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: Gregery 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

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

Peer-reviewed articles

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. Krisenko, R. L. Geahlen, A. E. Rundell, and G. T. Buzzard, *A computational study of the fffects 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*
- 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* arXiv, doi.org/10.48550/arXiv.2307.05606
- **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*

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 (×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 (×2), Fall 2021 & 2022 (×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, US-CAN Institutes 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

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 – 2024	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, LaTeX