
Department of Mathematics | Bryn Mawr College | 101 N. Merion Avenue, Bryn Mawr, PA

RESEARCH PROFILE

Mathematical biology with applications to endocrinology and dynamical systems.

ACADEMIC APPOINTMENTS

2021– Associate Professor, Bryn Mawr College
 2015–2021 Assistant Professor, Bryn Mawr College
 2012–2015 NSF Alliance Postdoctoral Research Scholar

EDUCATION

2012 Ph.D., Mathematics, University of Utah
 2008 M.S., Mathematics, University of Utah
 2004 A.B., Mathematics, *Magna Cum Laude*, Bryn Mawr College

SCHOLARSHIP

† peer-reviewed

WORKS IN PROGRESS

R. Kim, L. Zhao, L.S. Oremland, N. Wozniak, H.Z. Brooks, E.J. Schwartz, **E.J. GRAHAM**, L. de Pillis. (2026). Modeling the effects of hormonal oral contraceptive dosing on contraceptive efficacy. *Revision under review*.[†]

PUBLICATIONS

R. Hughes and **E. GRAHAM**. (2025). A Remembrance of Emmy Noether. *AWM Newsletter*. 55 (4). 3–5.
E.J. GRAHAM, N. Elhadad, D. Albers. (2023). Reduced model for female endocrine dynamics: validation and functional variations. *Mathematical Biosciences*, 358, 1089779.[†]
E.J. GRAHAM. (2023). Intersectionality as Impetus and Impediment. In: *Aspiring and Inspiring: Tenure and Leadership in Academic Mathematics*, eds. Garcia et al. American Mathematical Society, 29.[†]
E.J. GRAHAM. (2021). How (and How Not) to be Anti-racist in Mathematics. *MAA FOCUS*. 41(2), 22–28.
E.J. GRAHAM and A. Radunskaya. (2019). Mathematical Modeling of Immune-Mediated Processes in Coagulation and Anticoagulation Therapy. In: *A Celebration of the EDGE Program's Impact on the Mathematics Community and Beyond*, eds. D'Agostino et al. Association for Women in Mathematics Series, vol 18. Springer, 237–275.[†]
E. GRAHAM, R. Higgins, C. Price, S. Wilson. (2018). The “Mathematically Gifted and Black” Website. *Notices of the AMS*. 46 (2), 936–938.
A. Deines, D. Ferrero, **E. GRAHAM**, M. S. Im, C. Manore, C. Price, eds. (2018). *Advances in the Mathematical Sciences: AWM Research Symposium*. Los Angeles, CA, April 2017. Springer.
E.J. GRAHAM and J. F. Selgrade. (2017). A model of ovulatory regulation examining the effects of insulin-mediated testosterone production on ovulatory function. *Journal of Theoretical Biology* 416, 149–160.[†]
E. GRAHAM. (2017). The Accidental Mathematician. *The Lighthouse Almanac* 1, 3–5.
R. Higgins, **E. GRAHAM**, S. Wilson. (2016). SIAM Celebrates Diversity in Mathematics. *SIAM News* 49, 11.
L. de Pillis, **E.J. GRAHAM**, K. Hood, Y. Ma, A. Radunskaya, J. Simons. (2015). Injury-initiated clot formation under flow: a mathematical model with warfarin treatment. In: *Applications of Dynamical Systems in Biology and Medicine*, eds. T. Jackson and A. Radunskaya, vol. 158 of The IMA Volumes in Mathematics and its Applications, 75–98.[†]

E.J. GRAHAM and F. R. Adler. (2014). Long-term models of oxidative stress and mitochondrial damage in insulin resistance progression. *Journal of Theoretical Biology* 340, 238–250.[†]

GRANTS

- 2026 Karen EDGE Fellowship
- 2021 MAA Tensor-SUMMA Grant: *Mathematically Gifted and Black*
- 2018 Simons Foundation Mathematics and Physical Sciences-Collaboration Grants for Mathematicians: *Mathematical Models for Biomedical Applications*
- 2016 Alliance to Advance Liberal Arts Colleges Workshop Grant: *Strategic Optimization: Focusing Undergraduate Research to Maximize Scholarship in Applied Mathematics*

ORGANIZED CONFERENCES & MINISYMPOSIA

- Apr 2025 (co-organizer) *In Remembrance of Emmy Noether: A Gathering on the 90th Anniversary of Her Passing*, Bryn Mawr, PA
- Sep 2023 (co-organizer) *Celebrating 25 Years of EDGE: Mobilizing the Power of Diversity*, Bryn Mawr, PA
- Jul 2022 (minisymposium): *Data and Modeling in Action: When Mathematics and Society Intersect*, SIAM Annual Meeting, Pittsburgh, PA
- Jul 2017 SIAM Annual Meeting Organizing Committee, Pittsburgh, PA
- Jun 2017 (host/co-organizer): Alliance to Advance Liberal Arts Colleges Workshop, *Strategic Optimization: Focusing Undergraduate Research to Maximize Scholarship in Applied Mathematics*, Bryn Mawr, PA
- Apr 2017 (invited co-chair): *From cells to landscapes: modeling health and disease*, Association for Women in Mathematics Research Symposium, Los Angeles, CA
- Mar 2015 (minisymposium co-chair): *Fluid Transport Dynamics in Biology and Medicine, part of the Workshop Celebrating Diversity*, Society for Industrial and Applied Mathematics (SIAM) Conference on Computational Science and Engineering, Salt Lake City, UT
- Oct 2014 *Perspectives in Diabetes Modeling*, International Symposium on Biomathematics and Ecology Education and Research, Claremont Colleges, Claremont, CA
- Aug 2014 (minisymposium co-chair): *Dynamics of thrombus development: formation, degradation, and therapeutic design*, Society for Industrial and Applied Mathematics (SIAM) Conference on the Life Sciences, Charlotte, NC

TALKS

KEYNOTES & PLENARIES

- Jan 2026 Nebraska Conference for Undergraduate Wisdom in Mathematics, Lincoln, NE (Plenary)
- Oct 2025 Applied Math Intersections Conference, Claremont, CA (Featured)
- Jun 2024 SIAM Life Sciences, Portland, OR (Plenary)
- Apr 2024 Math4All, New Orleans, LA (Plenary)
- Aug 2022 MAA MathFest BIO SIGMAA, Philadelphia, PA (Plenary)
- Apr 2021 ParaDIGMS Spring Conference, *virtual* (Plenary)
- Jan 2021 Joint Mathematics Meetings, *virtual* (MAA-SIAM-AMS Hrabowski-Gates-Tapia-McBay Lecture)
- Mar 2020 WiMSoCal, Irvine, CA (Keynote)
- Sep 2019 WIMIN Conference, Northampton, MA (Dorothy Wrinch Lecture in Biomathematics)

INVITED & CONTRIBUTED CONFERENCE TALKS

 contributed talk

- Jul 2026 European Conference on Mathematical and Theoretical Biology, Graz, Austria
- Jul 2025 SIAM Annual Meeting, Montreal, QC, Canada
- Jan 2025 Joint Mathematics Meetings, Seattle, WA
- Jun 2024 SIAM Conference on the Life Sciences, Portland, OR
- Aug 2023 ICIAM, Tokyo, Japan

Jul 2023 Society for Mathematical Biology Annual Meeting, Columbus, OH
 May 2023 SIAM Conference on Dynamical Systems, Portland, OR
 Jul 2022 SIAM Annual Meeting, Pittsburgh, PA
 May 2021 SIAM Conference on Dynamical Systems (*virtual*)
 Jul 2019 ICIAM, Valencia, Spain
 Jul 2019 SIAM Conference on Dynamical Systems, Snowbird, UT
 Mar 2019 Explanation, Idealization and Modeling Workshop, Bryn Mawr College, Bryn Mawr, PA
 Jul 2018 SIAM Annual Meeting, Portland, OR
 Jul 2018 SIAM Conference on Applied Mathematics Education, Portland, OR
 Jan 2018 Joint Mathematics Meetings, San Diego, CA
 Jul 2017 Society of Mathematical Biology Annual Meeting, Salt Lake City, UT 🇺🇸
 Jul 2017 University of Utah Math Biology Alumni Reunion Conference in honor of James P. Keener's 70th birthday, Salt Lake City, UT 🇺🇸
 Jul 2017 SIAM Annual Meeting, Pittsburgh, PA
 Feb 2017 Women in Data Science (WiDS), Newtown Square, PA
 Jul 2016 SIAM Annual Meeting, Boston, MA
 Jul 2016 SIAM Conference on the Life Sciences, Boston, MA
 Jan 2016 Joint Mathematics Meetings, Seattle, WA
 Oct 2015 SACNAS National Conference, Washington, DC
 Jun 2015 Society for Mathematical Biology Annual Meeting, Atlanta, GA
 Apr 2015 AWM Research Symposium, College Park, MD
 Mar 2015 SIAM Conference on Computational Science and Engineering, Salt Lake City, UT
 Jan 2015 Joint Mathematics Meetings, San Antonio, TX
 Oct 2014 International Symposium on Biomathematics and Ecology Education and Research, Claremont Colleges, Claremont, CA 🇺🇸
 Aug 2014 SIAM Conference on the Life Sciences, Charlotte, NC
 Aug 2014 SIAM Conference on the Life Sciences, Charlotte, NC 🇺🇸
 Jul 2014 Society for Industrial and Applied Mathematics (SIAM) Annual Meeting, Chicago, IL
 Jul 2011 International Council for Industrial and Applied Mathematics (ICIAM), Vancouver, BC, Canada

COLLOQUIA AND SEMINARS

Apr 2026 Biomathematics Seminar, University of Florida (*virtual*)
 Apr 2022 Seminar, University of Colorado Denver
 Nov 2021 Mathematics Colloquium, Villanova University
 Nov 2021 Temple University (*virtual*)
 Oct 2021 Equity Forum, University of Toronto (*virtual*)
 Apr 2021 Mathematical Modeling Seminar, Rochester Institute of Technology (*virtual*)
 Oct 2020 Biomathematics Seminar, Virginia Commonwealth University (*virtual*)
 Apr 2020 Washington College (*virtual*)
 Sep 2019 Saint Joseph's University
 Apr 2019 Morehouse College
 Apr 2019 Mathematical and Computer Science Colloquium, Moravian College
 Mar 2019 University of the Sciences
 Oct 2018 Applied Mathematics Colloquium, Claremont Colleges
 Mar 2018 Health Equity and Inclusion Seminar, University of Utah
 Oct 2017 Partial Differential Equations and Applied Mathematics Seminar, Drexel University
 Dec 2016 Department of Electrical and Computational Engineering, Drexel University
 Oct 2016 Applied Mathematics & Statistics Colloquium, Colorado School of Mines
 Apr 2016 AWM Student Chapter Seminar, University of Delaware
 Apr 2016 Mathematics & Statistics Colloquium, Villanova University
 Feb 2016 Bard College at Simons Rock
 Feb 2016 Applied Math & Scientific Computing Seminar, Temple University
 Nov 2015 Bi-Co Mathematics Colloquium (Haverford College)
 Dec 2014 GlaxoSmithKline (remote)
 Oct 2014 Mathematical Biological Colloquium, Duke University

Jul 2014	National Institutes of Health/National Institute of Diabetes and Digestive and Kidney Diseases (NIH/NIDDK)
Jan 2013	Biomathematics Seminar, North Carolina State University
Jun 2012	Metabolism Interest Group, Division of Endocrinology, University of Utah School of Medicine
Jul 2009	University of Minnesota Medical School (Division of Pediatric Endocrinology)

TEACHING & MENTORING

COURSES TAUGHT

* course created

Calculus • Linear Algebra • Differential Equations with Applications • Introduction to Modeling and Simulation* • Applied Mathematics (*Topic: Mathematical Models in Biology**) • Advanced Topics in Applied Mathematics (*Topics: Numerical Linear Algebra*, Optimal Control in Biological Models**) • Senior Conference (*Topics: Discrete Mathematical Models with Algorithms, Epidemiological Modeling in an 'Infodemic' Age, Optimal Control in Biological Models*) • Graduate Numerical Linear Algebra*

GRADUATE STUDENTS

- 2026 Savannah Williams (PhD): *Modeling "Abnormal" Ovulatory Dynamics: Enzymes, Insulin, and the Impact of Stress*
- 2026 Suzanna Semaan (AB/MA): *The LESION Model: Local Estradiol Synthesis in Infertility Onset: A Mathematical Model of Lesion Growth in Endometriosis*
- 2024 Jo Amuso (AB/MA): *Using Biomathematical Models to Examine Potential Effects of Semaglutide on Polycystic Ovarian Syndrome Treatment*
- 2022 Ryann McManus (AB/MA): *Modeling the Effects of Incretins and Circadian Misalignment on Glucose-Insulin Dynamics*

UNDERGRADUATE STUDENTS

- 2026 Samantha Calloway: *Modeling GLP-1 Modulation of the CSTC Loop in Obsessive-Compulsive Disorder*
- 2026 Aiyana O'Prussack: *Modeling HIV-1 Persistence: Deterministic and Stochastic Approaches to Latent Reservoir Dynamics*
- 2025 K.c. Kula (co-advisor): *A Mathematical Evaluation of Solar Energy and Geothermal Heat Pumps at Bryn Mawr College*
- 2025 Orli McGuire-Berk: *Studying Acute Bee Paralysis Virus Through Various Epidemiological Methods*
- 2025 Kris Pasia: *Optimal Control Applied to Cancer Treatments*
- 2025 Lucy Wilson: *Mathematical Models of Immunotherapy For Food Allergy*
- 2024 Wren Jackson: *The Description and Derivation of Contemporary Pain Modeling Efforts: A Between-the-Lines Search for Chronic Pain Representation*
- 2023 Katherine Clemens: *Likely Parameters to Express Hopf Bifurcations in Eleven Gene Regulatory Networks*
- 2023 Rosalie Tarsala: *Modeling Diabetes Using Symbolic Regression Techniques*
- 2021 Katie Coe: *Mathematical Modeling of Pulmonary Thrombosis in COVID-19*
- 2021 Liwei Yang: *Modeling Cause of β -amyloid Induced Alzheimer's Disease and Its Potential Treatment*
- 2020 Ellie Lee: *Modeling Anchovy Interactions in the Puget Sound*
- 2020 Irene Lin: *Effectiveness of isolation and quarantine for COVID-19 in Wuhan from November 17, 2019 to March 31, 2020*
- 2018 Dina Benedetto: *Optimal Control Theory: Finding the Optimal Cancer Treatment Protocol for Various Anti-Cancer Approaches*
- 2018 Phuong Nguyen: *An Application of Queueing Theory: Optimizing Queues at JFK Airport*
- 2018 Lia Yoo: *Cantare con legno: Applications of Fourier's theory of harmonic analysis on the sound production of stringed instruments*

HONORS & AWARDS

- 2022 AWM Presidential Recognition Award: *Mathematically Gifted and Black*
- 2019–2020 Bryn Mawr College Rosabeth Moss Kanter Change Master Award

2015–2018 MAA Project NExT Fellow

PROFESSIONAL SERVICE

Panelist National Science Foundation
Reviewer Spora–A Journal of Biomathematics; Journal of Mathematical Biology (JOMB); Journal of Theoretical Biology (JTB); PLoS Computational Biology; Springer Book Series
Partner MGB-SIAM Early-Career Fellowship (MSEC), est. 2021
Co-founder Sylvia T. Bozeman Predoctoral Fellowship, 2020–2025
Co-founder *Mathematically Gifted & Black* (<https://mathematicallygiftedandblack.com/>) website, est. 2017
2015–2018 SIAM Diversity Advisory Committee, Workshop Celebrating Diversity Working Group

INSTITUTIONAL SERVICE

2024– Chair, Mathematics Department
2017– Faculty Marshal
• Grand Marshal (2025–)
• Commencement Faculty Marshal (2017–2024, except 2020)
• Emergency Faculty Marshal (May 2017 & May 2018)
F2025 Chair, Provost Search Committee
AY 2023–24 Faculty Representative, Presidential Search Committee
AY 2022–24 Mathematics Faculty Search Committees (3 total)
2022–2024 Faculty Parliamentarian
2020–2022 Committee on the Undergraduate Curriculum
2019–2020 Co-convener of the junior faculty
F2017– Committee on Libraries, Information and Computing (Chair 2019–2020)
S2020
S2020 Data Science steering committee
F2019 Bryn Mawr Biology physiology (Biology) faculty search committee
Aug 2019 Panelist, New faculty orientation
AY 2017–18 Haverford faculty theoretical and applied mathematics search committees (2 total)
Nov 2017 Faculty presenter, Family Weekend
Feb 2017 Faculty presenter, Board of Trustees Lunch
AY 2016–17 2017 Community Day of Learning planning committee
AY 2016–17 Haverford health studies search committee

OUTREACH & BROADER IMPACTS

 mentoring  panelist  participant  talk  teaching

Apr 2026  *Math is Life is Math*, North Carolina School of Science and Mathematics, Durham, NC (*virtual*)
Jun 2025  Numerical Analysis Instructor, EDGE Summer Program, University of Tennessee, Knoxville, TN
2024  Research Leader, MSRI-UP Summer Research Program, Simons Laufer Mathematical Sciences Institute (SL Math), Berkeley, CA
Apr 2021  *Changing the ‘Face’ of Mathematics*, National Math Festival invited presentation (*virtual*), with *Mathematically Gifted & Black*
Jun 2020  Numerical Analysis Instructor, EDGE Summer Program (*virtual*), sponsored by Brown University
Jun 2019  Numerical Analysis Instructor, EDGE Summer Program, Pomona College, Claremont, CA
Mar 2019  Podcast guest, *Relatively Prime*, Episode: “Mathematically Gifted and Black”, <https://relprime.com/mgab/>.
Jul 2018  *Hidden Figures: Then and Now*, SIAM Annual Meeting, Portland, OR
May 2018  #Mathematics4Life, Agnes Irwin School, Bryn Mawr, PA
Jul 2017  *Hidden Figures* Event featuring retired NASA engineer Dr. Christine Darden, SIAM Annual Meeting, Pittsburgh, PA

May 2016 🗨️ 'Becoming an academic mathematician: Transitioning from undergraduate to grad student': Women in Mathematics Program, IAS, Princeton, NJ

Mar 2016 🗣️ #Mathematics4Life, Sonia Kovalevsky Day keynote speaker, University of Wisconsin Eau-Claire, Eau-Claire, WI

Oct 2015 👥 Student poster judge and mentor: SACNAS Conference, Washington, DC

Jun 2014 👤 NSF Alliance Careers in Academia Workshop, ICERM, Providence, RI

Apr 2014 👤 Spring Opportunities for Women in the Mathematical Sciences, NIMBioS, Knoxville, TN

Jun 2013 🗣️ *ROS and MT in IR: Reviewing Ominous Signs and Mathematical Tones in Irreversible Ruin*, EDGE Summer Symposium, New College of Florida, Sarasota, FL

Jun 2010 👥 Graduate student mentor: EDGE Summer Program, North Carolina State University, Raleigh, NC

Jun 2006 👤 Enhancing Diversity in Graduate Education (EDGE) Summer Program, New College of Florida, Sarasota, FL