

CONTACT INFORMATION	Bryn Mawr College Department of Mathematics Park Science Center 101 North Merion Avenue Bryn Mawr, PA 19010, USA	 ochu@brynmawr.edu  (610) 526-5347  Office: Park 334
RESEARCH INTERESTS	Evolutionary game theory, evolutionary dynamics, complex adaptive systems, social behavior, quantitative social science	
EDUCATION	Princeton University , Princeton, New Jersey, USA Ph.D., Quantitative and Computational Biology, September 2021 M.A., Quantitative and Computational Biology, January 2017 • Thesis: Heterogeneity in human populations, from structure to personality – a modeling and data approach New York University, Courant Institute , New York, New York, USA B.A., Mathematics (highest honors), May 2015 • Advisors: Robert V. Kohn, Trushant S. Majmudar • Thesis: Analysis of the “euglenoid motion” – locomotion by shape deformations Stuyvesant High School , New York, New York, USA Advanced Regents Diploma with Honors, June 2011	
ACADEMIC POSITIONS	Bryn Mawr College , Bryn Mawr, Pennsylvania, USA Assistant Professor of Mathematics, Aug. 2024-present Dartmouth College , Hanover, New Hampshire, USA Neukom Institute for Computational Science • Visiting Scholar, Sept. 2024-Aug. 2025 • Postdoctoral Fellow, Sept. 2021-Aug. 2024 Lecturer, Dept. of Mathematics, Sept. 2021-Aug. 2024	
PUBLICATIONS AND WORKING PAPERS	1. Olivia J. Chu (2026). Affirming Spaces for Reflection, <i>Teaching and Learning Together in Higher Education</i>, Iss. 49. 2. Olivia J. Chu, Jonathan F. Donges, Grigore Pop-Eleches, and Graeme B. Robertson (2021). The micro-dynamics of geographic polarization: a model and an application to survey data from Ukraine, <i>PNAS</i>, 118(50). 3. Zachary Nathan*, Daniel DiPietro*, and Olivia J. Chu, Altruism and energy flow in dynamic beehive models, <i>in prep.</i> 4. Arturo F. Serrano Borrero*, Dylan Green, and Olivia J. Chu, Exploring evolutionary dynamics of activism and social movements through conviction moderation of the adaptive voter model, <i>in prep.</i> 5. Shir Carasso*, Chadi M. Saad-Roy, Arne Traulsen, and Olivia J. Chu, Social Dilemmas in an Age-Structured Population Facing a Viral Outbreak, <i>in prep.</i> 6. Shuwen Duan* and Olivia J. Chu, An Evolutionary Approach to the Stable Marriage Problem: Adaptive Preferences and Market Structure, <i>in prep.</i>	

7. **Olivia J. Chu**, Vítor V. Vasconcelos, and Corina E. Tarnita, The role of loners in the evolutionary dynamics of group structured populations, *in prep.*
8. **Olivia J. Chu**, Atticus W. McWhorter, and Wai-Tong Louis Fan, Heterogeneous preferences and personality in adaptive network models, *in prep.*

* indicates an undergraduate co-author.

TEACHING

Bryn Mawr College (all courses as Instructor)

MATH B210 – Differential Equations	Fall 2026
MATH B205 – Theory of Probability	Spring 2026
MATH B399 – Senior Conference	Spring 2026
MATH B325 – Advanced Topics in Applied Math: Evolutionary Dynamics	Fall 2025, 2026
MATH B102 – Calculus II	Fall 2025, Spring 2027
MATH B295 – Topics in Math: Evolutionary Game Theory	Fall 2024, Spring 2025
Math B101 – Calculus I	Spring 2025

Dartmouth College

Math 76.03 – Evolutionary Dynamics <i>Instructor</i>	Winter 2023
Math/QSS 30.04 – Evolutionary Game Theory and Applications <i>Instructor</i>	Spring 2022, 2024

Princeton University

MAT 378 – Theory of Games <i>Assistant in Instruction (AI)</i>	Spring 2018, 2019, 2020
MAT 104 – Calculus II <i>Assistant in Instruction (AI)</i>	Summer 2020, Fall 2020

Courant Institute, New York University

<i>Grader</i> , Mathematics for Economics	Spring 2015
<i>Mathematics Tutor</i> , Calculus I-III, Discrete Mathematics	Fall 2013, Spring 2014
<i>Teaching Assistant</i> , Calculus III, Linear Algebra	Summer 2013
<i>Grader</i> , Calculus II	Spring 2013
<i>Grader</i> , Calculus I	Fall 2012

RESEARCH ADVISING AND MENTORING

Honors Thesis Advisor

<i>Bryn Mawr College</i>	2025-present
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- Advisor for the following undergraduate honors theses:
 - ◆ Ana Chaiet ('26, Mathematics): *An Evaluation of Post Face-off Events in the AHL using Evolutionary Game Theory.*
 - ◆ Shuwen (Shera) Duan ('26, Mathematics): *An Evolutionary Approach to the Stable Marriage Problem: Adaptive Preferences and Market Structure.*
 - ◆ Kir Morozov ('26, Mathematics): *An Evolutionary Game Theory Model of Balancing Selection: Dynamics of Sickle Cell Trait Protection Against Endemic Malaria.*
 - ◆ Anne Nguyen ('26, Mathematics): *Network Evolution in Homophilic Populations with Kindness.*
- Advisor for the following Masters theses:
 - ◆ Shir Carasso ('26 AB/MA, Mathematics): *Social Dilemmas in an Age-Structured Population Facing a Viral Outbreak.*

<i>Dartmouth College</i>	2022-2024
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- Advisor for the following undergraduate honors theses:

- ◆ Arturo F. Serrano Borrero ('24, Mathematics): *A Survey-Informed Evolutionary Opinion Dynamics Model of Political Activism with an Application to the 2022 Panamanian Protests* (awarded high honors and the *Hazleton Mirkil Prize* for Best Senior Thesis Presentation).
- ◆ Samson S. O'Donnell ('24, Quantitative Social Science (QSS)): *Edgeworth Cycles and Consumer Welfare: Competitive Phenomenon or Tacit Collusion?* (awarded honors).
- ◆ Sara Catherine Cook ('23, Mathematical Data Science (MDS)): *Too Big to Fail: An Evolutionary Dynamics Approach to Social Media Controversy*.
- ◆ Amar J. Scherzer ('23, Quantitative Social Science (QSS)): *The role of behavior in mpox dynamics – an SIR model approach* (awarded high honors).

Summer Science Research (SSR) Program Mentor

Bryn Mawr College

2025-present

- Advisor for the following Summer 2025 undergraduate SSR projects:
 - ◆ Shuwen (Shera) Duan ('26, Mathematics): *Matching minds and metrics: an adaptive and evolutionary approach to stable relationships*.
 - ◆ Mei Gordon-Washington ('27, Mathematics): *Population dynamics and generalized reciprocity in Female Norway rats*.

Independent Study Advisor

Bryn Mawr College

2025-present

- Advisor for the following independent study projects:
 - ◆ Mei Gordon-Washington (AB/MA '27, Mathematics): *A population dynamics model of generalized reciprocity in female Norway Rats (*Rattus Norvegicus*)* (Spring '26).

Dartmouth College

2022-2024

- Advisor for the following undergraduate independent study projects:
 - ◆ Liam F. Nokes ('25, Mathematics), through the James O. Freedman Presidential Scholars Program: *Mycorrhizal evolutionary dynamics: games on bipartite networks and applications* (Summer '23).
 - ◆ Zack Nathan ('23, Computer Science & Mathematics): *An evolutionary game theory model of altruism via arrhenotoky* (Winter, Spring '23).
 - ◆ Brian Wang ('23, Mathematics & Computer Science), Ryan Wu ('23, Computer Science & Quantitative Social Science), and Adi Ogale ('23, Applied Mathematics & Economics), through the Neukom Scholars program: *Meerkats and Alloparenting: Examining why meerkats choose to take care of kids that are not their own* (Winter '23).
 - ◆ Arturo F. Serrano Borrero ('24, Mathematics): *Models of evolution, adaptation, and revolution: understanding political activism in post-COVID Panama* (Summer '22).
 - ◆ Graduate student reading course on adaptive network models (Winter '23).

Thesis Reader

Bryn Mawr College

2024-present

- Second reader for the following MA theses:
 - ◆ Suzanna Semaan ('26, Mathematics): *The LESION Model: Local Estradiol Synthesis in Infertility Onset*.
 - ◆ Ellie Lew ('25, Mathematics): *An Algebraic Study of Combinatorial Neural Codes*.

Dartmouth College

2022-2024

- Second reader for the following undergraduate QSS honors theses:
 - ◆ Max Blum ('23): *Information diffusion in online social networks: a simulation experiment*.
 - ◆ Max Schindel ('22): *Who wins? A game theoretic approach to three candidate elections in ranked choice voting*.

Ph.D. Supervising Committee Member

Bryn Mawr College

2024-present

- Member of the Ph.D. supervising committee for Dee Ann Reisinger, Ph.D. candidate in Mathematics.

ReMatch Graduate Mentor

Princeton University

2016-2017

- Undergraduate research student advised: Ayanna Matthews ('20, Physics)

HONORS AND AWARDS

“Worthy” in Bryn Mawr’s traditional May Day parade, 2025 and 2026

Interviewee for the AWM’s *Biographies of Contemporary Women in Mathematics* Essay Contest, 2024

- Dartmouth College local contest, first prize for middle school: [Link to essay](#)
- National contest, honorable mention for middle school: [Link to essay](#)

Princeton Center for Health and Wellbeing (CHW) Research Grant for *The creation and evolution of social networks on campus: a case study in how individuals integrate and assimilate into social groups*, 2020

Maple Poster Prize, Society for Mathematical Biology (SMB) Annual Meeting, 2019

National Science Foundation Graduate Research Fellowship (NSF GRFP), Mathematical Sciences – Mathematical Biology, 2017-2020

National Science Foundation Graduate Research Fellowship (NSF GRFP) Honorable Mention, Life Sciences – Biophysics, 2016

Courant Institute, Hollis Cooley Prize for excellence and promise in undergraduate mathematics, 2015

Courant Institute, Highest Honors in Mathematics, 2015

NYU University Honors Scholar, Founder’s Day Award, 2015

NYU Undergraduate Research Conference Panel Winner in Mathematics, 2015

NYU Dean’s Undergraduate Research Fund Grant, 2014

Courant Institute Summer Undergraduate Research Experience (SURE) Grant, 2014

INVITED TALKS

1. *A population dynamics model of generalized reciprocity in female Norway Rats (*Rattus Norvegicus*)*, SIAM Annual Meeting. Cleveland, OH, July 2026.
2. *Models of Social and Biological Systems*, AMS Spring Eastern Sectional Meeting. Boston College, March 2026.
3. *Models of Social and Biological Systems*, University of Maryland Math Bio Seminar. Sept. 2025.
4. *Models of Social and Biological Systems*, Villanova University VPR³ Colloquium. July 2025.
5. *Adaptive network models and the dynamics of political polarization and social activism*, Society for Mathematical Biology Annual Meeting (SMB). Edmonton, AB, Canada, July 2025.
6. *Altruism and Energy Flow in Dynamic Beehive Models*, SIAM Conference on Applications of Dynamical Systems. Denver, CO, May 2025.
7. *Models of Social and Biological Systems*, West Chester University Math Colloquium. Apr. 2025.
8. *Models of Social and Biological Systems*, Temple University Math Colloquium. Feb. 2025.
9. *Using Infectious Disease Simulations to Model Mpox Spread in the United States*, JMM. Seattle, WA, Jan. 2025.
10. *The Dynamics of Social Mobilization and Climate Activism*, SIAM Conference on Mathematics of Planet Earth. Portland, OR, June 2024
11. *Exploring the Role of Altruism with Dynamic Beehive Models*, Philadelphia Undergraduate Mathematics Conference, Plenary talk. Bryn Mawr College, Apr. 2024

12. *Using Conviction-Moderated Adaptive Network Models to Understand Political Activism*, JMM. San Francisco, CA, Jan. 2024
13. *Heterogeneous Preferences and Personality in Adaptive Network Models*, JMM. San Francisco, CA, Jan. 2024
14. *Altruism and Arrhenotoky with Evolutionary Game Theory*, MAA MathFest. Tampa, FL, Aug. 2023
15. *Altruism and Arrhenotoky with Evolutionary Game Theory*, Society for Mathematical Biology Annual Meeting (SMB). The Ohio State University, July 2023
16. *An adaptive voter model in heterogeneous environments*, SIAM Conference on Applications of Dynamical Systems. Portland, OR, May 2023
17. *The role of loners in the evolution of cooperation in group-structured populations*, Smith College Thursday Lunch Seminar. Northampton, MA, March 2023
18. *An evolutionary game theory model of altruism via arrhenotoky*, AMS Spring Southeastern Sectional Meeting. Georgia Tech, March 2023
19. *An adaptive voter model in heterogeneous environments and the microdynamics of spatial polarization*, JMM. Boston, MA, Jan. 2023
20. *The role of loners in the evolution of cooperation in group-structured populations*, Mathematics Colloquium. University of Central Florida, Oct. 2022
21. *An adaptive voter model in heterogeneous environments and the microdynamics of spatial polarization*, AMS Fall Eastern Sectional Meeting. UMass Amherst, Oct. 2022
22. *The role of loners in the evolution of cooperation in group-structured populations*, SIAM Conference on the Life Sciences. Pittsburgh, PA, July 2022
23. *Heterogeneity in human populations, from structure to personality – a modeling and data approach*, Inaugural AIMS Seminar (Applied Interdisciplinary Mathematics and Sociology). University of Central Florida, Virtual, April 2022
24. *The role of loners in the evolution of cooperation in group-structured populations*, JMM. Virtual, April 2022
25. *Heterogeneity in human populations, from structure to personality – a modeling and data approach*, Applied and Computational Mathematics Seminar. Dartmouth College, March 2022
26. *The microdynamics of spatial polarization: A model and an application to survey data from Ukraine*, Santa Fe Institute CounterBalance Seminar. Virtual, Feb. 2022
27. *The Emergence and Stability of Population Structure: Two Approaches*, Society for Mathematical Biology Annual Meeting (eSMB). Virtual, Aug. 2020
28. *Polarization and Adaptive Voter Models*, Political Polarization Workshop. Virtual, Aug. 2020
29. *An Adaptive Voter Model in Heterogeneous Environments*, AMS Spring Western Sectional Meeting. California State University, Fresno, May 2020 (postponed due to COVID-19).
30. *Evolutionary Dynamics in Set Structured Populations*, Applied and Computational Mathematics Seminar. Dartmouth College, Oct. 2019

CONTRIBUTED
TALKS

1. *The Micro-dynamics of Geographic Polarization: a Model and an Application to Survey Data from Ukraine*, Society for Mathematical Biology Annual Meeting. Virtual, June 2021
2. *The Micro-dynamics of Geographic Polarization: a Model and an Application to Survey Data from Ukraine*, APS March Meeting. Virtual, Mar. 2021
3. *The Emergence and Stability of Population Structure*, QCB Colloquium. Princeton University, Nov. 2020
4. *An Adaptive Voter Model Applied to Polarization Data*, Theoretical Ecology Lab Tea. Princeton University, Nov. 2020

5. *Evolutionary Dynamics in a Group Population Structure with Barriers to Group Entry*, SIAM Conference on the Life Sciences (canceled due to COVID-19), June 2020
6. *An Adaptive Voter Model in Heterogeneous Environments*, SIAM Conference on the Life Sciences (canceled due to COVID-19), June 2020
7. *Evolutionary Dynamics in a Group Population Structure*, Joint Mathematics Meetings (JMM). Denver, CO, Jan. 2020
8. *An Adaptive Voter Model with Optimal Distinctiveness*, Theoretical Ecology Lab Tea. Princeton University, Oct. 2019
9. *Evolutionary Dynamics in a Group Population Structure*, Social Decisions Workshop. University of Houston, Oct. 2019
10. *Evolutionary Dynamics in a Group Population Structure* (poster), Society for Mathematical Biology Annual Meeting. Montréal, QC, Canada, July 2019
11. *Optimal Distinctiveness and its Effects on Network Formation and Social Integration*, CoCCoN Workshop on the Social Modulation of Risk & Collective Cognition. Humboldt University, Berlin, Germany, July 2019
12. *Evolutionary Dynamics in a Group Population Structure*, SIAM Conference on Applications of Dynamical Systems. Snowbird, UT, May 2019
 - Talk recording and slides: <https://bit.ly/2Zp8BmD>
13. *Evolutionary Dynamics in a Group Population Structure*, APS March Meeting. Boston, MA, Mar. 2019
 - Featured in the conference's media materials: <https://bit.ly/3TwvT7H> and participated in a press conference with members of the media.
14. *Evolutionary Dynamics on Sets with Barriers to Entry*, Theoretical Ecology Lab Tea. Princeton University, Dec. 2017
15. *Evolutionary Dynamics on Sets with Barriers to Entry*, NIH NHGRI Annual Meeting. St. Louis, MO, Apr. 2017
16. *Evolutionary Dynamics on Sets with Barriers to Entry*, QCB Colloquium. Princeton University, Apr. 2016
17. *Analysis of the "Euglenoid Motion" – Locomotion by Shape Deformations*, NYU Dean's Undergraduate Research Conference. Apr. 2015
18. *Analysis of the "Euglenoid Motion" – Locomotion by Shape Deformations*, Courant Institute Undergraduate Research Conference. Oct. 2014

OTHER
PRESENTATIONS

1. *Models of Social and Biological Systems*, Seminar for Incoming Students, Bryn Mawr College. Aug. 2025
2. *Evolutionary dynamics in group-structured populations*, Bryn Mawr College Distressing Math Collective (DMC). Oct. 2024.
3. *An Introduction to Evolutionary Game Theory*, cSplash, Courant Institute. Apr. 2019
4. *Topics in Quantitative and Computational Biology*, NYU Courant Institute Mathematics Society. Nov. 2015
5. *Calculus Crash Course: Biology and Medicine*, cSplash, Courant Institute. Apr. 2014, 2016
6. *Fourier Series and Their Applications to Music*, cSplash, Courant Institute. Apr. 2013

INVITED
WORKSHOPS
AND
CONFERENCES

Building a Bigger and Better US, *MIT*, Sept. 2024

- Co-hosted by MIT's Laboratory for Financial Engineering, American Exchange Project, and The Cooperation Game, in collaboration with the Santa Fe Institute

Collective Adaptation in a Turbulent World, *Santa Fe Institute*, Sept. 2023

CoCCoN Workshops (Cooperation and Collective Cognition Network)

- Humboldt University, Berlin, Germany – Nov. 2017, July 2019
- Princeton University, Princeton, NJ – May 2017, Jan. 2019

Langfeld Meeting, *From Micro-Level Cognitive Phenomena to Large-Scale Social Dynamics*, Princeton University, May 2017

MINISYMPOSIUM
AND
WORKSHOP
ORGANIZING

Workshop on Evolutionary Game Theory

NITMB, Chicago, IL

May 2026

- Co-organized a workshop on “Evolutionary Games: Mathematical Theory and Biological Insights” at the National Institute for Theory and Mathematics in Biology (NITMB).

IBA Symposium on Biomathematics and Ecology Education and Research (BEER)

George Mason University

Nov. 2025

- Co-organized a mini-symposium on “Modeling Eco-Evolutionary Dynamics in Spatial and Group-Structured Populations.”

SMB Annual Meeting

Edmonton, AB, Canada

July 2025

- Co-organized a special session on “Applications of Evolutionary Game Theory and Related Frameworks: From Cells to Societies.”

Workshop on Evolutionary Game Theory

Virtual

May 2025

- Co-organized a workshop on “Modeling and Applications of Evolutionary Game Theory.”

SIAM Life Sciences (LS)

Portland, OR

June 2024

- Co-organized a special session on “Evolutionary Game Theory in Modeling Biological and Social Systems.”

SMB Annual Meeting

The Ohio State University

July 2023

- Co-organized a special session on “Modeling and Analysis of Evolutionary Dynamics Across Scales and Areas of Application.”

AMS Spring Sectional Meeting

Georgia Tech

March 2023

- Co-organized a special session on “Multiscale Approaches to Modeling Ecological and Evolutionary Dynamics.”

Joint Mathematics Meetings (JMM)

Boston, MA

Jan. 2023

- Co-organized a special session on “Mathematical Modeling of Ecology and Evolution: From Infectious Disease to the Evolution of Cooperation.”

AMS Fall Sectional Meeting

UMass Amherst

Oct. 2022

- Co-organized a special session on “Game-Theoretic and Agent-Based Approaches to Modeling Biological and Social Systems.”

	eSMB <i>Society for Mathematical Biology Annual Meeting (online)</i> • Co-organized a mini-symposium on “Collective Behavior and Social Evolution.” • Served as session chair for a Population Dynamics & Evolution Contributed Talk session.	June 2021
	SIAM Dynamical Systems (DS) <i>SIAM DS Meeting (online)</i> • Co-organized a mini-symposium on “Dynamical Systems Approaches for Biological and Cultural Evolution.”	May 2021
	eSMB <i>Society for Mathematical Biology Annual Meeting (online)</i> • Co-organized a mini-symposium on “The Emergence and Stability of Population Structure and Biological Aggregates Across Scales.”	Aug. 2020
	AMS Spring Sectional Meeting <i>Tufts University</i> • Co-organized a special session on “Mathematical Methods for Ecology and Evolution in Structured Populations.”	March 2020, March 2022
PEER MENTORING	QCB Peer Mentor <i>Princeton University</i> • Co-founded the QCB Peer Mentoring Program; mentored five first-year graduate students.	Sept. 2017 - Sept. 2021
	Undergraduate Peer Mentor <i>Courant Institute, New York University</i>	Sept. 2012 - May 2015
SERVICE AND VOLUNTEERING	Panelist for career development discussion on job applications <i>Bryn Mawr College GGSM (Graduate Group in Science and Mathematics)</i>	Apr. 2026
	Discussion co-leader on mathematical biology at liberal arts colleges <i>SMB Online Conference on Population Dynamics, Ecology, and Evolution</i>	Feb. 2026
	Committee and Council on Academic Standing, member <i>Bryn Mawr College</i>	2025-present
	STEMLA Faculty Mentor <i>Bryn Mawr College</i>	2025-present
	Search Committee Member – Tenure-Track Faculty Search in Statistics <i>Bryn Mawr College Dept. of Math</i>	Fall 2024
	International Friendship Program host <i>Bryn Mawr College</i>	2024-2025
	“Being a (Math) Postdoc” Panelist <i>Professional Development Seminar, Dartmouth College</i>	May 2024
	SMB Newsletter Editor <i>Society for Mathematical Biology (SMB)</i> • Editor-in-Chief from May 2025.	2024-present
	Student Poster Session Judge <i>Joint Mathematics Meetings (JMM), San Francisco, CA</i>	Jan. 2024
	Undergraduate Student Poster Session Judge <i>MAA MathFest, Tampa, FL</i>	Aug. 2023
	Undergraduate Poster Session Judge	

	<i>Dartmouth College Dept. of Math</i>	May 2023
	Math Department DEI committee <i>Dartmouth College</i>	2022-2024
	Judge for the AWM “biographies of contemporary women in mathematics” essay contest <i>Dartmouth College</i>	2022-2024
	Student Poster Session Judge <i>Joint Mathematics Meetings (JMM), Denver, CO</i>	Jan. 2020
	Courant Splash (cSplash) <i>Courant Institute, New York University</i>	Sept. 2012 - Sept. 2015
	• cSplash is an annual one-day lecture series for advanced high school students interested in STEM. Served as Advertising Coordinator from 2012-2013, Logistics Coordinator from 2013-2014, and the first undergraduate co-director from 2014-2015.	
REFEREING	Manuscript Reviewing • Referee for <i>Journal of Theoretical Biology</i> (JTB), <i>Mathematics Magazine</i>, <i>CRC Press</i>. Grant and Workshop Peer Reviewer • Grant reviewer for the University of Tennessee’s internal grant competition through the Center of Excellence in Computational Science and Engineering (CEACSE). • Workshop proposal reviewer for the Banff International Research Station (BIRS).	
SEMINAR ORGANIZING	Bi-Co Math Colloquium, Bryn Mawr College Theoretical Ecology Lab Tea, Princeton University	2025-2026 Fall 2018
PROFESSIONAL AFFILIATIONS	SIAM, AWM, AMS, MAA	