

REGINALD L. MCGEE II

Curriculum Vitae

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Education and academic appointments

- 2024 – Associate Professor of Mathematics and Statistics, Haverford College, Haverford, PA
- 2021 – Affiliate Graduate Faculty, Virginia Commonwealth University, Richmond, VA
- 2020 – 2021 Visiting Assistant Professor, Virginia Commonwealth University, Richmond, VA
- 2018 – 2024 Assistant Professor of Mathematics, College of the Holy Cross, Worcester, MA
- 2015 – 2018 Postdoctoral Fellow, NSF Mathematical Biosciences Institute (MBI), Columbus, OH
Mentor: Kevin R. Coombes (Biomedical Informatics, OSU Wexner Medical Center)
- 2015 Ph.D. Mathematics - Purdue University, West Lafayette, IN
Advisor: Gregory T. Buzzard *Specialization:* Computational life sciences
Thesis title: Modeling, analysis, and control of Syk-mediated signaling events
and associated cellular response for B cells
- 2012 M.S. Mathematics - Purdue University, West Lafayette, IN
- 2009 B.S. Mathematical sciences - Florida A&M University, Tallahassee, FL (Summa Cum Laude)

Research interests

Analysis of biomedical data and models for biological systems, scientific computing, blood disorders, health disparities, signal transduction, dynamical systems, immune responses, and autoimmunity

Fellowships, honors, and awards

- 2024 Holy Cross JEBCI Office's Inclusive Excellence Champion Award for Faculty (Inaugural)
- 2023 Biomathematics and Ecology Education and Research (BEER) XVI Travel Grant, \$900
- 2023 SIAM ICIAM Travel Award, \$1,750
- 2022 – 2024 NIH Grant 1R21DE032583-01, \$420,357, *Role:* Co-PI
Title: Predicting Pediatric Sickle Cell Disease Acute Pain Using
Mathematical Models Based on mHealth Data
- 2022 – 2024 MGB-SIAM Early Career Fellowship
- 2021 Robert L. Ardizzone '63 Fund for Tenure Track Faculty Excellence, \$2,000
- 2019 Batchelor Ford Foundation Summer Faculty Fellowship, \$4,000
- 2018 Saginaw High School Distinguished Alumni
- 2018 – 2019 Mathematical Association of America (MAA) Project NExT Fellow
- 2017 SMB Landahl-Busenberg Travel Award – SMB Annual Meeting, \$500
- 2017 SIAM Workshop Celebrating Diversity Travel Award - SIAM Annual Meeting, \$1,500
- 2016 Biology and Medicine through Mathematics (BAMM!) Conference Travel Award, \$600
- 2016 SIAM Early Career Travel Award – Conference on the Life Sciences, \$650
- 2015 – 2018 Big Ten Academic Alliance Professional Advancement Initiative Postdoctoral Scholar
- 2015 Ford Foundation Dissertation Fellowship – Alternate and Honorable Mention
- 2015 SIAM Student Travel Award – Conference on Applications of Dynamical Systems, \$650
- 2014 Ford Foundation Dissertation Fellowship – Alternate and Honorable Mention
- 2011 – 2014 Graduate Assistance in Areas of National Need Fellowship
- 2011 – 2015 Purdue Alliance for Graduate Education and the Professoriate Scholar
- 2009 – 2011 Purdue Doctoral Fellowship
- 2005 – 2009 Florida A&M University Distinguished Scholars Tuition Award

Non-degree education

- 2023 July Master Class in Teaching Math Modeling for Life Sciences, Harvard University
- 2021 Fall Reshaping Mathematical Identity by Valuing Creativity in Calculus (REACT-C) Fellow
- 2021 July Advanced Course in Immunology, American Association of Immunologists
- 2014 Jun. 17th Annual Applied Management Principles Program, Purdue University - West Lafayette

Publications

Published articles

7. E. KARA, T. JACKSON, C. JONES, **R. L. McGee**, AND R. SISSON, *Mathematical modeling insights into improving CAR-T cell therapy for solid tumors: antigen heterogeneity and bystander effects* (accepted in principle at npj Systems Biology and Applications) doi:10.48550/arXiv.2307.05606
6. J. SHEEN, L. CURTIN, S. FINLEY, A. KONSTORUM, **R. L. McGee**, AND M. CRAIG, *Integrating Diversity, Equity, and Inclusion into Preclinical, Clinical, and Public Health Mathematical Models*, Bulletin of Mathematical Biology, 86 (2024), p. 56
5. N. KRAVTSOVA, **R. L. McGee**, AND A. T. DAWES, *Scalable gromov–wasserstein based comparison of biological time series*, Bulletin of Mathematical Biology, 85 (2023), p. 77
4. **R. L. McGee** AND G. T. BUZZARD, *Maximally informative next experiments for nonlinear models* Mathematical Biosciences **302** (2018) pp. 1-8. doi:10.1016/j.mbs.2018.04.007
3. L. WEIHS, B. ROBINSON, E. DUFRESNE, J. KENKEL, K. KUBJAS, **R. L. McGee**, N. NGUYEN, E. ROBEVA, AND M. DRTON, *Determinantal generalizations of instrumental variables*, Journal of Causal Inference **6**, no. 1 (2018) pp. 20170009. doi:10.1515/jci-2017-0009
2. **R. L. McGee**, M. O. KRISSENKO, R. L. GEAHLEN, A. E. RUNDSELL, AND G. T. BUZZARD, *A computational study of the effects of Syk activity on B cell receptor signaling dynamics*, Processes **3**, no. 1, (2015) pp. 75-97. doi:10.3390/pr3010075
1. S. ALBEN AND **R. L. McGee**, *Optimizing a fin ray for stiffness*, Journal of the Mechanics and Physics of Solids **58**, no. 5, (2010) pp. 656–664. doi:10.1016/j.jmps.2010.03.002

Submitted

- Z. B. ABRAMS, D. TALLY, A. JOGLEKAR, G. R. GERSHKOWITZ, S. SINICROPI-YAO, A. ASIAEE, **R. L. McGee**, D. P. CARBONE, AND K. R. COOMBES, *Personalized transcriptomics: selecting drugs based on gene expression profiles*
- **R. L. McGee**, J. REED, G. K. BEHBEHANI, AND K. R. COOMBES, *Differential correlation across subpopulations of single cells in subtypes of acute myeloid leukemia*, bioRxiv doi:10.1101/2022.03.07.483400
- **R. L. McGee**, J. REED, C. E. COOMBES, C. D. HERLING, M. J. KEATING, L. V. ABRUZZO, AND K. R. COOMBES, *Topological structures in the space of treatment-naive patients with chronic lymphocytic leukemia*, bioRxiv doi:10.1101/2024.05.16.593927

In preparation

- (with Jake Reed, Gregory Behbehani, and Kevin Coombes) *Detecting higher-dimensional protein interactions within mass cytometry data using topological data analysis*

Ongoing projects

- (with Angela Reynolds, Rebecca Segal, Quindel Jones, Wally Smith, and Cecelia Valrie) *Modeling pain in sickle cell disease*

Leadership activities

- 2023 – 2024 Organizing committee, 2024 SIAM Annual Meeting, Spokane, WA
- 2022 – 2025 Working Group Member (2024 Chair and Contact), SIAM Workshop Celebrating Diversity
- 2021 Organizing committee, SMB Education & REU Workshop
- 2020 – Education subgroup liaison to the SMB Committee for Diversity, Equity and Inclusion
- 2019 – Advisory board, Mathematics – Opportunities in Research & Education Conference
- 2018 – 2019 Organizing committee, 2019 Biology and Medicine through Mathematics (BAMM!)

Teaching and mentoring activities

Courses taught as instructor of record at Haverford College

MATH 118 Calculus: Dynamics and Integration: Fall 2024 ($\times 2$)

Courses taught as instructor of record at College of the Holy Cross

MATH 133 Calculus 1 with Fundamentals: Fall 2023

MATH 244 Linear Algebra: Fall 2021, Spring 2023

MATH 136 Calculus 2: Spring 2020, Spring 2022, Spring 2023, Spring 2024

MATH 371 Methods of Numerical Analysis: Fall 2019, Spring 2022, Fall 2023

MATH 241 Multivariable Calculus: Spring 2019, Spring 2020

MATH 304 Ordinary Differential Equations: Fall 2018

MATH 135 Calculus 1: Fall 2018, Spring & Fall 2019 ($\times 2$), Fall 2021 & 2022 ($\times 2$), Spring 2024

Courses taught as instructor of record

Evaluation

2017 Spring MATH 3607 Beginning Scientific Computing, The Ohio State University 4.5/5

2015 Spring MA 250/STAT 250 Problem Solving in Probability, Purdue University 4.2/5

2013 Spring MA 232 Calculus for the Life Sciences II, Purdue University 4.5/5

Courses taught as recitation instructor

2012 Fall MA 161 Plane Analytic Geometry And Calculus I, Purdue University 4.8/5

External courses taught

2017 June MBI Summer Research Experience for Undergraduates MATLAB Tutorial

2015 June Purdue Summer Research Opportunities Program (SROP) General GRE Math Prep

2011 Spring Purdue Gifted Education Resource Institute Super Saturday Program

Course title: Power It Up! (5th and 6th graders)

Mentoring experience

2018 – Math Alliance predoctoral mentor

2016 Fall Project mentor, MATH 1156 Calculus for Biological Sciences, The Ohio State University

2016 June Project mentor, MBI Graduate Summer School:
Mathematical Modeling of Infection Disease Spread

2015 Fall Project mentor, MATH 1156 Calculus for Biological Sciences, The Ohio State University

2015 Sum. Graduate coordinator, Purdue SROP program

2013 – 2015 AGEP mentor, Purdue Louis Stokes Alliance for Minority Participation program

Professional and scholarly memberships

2018 – ∞ Mathematical Association of America

2018 – ∞ National Association of Mathematicians

2016 – ∞ Society for the Advancement of Chicanos and Native Americans in Science (SACNAS)

2013 – ∞ Society for Mathematical Biology

2011 – Society for Industrial and Applied Mathematics (SIAM)

2009 – 2021 American Mathematical Society

∞ denotes lifetime membership

Talks and presentations

Invited talks

- 2024 Aug. MAA MathFest Invited Paper Session, Indianapolis, IN
Session topic: Trends in Mathematical and Computational Biology
- Jul. Society for Mathematical Biology (SMB) Annual Meeting Minisymposium, Seoul, KR
Minisymposium (MS) Topic: Immunobiology and infection subgroup minisymposium
- 2023 Nov. Symposium on Biomathematics and Ecology Education and Research, Richmond, VA
MS topic: Teaching mathematics to humans by humans
- Aug. Jumpstart Math Workshop, Western Washington University, Bellingham, WA
- Jul. SMB Annual Meeting Minisymposium, Columbus, OH
MS Topic: Mathematical-biology education in a post-COVID world
- Jul. SMB Annual Meeting Minisymposium, Columbus, OH
MS topic: 10th anniversary of the 2013 Workshop for Young Researchers in Math. Bio.
- May SIAM Conference on the Dynamical Systems Minisymposium, Portland, OR
MS topic: Diverse Applications and Approaches in Biological Dynamics
- 2022 Jul. SIAM Conference on the Life Sciences Minisymposium (Co-organizer), Pittsburgh, PA
MS topic: Quantitative Approaches for Studying Sickle Cell Disease
- 2021 Nov. Digital and Computational Studies Colloquium, Bates College, Lewiston, ME*
- Jul. MSRI Undergraduate Program (MSRI-UP) Colloquium, Berkeley, CA*
- Apr. Biomath Seminar, Virginia Commonwealth University, Richmond, VA*
- Apr. Math Biology Seminar, University of California Davis, Davis, CA*
- Mar. Mathematics & Computer Science Colloquium, Moravian College, Bethlehem, PA*
- Mar. Mathematics Colloquium, Gettysburg College, Gettysburg, PA*
- Mar. Mathematics and Natural Sciences Colloquium, College of Idaho, Caldwell, ID*
**Virtual due to COVID-19*
- 2019 Aug. MAA MathFest Invited Paper Session, Cincinnati, OH
Session topic: Mathematical Diversity in Mathematical Biology
- Jul. SMB Annual Meeting Minisymposium, Montreal, QC
MS topic: Education subgroup minisymposium
- Mar. Mathematical Sciences Colloquium, Worcester Polytechnic Institute, Worcester, MA
- Mar. Center for Quantitative Medicine Research Seminar, UConn Health, Farmington, CT
- 2018 Oct. Applied and Computational Math Seminar, Tulane University, New Orleans, LA
- Oct. SACNAS Scientific Symposia Session, San Antonio, TX
Session topic: Recent Advances from the Intersection of Bio., Math., & Stats.
- Sep. Mathematical Sciences Colloquium, Rensselaer Polytechnic Institute, Troy, NY
- Jul. Applied Maths Seminar Series, The University of Auckland, Auckland, NZ
- Jul. SMB Annual Meeting Minisymposium, Sydney, AU
MS topic: Immunobiology and infection subgroup minisymposium
- Apr. Mathematical Biology Seminar, University of British Columbia, Vancouver, BC
- Mar. AMS Central Sectional Meeting Special Session (Co-organizer), Columbus, OH
Session topic: Parameter analysis and estimation in applied dynamical systems
- Jan. AMS Special Session at Joint Mathematics Meetings (JMM), San Diego, CA
Session topic: Presentations by Scholars in the National Math Alliance
- 2017 Sep. Mathematics & Statistics Colloquium, University of Minnesota Duluth, Duluth, MN
- Sep. Applied Mathematics Seminar, Texas Tech University, Lubbock, TX
- Sep. Biomathematics Seminar, Texas Tech University, Lubbock, TX
- July Workshop Celebrating Diversity at SIAM Annual Meeting, Pittsburgh, PA
- Apr. Ohio Wesleyan Science Lecture Series, Ohio Wesleyan University, Delaware, OH

- Feb. Black History Month Colloquium Series, Youngstown State University, Youngstown, OH
 2016 Nov. Mathematics & Computer Science Colloquium, College of the Holy Cross, Worcester, MA
 Oct. NSF Mathematics Institutes' Modern Math Workshop at SACNAS, Long Beach, CA
 Aug. MAA MathFest Invited Paper Session (Organizer), Columbus, OH
 Session topic: Mathematics & the Life Sciences at MBI
 Jan. NAM Granville-Brown-Haynes Session at JMM, Seattle, WA
 2015 Nov. Math Alliance Field of Dreams Conference, Birmingham, AL

Contributed talks and local seminars

- 2023 Aug. International Congress on Industrial and Applied Mathematics (ICIAM), Tokyo, Japan
 2017 Nov. MBI Postdoc Seminar, Columbus, OH
 July SMB Annual Meeting, Salt Lake City, UT
 May Biology and Medicine through Mathematics (BAMM!) Conference, Richmond, VA
 2016 Dec. MBI Postdoc Seminar, Columbus, OH
 Jul. SIAM Conference on the Life Sciences, Boston, MA
 May Biology and Medicine through Mathematics (BAMM!) Conference, Richmond, VA
 Feb. MBI Postdoc Seminar, Columbus, OH
 Jan. AMS Session on Mathematical Biology at JMM, Seattle, WA
 2015 Jan. AMS Session on Mathematical Biology at JMM, San Antonio, TX
 2014 Nov. Purdue Department of Mathematics Graduate Research Day, West Lafayette, IN

Poster presentations

- 2016 Oct. Blackwell-Tapia Conference, NIMBioS, Knoxville, TN
 2015 May SIAM Conference on Applications of Dynamical Systems, Snowbird, UT
 2014 Nov. Blackwell-Tapia Conference, Institute of Pure and Applied Mathematics, Los Angeles, CA
 Aug. Workshop for Young Researchers in Math Biology, MBI, Columbus, OH
 2013 Nov. Math Alliance Field of Dreams Conference, Phoenix, AZ
 Aug. Workshop for Young Researchers in Math Biology, MBI, Columbus, OH
 Jun. National Laboratories Professional Development Workshop, Oak Ridge National Lab
 2012 Nov. Blackwell-Tapia Conference, ICERM, Providence, RI

Participations in workshops and conferences

- 2022 June ADJOINT Workshop, Mathematical Sciences Research Institute (MSRI), Berkeley, CA
 2021 Nov. Blackwell-Tapia Conference, Institute of Advanced Study, Princeton, NJ
 2021 June eSMB: Virtual SMB Annual Meeting
 2020 Aug. eSMB: Virtual SMB Annual Meeting
 May MBI Virtual Workshop
 Topic: Mathematical and Computational Methods in Biology, Columbus OH
 2019 Aug. ICERM Topical Workshop, Providence, RI
 Topic: Applied Mathematical Modeling with Topological Techniques
 Jul. Project NExT Workshop at MAA MathFest (Co-organizer), Cincinnati, OH
 Topic: Equity and Diversity in the College Mathematics Classroom
 Mar. Critical Issues in Mathematics Education, MSRI, Berkeley, CA
 Topic: Mathematical Modeling In K-16: Community And Cultural Context
 Jan. AMS-MAA Joint Mathematics Meetings (JMM), Baltimore, MD

- 2018 Nov. Blackwell-Tapia Conference, ICERM, Providence, RI
 Aug. MAA MathFest, Denver, CO
 Feb. Critical Issues in Mathematics Education, MSRI, Berkeley, CA
Topic: Access to math. by opening doors for students currently excluded from math.
- 2017 Jan. AMS-MAA Joint Mathematics Meetings (JMM), Atlanta, GA
- 2016 Sep. MBI Emphasis Semester Workshop, Columbus, OH
Topic: Models for Oncogenesis, Clonality and Tumor Progression
- Sep. MBI Emphasis Semester Workshop, Columbus, OH
Topic: Topological, Geometric, and Statistical Techniques in Biological Data Analysis
- Jun. AMS Mathematics Research Communities Program, Snowbird, UT
Topic: Algebraic Statistics
- 2015 Oct. ICMA-V (Modeling and Analysis of Populations in Biological Systems), London, ON
 Sep. Workshop on Omics Data Analysis, MBI, Columbus, OH
 Jan. NIMBioS Investigative Workshop, University of Tennessee - Knoxville
Topic: Lymphoid Cells in Acute Inflammation
- 2014 Oct. Compact for Faculty Diversity: 21st Institute on Teaching and Mentoring, Atlanta, GA
 Jul. MBI-NIMBioS-CAMBAM Summer Graduate Workshop, MBI, Columbus, OH
Topic: Rhythms and Oscillations
- 2013 Oct. NSF Mathematics Institutes' Modern Math Workshop at SACNAS, San Antonio, TX
 Jun. MBI-NIMBioS-CAMBAM Summer Graduate Workshop, University of Tennessee - Knoxville
Topic: Connecting Biological Data with Mathematical Models
- 2012 Jan. AMS-MAA Joint Mathematics Meetings, Boston, MA
- 2010 Nov. Blackwell-Tapia Conference, MBI, Columbus, OH
 Mar. Career Options for Underrepresented Groups in Mathematical Sciences,
 Institute for Mathematics and its Applications, Minneapolis, MN

Service activities

Service to College of the Holy Cross

- May 2024 Faculty Marshal
- Spring 2024 Co-organizer, Black History Month Colloquium for the Departments of Chemistry & Mathematics and Computer Science
- 2023 – 2024 Member, Howard Hughes Medical Institute (HHMI) Inclusive Excellence Core Team
- 2023 – 2024 Member, Health Professions Advising Committee
- 2023 – 2024 Faculty Affiliate, Neuroscience Program
- Fall 2022 Department of Mathematics and Computer Science liaison to the Science Library
- 2021 – 2024 Co-organizer, Department of Mathematics and Computer Science Colloquium
- 2021 – 2023 Member, Benefits Advisory Committee
- 2021 – 2023 Member, Faculty Compensation Committee
- 2019 – 2024 Coordinator, Department of Mathematics and Computer Science Digital Sign
- 2019 – 2020 Application Reviewer, Weiss Summer Research Program
- 2018 – 2020 Department of Mathematics and Computer Science liaison to the Science Library
- 2018 – 2020 Faculty Co-advisor, Mathematics, Computer Science, and Statistics Club

Service to the Profession and Outreach

- 2023 Co-organizer, SMB Annual Meeting DEI Session
Topic: “Mathematical modelling and the integration of diverse and underserved populations in (pre)clinical research and public health”
- 2022 Panelist, MSRI Undergraduate Program (MSRI-UP) panel
Topic: Careers and trajectories within the mathematical sciences

- 2022 Panelist, WPI Center for Industrial Mathematics and Statistics REU panel
Topic: Careers in academia
- 2022 Co-organizer, BAMM! mentoring session
- 2022 – 2023 Proposal Reviewer, MAA Tensor SUMMA
- 2022 – 2025 Member, AWM-MAA Joint Committee on the Etta Z. Falconer Lecture
- 2021 Discussion Co-facilitator, SMB Workshop on Diversity, Equity and Inclusion
Topic: Inclusive Pedagogy
- 2021 Speaker, Nativity School of Worcester Lunch Chat
- 2021 Panelist, MBI Professional Development Seminar
Topic: Academic life at liberal art colleges and smaller universities
- 2021 Mock Interviewer, Nativity School of Worcester Networking Night
- 2020 Panelist, Math Alliance Virtual Field of Dreams Event
Topic: Preparing for Your First Professional Position
- 2020 Speaker, University of Oklahoma Senior Mathematics Seminar
- 2020 Speaker, FAMU Department of Energy Pipeline Engagement Colloquium Series
- 2020 Panelist, Success Through Rewarding and Inclusive Virtual Experience for MORE
Topic: Career and Pathways
- 2020 Abstract reviewer, Immunobiology and Infection Subgroup eSMB Minisymposium
- 2020 – 2022 Co-editor, SMB Newsletter
- 2018 Judge, SMB Annual Meeting Poster Session
- 2018 Speaker, The Ohio State Office of Postdoctoral Affairs Workshop Series
Topic: Advice From A Successful Job Search
- 2017 Panel Co-moderator, SMB Early Careers Workshop
Topic: Career options in government, publishing, and academia
- 2014 Panel Participant, Math Alliance Field of Dreams Conference
Topic: Maximizing Opportunities at a Conference
- 2014 – 2015 Graduate Student Representative, Purdue Department of Mathematics
- 2014 Volunteer: Executive Director of Registration, Underrepresented Students in Algebra and Topology Research Symposium (USTARS)
- 2013 Panel moderator, Math Alliance Field of Dreams Conference
Topic: Surviving the Doctoral Experience

Service to The Ohio State University and Purdue University

- 2016 – 2017 Co-organizer, MBI Postdoc Seminar
- 2016 Panel participant, The Ohio State SROP Program
Topic: Choosing the Right Graduate School
- 2013 – 2015 Tutor, Purdue Science Bound
- 2013 – 2014 Graduate student member, Purdue Department of Mathematics Website Committee
- 2013 Chaperone, OurPurdue Visitation Program
- 2012 – 2015 Tutor, Purdue Science Opportunities to Advance Retention
- 2011 – 2013 Treasurer, Purdue Black Graduate Student Association

Skills

Operating Systems: macOS, Unix/Linux, Windows
 Programming Experience: Python, C, HTML/CSS
 Software: MATLAB, R, L^AT_EX