Benjamin Brindle

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EDUCATION

Johns Hopkins University | Baltimore, MD

Applied Mathematics and Statistics Ph.D. Candidate with concentration in Computational Medicine | May 2026 | **GPA: 4.0/4.0**

- National Science Foundation (NSF) Fellow through the Internship Network in the Mathematical Sciences (INMAS)

Lehigh University | Bethlehem, PA

Bachelor of Science in Mathematics | January 2021 | **GPA: 3.96/4.0**

- Senior thesis: *A Mathematical Understanding of Red Blood Cell Dynamics*. Advisor: Dr. Miranda Teboh-Ewungkem

RELATED EXPERIENCE

Research Analyst Intern | Talkspace | Network & Clinical Quality | May 2022 – present

- Develop network model with natural language processing analysis of therapy transcripts to study patient diagnosis and recovery

Graduate Teaching Assistant | Johns Hopkins University | Department of Applied Mathematics & Statistics | August 2021 – present

- Supervised graduate and undergraduate teaching assistants and assigned grading responsibilities
- Enhanced students' understanding of key concepts through interactive office hours in Intro to Probability

Deep Learning Theory Summer School | Princeton University | July 2021 – August 2021

- Studied current developments in deep learning theory and its applications under supervision of top researchers

Math Grader | Lehigh University | Department of Mathematics | January 2019 – May 2021

- Graded homework for Calculus II, Honors Calculus III, Principles of Analysis I, and Introduction to Differential Equations
- Provided students with constructive feedback on proof-based assignments

Tutor | Lehigh University | Center for Academic Success | October 2018 – May 2021

- Tutored individuals and groups of up to ten in chemistry and calculus; helped students form problem solving strategies

UNDERGRADUATE RESEARCH EXPERIENCE

Independent Research Activities | Lehigh University | Department of Mathematics | September 2018 – May 2021

Advisor: Dr. Teboh-Ewungkem

- Thesis: *A Mathematical Understanding of Red Blood Cell Dynamics* | February 2019 – May 2021
  - Created a generalized mathematical model of red blood cell dynamics after blood loss
    - Used mathematical techniques from dynamical systems such as nondimensionalization and stability analysis
    - Utilized MATLAB to perform numerical bifurcation analysis and produce bifurcation plots
  - Described how to model blood loss dynamics due to variety of factors, including menstruation and malarial parasitemia
  - Researched malaria dynamics to better understand blood loss due to malaria in humans
- Nonlinear Dynamics | September 2018 – February 2019
  - Studied essential nonlinear dynamics material such as limit cycles and Hopf bifurcations
  - Further researched Ludwig et al.'s spruce budworm model with analysis and extensions

Research Development | Los Alamos National Laboratory | January 2020

- Discussed mathematical modeling malaria in humans with Dr. Teboh-Ewungkem, Dr. Carrie Manore, and Dr. Douglas J. Perkins
- Examined Dr. Perkins' data on malaria in endemic region and learned how it was collected
- Conferenced with collaborators in Siaya, Kenya

CONFERENCE PRESENTATIONS

International Conference Presentations

- SMB 2021 Annual Meeting of the Society for Mathematical Biology | Online | June 16, 2021
  - Contributed talk title: Bifurcation Analysis in a Mathematical Model for Red Blood Cell Dynamics
- SMB 2019 Annual Meeting of the Society for Mathematical Biology | Montreal, Canada | July 23, 2019
  - Poster title: The Mathematical Role of Immunity on the Within-Host Malaria Parasite Dynamics

National Conference Presentations

- 2021 Joint Mathematics Meetings | Online | January 8, 2021
  - Talk title: Mathematical Understanding of Red Blood Cell Dynamics
- National Institute for Mathematical and Biological Synthesis Undergraduate Research Conference | Online | November 1, 2020
  - Talk title: Mathematical Understanding of Red Blood Cell Dynamics

Regional Conference Presentations

- Moravian College Student Mathematics Conference | Online | February 13, 2021
  - Talk title: Bifurcation Analysis in a Mathematical Model for Red Blood Cell Dynamics
- Moravian College Student Mathematics Conference | Bethlehem, Pennsylvania | February 22, 2020
  - Talk title: Mathematical Modeling of Red Blood Cell Dynamics Under Malaria Parasitemia
- Moravian College Student Mathematics Conference | Bethlehem, Pennsylvania | February 23, 2019
  - Talk title: The Spruce Budworm Model and Its Extensions

SKILLS/RECOGNITIONS

Programming Languages

- Proficient in MATLAB, Java, Python, and LaTeX; familiar with R; experience with data mining using IBM SPSS Modeler

Gordon Croft Endowed Fellowship | Johns Hopkins University | August 2021 – May 2022

President's Scholar Award | Lehigh University | Department of Mathematics | January 2021 – August 2021

- Received three semesters' full tuition for achieving undergraduate GPA of 3.75+ to pursue thesis in mathematics

Thornburgh Mathematics Prize | Lehigh University | Department of Mathematics | May 2021

- Awarded for maintaining outstanding record in advanced mathematics courses

Goldwater Scholar Nominee | Lehigh University | February 2020

Travel Grant | NSF Grant NSF – Mathematical Biology (DMS- 1815912) | PI: Dr. Teboh-Ewungkem | July 2019

- Travelled to Annual Meeting of the Society for Mathematical Biology, July 2019, Montreal, Canada

College of Arts and Sciences Undergraduate Research Grant | Lehigh University | College of Arts and Sciences | April 2019

- Proposal title: The relation of evolving drug resistant pathogens to treatment drugs
- Awarded $750, used in travel to Los Alamos National Laboratory in January 2020

Six Sigma Yellow Belt (YB) Certification | Lehigh University | December 2018

ADDITIONAL EXPERIENCE

Special Collections Assistant | Lehigh University | Linderman Library | September 2017 – December 2020

- Populated digital mass archive and created metadata for historic Lehigh media

Civil Engineer Summer Intern | Delaware Department of Transportation | May 2018 – August 2018

- Inspected construction and completed reports and source documents during Terminal Avenue road repairs

LEADERSHIP

President and Secretary | Latin Dance Club | Lehigh University | August 2018 – May 2021

- Managed the executive board while coordinating and promoting club activities and choreography

Secretary and Treasurer | East Fifth Records | Lehigh University | April 2018 – May 2021

- Helped found the first student-run record label at Lehigh University in the roles of secretary and treasurer