, Director
2022 - Present	CLAS Teaching Awards Committee
2018 - 2020	Path Forward, DEIC, Member
2016 - 2020	Iowa Bioscience Academy Advisory Board, Member
2018 – 2019	DEI Action Plan Committee, Member
2019 - 2020	AMCS Curriculum Committee, Member
2015 - 2021	CIRTL Faculty Advisory Committee, Member.