

Mario Banuelos



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EDUCATION

Ph.D., Applied Mathematics, 2018

University of California, Merced, Research Advisor: Prof. Suzanne Sindi

Preliminary Mathematics Teaching Credential, 2013

California State University, Bakersfield, 2013

B.A., Mathematics, 2012

California State University, Fresno, 2012

CURRENT AND FORMER POSITIONS

- **Associate Professor**, Mathematics, College of Science and Mathematics, Fresno State, Fall 2023 – *present*
- **Visiting Associate Professor**, Data Science Institute, The University of Chicago, Fall 2024
- **Associate Chair**, Department of Mathematics, Fresno State, Fall 2021 – Spring 2024
- **Assistant Professor**, Mathematics, College of Science and Mathematics, Fresno State, 2018 – 2023
- **Post-Doctoral Researcher**, Mathematical Sciences Research Institute - Undergraduate Program (MSRI-UP) in Mathematical Data Science, Summer 2018
- **Genomics Graduate Intern**, Joint Genome Institute and University of California, Merced, Summer 2017

RESEARCH INTERESTS

Endemic Disease Modeling, Epistatic Interactions in Genomics, Optimization Methods in Computational Biology, Data Science, including

- Developing and applying machine learning methods to identify environmental factors in disease rates.
- Leveraging recommendation systems to identify groups of genomic anomalies related to phenotypic differences.
- Implementing and developing statistical and optimization methods to model and detect structural variations in genomic data of related individuals.

TEACHING INTERESTS

Applied Statistical Methods, Linear Algebra, Bioinformatics, Mathematical Biology, Machine Learning and Data Science, Open Education Resources (OER)

TEACHING EXPERIENCE

California State University, Fresno

Spring 2025

Fall 2021, Spring 2022/23

Linear Algebra for Data Science (graduate course)

Introduction to Biostatistics

Spring 2021/22, Fall 2022/23	Mathematical Modeling
Spring 2021	Linear Algebra
Fall 2020/2022	Mathematical Models w/ Technology (graduate course)
Spring 2019/20/21	Applied Linear Statistical Models
Fall 2019/20/21/22	Mathematical Software & Programming
Fall 2018/19/20, Spring 2019	Elementary Statistics
Fall 2018/2019	Exploring Statistics (for Liberal Studies Majors)
The University of Chicago	
Fall 2024	Introduction to Data Science

LEADERSHIP, PROFESSIONAL DEVELOPMENT, AND OUTREACH

Fall 2023-Spring 2024	Intersegmental Committee of Academic Senate (ICAS) member
Spring 2023-Fall 2024	Vice Chair, <i>Society for Industrial and Applied Mathematics (SIAM) Activity Group on Applied Mathematics Education</i> .
Spring 2022-Fall 2023	Fellow, <i>Society for Industrial and Applied Mathematics (SIAM) Policy Fellowship</i> .

SELECTED HONORS AND AWARDS

- SIAM Science Policy Fellow (2022 – 2023)
- Fresno State College of Science and Mathematics (CSM) Promising New Faculty Award (2022)
- Fresno State 2022-2023 CSM Scholarly and Creative Activity Award

SELECTED PUBLICATIONS

Journal Articles

- M. Spence, M. Banuelos, R. F. Marcia, and S. Sindi, *Detecting Inherited and Novel Structural Variants in Low-Coverage Parent-Child Sequencing Data*, *Methods*, 2020.
- M. Banuelos, S. Sindi, *Modeling Transposable Element Dynamics with Fragmentation Equations*, *Mathematical Biosciences*, 2018.

Proceedings

- N. Valenzuela and M. Banuelos., *The Role of California Fires in Predicting Valley Fever*, The 16th Mexican Conference on Pattern Recognition (MCP2024).*
- Garner, S., Banuelos, M. E. Andrade, and N. Tom, *Recommendation and Clustering Methods for Quantifying Genomic Signal Interactions*, Proceedings of the 13th Int'l Symposium on Image and Signal Processing and Analysis (ISPA 2023).*
- M. Banuelos and M. Hernandez, *A Recommendation Systems Approach for Detecting Epistasis in Genomic Signals*, Proceedings of the Asia-Pacific Signal and Information Processing Association Annual Summit and Conference 2021 (APSIPA ASC 2021). *

* Indicates work done with student researchers.