Latinxs and Hispanics in Mathematical Sciences

Mario Banuelos

Mario Banuelos is a first-generation Chicano from the small, agricultural town of Delano, California. The son of an immigrant, he remembers helping his mother tie up grapevines and her sacrifice to provide a better life for her children. Mario received the Gates Millennium Scholarship after graduating high school and earned his B.A. in Mathematics from California State University, Fresno (Fresno State). He obtained a teaching credential from California State University, Bakersfield while teaching high school mathematics in his hometown. Mario decided to go to graduate school and obtained his Ph.D. in Applied Mathematics from the University of California, Merced under the guidance of Prof. Suzanne Sindi. He joined California State University, Fresno as Assistant Professor of Mathematics in 2018.

Mario Banuelos and his research group focus on developing statistical and computational models that take advantage of abundant data (e.g. genomic sequencing data) to better inform biological inference and improve predictions in classification problems arising from such information. In particular, he combines modeling with optimization by leveraging information about the data (i.e., relatedness, sparsity). Mario has built mathematical and statistical models of genome evolution through the acquisition of mutations and other types of structural variation. By combining these mathematical models with publicly available genomic data sets, he infers biological parameters and thus estimates the rates of these otherwise unobservable phenomena. Using relatedness information and lower-quality data, his work concentrates on statistical modeling and inference of genomic variants between and within species. In the greater context of mathematical biology, these models lead to insight on how genomic variation responsible for hereditary diseases and genetic diversity influences human populations and evolution. Recently, Mario has worked on developing machine learning methods to address classification problems in both biology and imaging. He is currently mentoring four undergraduates and one graduate student in these research areas.

Outside of the classroom, Mario works to mentor a range of undergraduate students through several organizations, including the Society for Advancement of Chicanos/Hispanics and Native Americans in Science (SACNAS) and the Society for Industrial and Applied Mathematics (SIAM) by serving as a faculty advisor for both on-campus clubs. To further highlight students and professionals, he is also a member of the SIAM Workshop Celebrating Diversity group and the SACNAS Student Presentation Subcommittee.

"Hispanic Heritage Month is a time of reflection and celebration of the diversity of Latinx mathematical scientists and their contributions. Sometimes we may feel like we are Ni de aquí, ni de allá, caught between our culture and our profession. This month is about building that bridge and letting others know we can cross it together."