Gillian Mary Baker

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EDUCATION

The Ohio State University Coding Bootcamp — Remote Learning
Certificate in Full-Stack Development with expected graduation: Sept. 28, 2021
GitHub: `https://github.com/gillianbaker97`

Case Western Reserve University — Cleveland, Ohio
Classes toward a Ph.D. in Mathematics — August 2020-May 2021

The Ohio State University — Columbus Ohio
Bachelor of Science, Major in Theoretical Mathematics — May 3, 2020
GPA 3.409

RESEARCH

Independent Research with Dr. Majid Jaberi-Douraki Autumn 2018-Summer 2020

- Studied nonlinear dynamics and biomathematics to create a mathematical model for data collected from cystic fibrosis transmembrane conductance regulator (CFTR) responses to patch-clamp experiments.
- Programmed a MatLab model of the electrochemical data from the CFTR studies in order to better understand the mechanisms behind the channels' fatally faulty performance.

Research Undergraduate Experience at Kansas State University Summer 2018

- Created a NetLogo model and theoretical framework for MCF-7 cancer cell proliferation, reuptake, and death.

Department of Chemistry, Undergraduate Researcher February 2017 - Spring 2020

- Conduct studies of chemotherapy agents' mass spectral data
- Identify and characterize chemical species
- Design experimental methods for paper and thread spray ionization
- Assist graduate researchers in sample preparation and data collection

PUBLICATIONS October 4, 2019

"Determining Surface Energy of Porous Substrates by Spray Ionization."
Damon, Deidre; Maher, Yosef; Allen, Danyelle; Baker, Jill; Chang, Boyce; Maher, Simon; Thuo, Martin; Badu-Tawiah, Abraham.
Langmuir, doi: 10.1021/acs.langmuir.9b02419. June 8, 2021

"Protective Mechanism of Dried Blood Spheroids: Applications for the Stabilization of Labile Analytes in Less Viscous Biofluids." Frey, Benjamin; Damon, Deidre; Allen, Danyelle; Baker, Jill; Asamoah, Samuel ; Badu-Tawiah, Abraham.
Analytical Chemistry, Manuscript id: ac-2021-024192; *Chemical Science*, Manuscript id: SC-EDG-05-2021-002842.

RESEARCH PRESENTATIONS

Attended the Central States Math Undergraduate Research Conference at Kansas State University   April 2019

- Presented on the previous summer's NetLogo model and research with Dr. Jaberi and included insights into the current project on cystic fibrosis.

Mathematical Biosciences Institute Capstone Conference at The Ohio State University   August 2018

- Presented *Agent-Based Modeling of Cellular Uptake, Proliferation, and Death of MCF-7 Cells undergoing Nanoparticle Chemotherapy* from the REU at Kansas State University.

HONORS

- Recipient of The Ohio State University's Provost Scholarship   2016-present
- Dean's List   Autumn 2017-Spring 2018, Autumn 2019
- Completed the program requirements of volunteering, academic achievements, and an independent research project for the STEM Exploration and Engagement Scholars Program.   Autumn 2016-Spring 2018

SERVICE and ACTIVITIES

Volunteer   Autumns 2019, 2017
- Helped coordinate a chemistry investigation for elementary school students in the Breakfast of Science Champions program.

Participation in the Directed Reading Program in Mathematics   Autumn 2019
- Currently working with a graduate student to better understand commutative algebra, including reviewing problem sets and the fundamentals of the topic.

Mentor in the Math Major Mentor Program   Autumn 2019
- Serving as a mentor and a resource for first-year mathematics majors, giving them advice and helping them navigate the university.

Presenter at Grandview Heights Public Library   Spring 2017
- Configured experiments for elementary school students' Science Night.

Radical Pi Math Club   2016-2017
- Attend talks by professors on their research in mathematics.

RELEVANT COURSES

Algebra: Linear Algebra, Abstract Algebra 1 & 2, Graduate Algebra 1& 2
Analysis: Advanced and Multivariable Calculus, Differential Equations, Analysis 1 & 2, Graduate Analysis 1&2
Electives: Geometry, Applied Algebraic Topology, Graduate Algebraic Topology, Graduate Topology, Complex Analysis, Number Theory
Statistics: Statistics 1 & 2
Chemistry: General Chemistry 1 & 2

TECHNICAL SKILLS

- Moderate proficiency in written and read Spanish
- Languages: JavaScript, HTML, CSS, SQL, and MatLab
- Databases: MySQL, MongoDB, and React
- Other: Heroku, Git

PROJECTS   The following event planning app is a project which was recently completed in the OSU Coding Bootcamp and uses Bootstrap, HTML, Handlebars, JavaScript, and MySql:

`https://github.com/larafoster/Event-Management-App`

COURSE RESEARCH PROJECTS

Perovskite Solar Cell Project, General Chemistry 2   Spring 2017

- Studied the structure and properties of lead halide perovskites and created methylammonium halide solar cells with differing thicknesses of titanium dioxide to determine the most electrically efficient design.

Trends in Social Bonds Research Project, Rural Sociology   Autumn 2017

- Used Microsoft Excel and statistical guidelines to interpret data gathered from assessments of gender and social bias.

ANALYTICAL SKILLS

- Biomathematical analyses
- Mathematical modeling
- Paper and thread spray methods

- Proficient in NetLogo, XPP, MatLab
- mass Spectrometry instrumentation
- Halide solar cell construction

ADDITIONAL WORK EXPERIENCE

Adam Baker Law, LLC.
Intern
- Conduct intensive research on the Ohio Revised Code pertaining to oil and gas litigation
- Develop strategies behind advancing various court cases