Erin Calfee

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Education

PhD in Population Biology, University of California, Davis   06/2021
BA in History, Brown University, *magna cum laude*   05/2011

Fellowships, Honors and Awards

Winning Data Visualization, CA 2020 Election Data Challenge, UC Davis   2020
Loomis Graduate Fellowship in Agronomy, UC Davis   2019
Center for Population Biology Conference Travel Award, UC Davis   2019
Population Biology Graduate Student Fellowship, UC Davis   2015 - 2016
Undergraduate Teaching and Research Award (UTRA), Brown University   2010

Publications

Calfee E, Agra MN, Palacio MA, Ramírez SR, Coop G (2020) Selection and hybridization shaped the rapid spread of African honey bee ancestry in the Americas. PLoS Genetics 16(10): e1009038. https://doi.org/10.1371/journal.pgen.1009038

Preprints and Manuscripts in Review

Calfee E, Gates D, Lorant A, Perkins MT, Coop G, Ross-Ibarra J (2021). Selective sorting of ancestral introgression in maize and teosinte along an elevational cline. *bioRxiv*. https://www.biorxiv.org/content/10.1101/2021.03.05.434040v1

Zarate D, Lima T, Poole J, **Calfee E**, Burton R, Kohn J. Admixture in Africanized honey bees (*Apis mellifera*) from Panamá to San Diego, California (U.S.A.). *In review.*

Research Grants

North American Pollinator Protection Campaign (NAPPC) Honey Bee Health Improvement Project Grant, awarded to Erin Calfee and CO-PI Dr. Santiago Ramirez for grant "Identifying key loci for honey bee stock improvement using genomic signatures of selection in Africanized bees," 2018-2019 ($9,963).

Daphne and Ted Pengelley Award in Evolutionary Biology from the Center for Population Biology, UC Davis, for the research proposal "How selection and hybridization shape the Africanized honey bee invasion," 2017-2018 ($2000).

Skills

Statistics: R programming, graduate coursework in Bayesian statistics
Bioinformatics: Whole genome sequence analysis, git, bash, python, snakemake
Lab: PCR, DNA extraction, quantification & library preparation
Languages: English (native), Spanish (proficient), German (intermediate)

Research Experience

Graduate Researcher, UC Davis PhD program in Population Biology 09/2015 - 06/2021
Research advisor: Dr. Graham Coop
- Developing novel statistical methods to detect selection in admixed populations using whole genome sequence data
- Applying new methods to identify adaptively introgressed loci in highland maize
- Conducted a comparative study of selection in the *scutellata*-European hybrid honey bee invasion in North and South America; wrote and received ~$10k external grant and initiated a collaboration in Argentina to pursue this research

Data Science Intern, Bayer Crop Science, Woodland, CA   09/2020 - 12/2020
Supervisor: Dr. Sean MacEachern, Statistics and Digital Innovations Lead
- Analyzed pedigree and genomic data to estimate the heritability of a lab trait and evaluate potential genetic markers
- Designed a python pipeline to automate trait measurements for watermelon using computer vision and machine learning techniques
- Communicated findings to leadership, plant breeding, wet lab, and statistics teams

Full-time Lab Technician, UC Davis MIND Institute   2012 - 2015
PI: Dr. Julie Schweitzer, ADHD Research Program
- Conducted human-subject research on ADHD and teen brain development, including running fMRI brain scans, administering IQ tests and structured interviews, and analyzing preliminary data
- Assisted with grant writing and Institutional Review Board (IRB) approvals
- Managed 3-5 undergraduate research assistants at a time

Independent Undergraduate Research Project (UTRA), Brown University   2010
Advisor: Dr. Linford Fisher, historical research on Native Americans and Christianity

Undergraduate Research Assistant, Brown University Child Language Lab   2008
PI: Dr. Katherine Demuth, child language development and early vocalization research

Leadership in Data Visualization and R

Team Leader, CA 2020 Election Data Challenge, UC Davis   10/2020
- Won campus-wide data science competition
- Created interactive RShiny visualization using public data relevant to California's 2020 election (Prop 20): https://erincalfee.rbind.io/project/miss_demeanors

R Workshop Instructor and Course Developer   05/2017 - 08/2018
- Co-developed a three day course in the statistical programming language R: https://github.com/ecalfee/STEMinist_R
- Taught course 4 times for 'STEMinist' (UC Berkeley) and 'EEGAP' (UC Davis) programs, providing free data science workshops for women and students of color

Teaching

Graduate Teaching Assistant, UC Davis   03/2017 – 12/2018
- Courses: Population & Quantitative Genetics (EVE102), Evolution (EVE100), Genes & Gene Expression (BIS101)
- Plan lessons and lead weekly discussion sections, develop R coding assignments, and grade homework and exams
- Achieve consistently > 4.5/5 instructor evaluations from student reviews

Acting Instructor and Workshop Developer, UC Davis School of Medicine   05/2013
Medicine and Improv: A communication skills workshop for medical students

GRE & GMAT Teacher, Kaplan Test Prep   09/2011 - 11/2012
- Achieved > 90% excellent student reviews

Posters and Presentations

Calfee E, Gates D, Lorant A, Coop G & Ross-Ibarra J. *Parallel selection on introgression into maize from a highland endemic wild relative.* Talk presented at the 2019 Evolution Meeting, Providence, Rhode Island.

Calfee E, Agra MN, Palacio MA, Ramírez SR & Coop G. *Admixture and selection in the Africanized honey bee invasion.* Selected talk at the 2019 Bay Area Population Genetics Meeting, UC Berkeley, California.

Calfee E & Ramirez SR. *Identifying key loci for honey bee stock improvement using genomic signatures of selection in Africanized bees.* Invited talk at the NAPPC & Pollinator Partnership International Conference 2018, USDA, Washington DC.

Calfee E, Gates D, Ross-Ibarra J & Coop G. *Methods for detecting selection in admixed populations.* Talk selected from abstracts and poster at the 2018 Population, Evolutionary and Quantitative Genetics Conference, Madison, Wisconsin.

Calfee E & Coop, G. *Detecting selection for ancestry in admixed populations.* Talk presented at the 2017 Evolution Meeting, Portland, Oregon.

Mentorship

Mentor for 'Evolution and Ecology Grad Preview', student-led diversity initiative   2020
Mentor for two undergraduate researchers in evolution & ecology, UC Davis 2018 - 2019
STEM Mentor, UC Davis Women's Research and Resource Center   2015 - 2016

Other Academic Service

Member, Population Biology Student Diversity Committee   2016 - 2021
Lead Organizer, Population Biology Student Research Symposium 'Proutfest'   2018
Reviewer: PLoS Genetics, Molecular Ecology, Evolutionary Applications