

# Ensieh Habibi

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## Professional Summary

Applied Bioinformatics Scientist with intensive experience in genomics and epigenomics research, including Whole Genome Sequencing (WGS), Whole Genome Bisulfite Sequencing (WGBS), and single-cell WGBS (scWGBS). Proven expertise in DNA methylation profiling, genotype calling, NGS library preparation, and implementing and developing computational pipelines using R, Python, and Unix environments. Experienced in translational projects related to reproductive, conservation biology, and cancer with a track record of cross-functional collaboration and impactful publications.

## Technical Skills

**Bioinformatics & Epigenomics Analysis:** BWA, ANGSD, snpR, Bismark, Bowtie2, DMRichR, CoMethyl, snmC-seq2, AllCools, CpG\_Me

**NGS Techniques:** scWGBS, WGBS, WGS, RAD-seq

**Programming & Workflow Tools:** R (Seurat), Python (pandas, scanpy), Snakemake, Unix shell scripting

**Statistical Analysis & Population Genetics:** GWAS,  $F_{st}$ , PCA, Admixture, Hardy-Weinberg Equilibrium

**HPC & Cluster Computing:** SLURM, high-memory environments

## Education and Employment

**Postdoctoral Scholar**, LaSalle Lab, Department of Microbiology and Immunology, UC Davis (2023–present)

**Postdoctoral Researcher**, Genomic Variation Lab, UC Davis (2022–2023)

**Ph.D.**, Animal Biology, UC Davis (2017–2022)

Dissertation: 'Using Genomic and Epigenomic Tools for Conservation Genetics of Two California Endangered Species'

**M.S.**, Fisheries - Population Genetics, Tarbiat Modares University, Iran (2007–2010)

**B.S.**, Fisheries, University of Mazandaran, Iran (2003–2007)

## Research Experience

**Postdoctoral Scholar, LaSalle Lab, UC Davis (2023–present)**

- Investigating preconception stress effects on oocyte DNA methylation in rhesus macaque using scWGBS
- Developed pipelines for methylation data processing, QC, DMR calling

- Applied statistical models for detecting epigenetic biomarkers of stress

**Postdoctoral Researcher, Genomic Variation Lab, UC Davis (2022–2023)**

- Used genomics to track zooplankton connectivity across California water systems

**Research Assistant (Intern), Snyder Lab, Stanford Medicine (2021)**

- Contributed to eQTL discovery in colon cancer using RNA-seq and genomic datasets

**Graduate Student Researcher, Miller Lab, UC Davis (2017–2022)**

- Genome annotation and SNP assay development for Delta Smelt and Redband Trout
- Investigated transgenerational epigenetic effects and domestication selection using WGBS and RAD-seq

**Research Assistant, Reinhardt Lab, TU Dresden, Germany (2015–2016)**

- Explored mito-nuclear genomic interactions affecting fertility and oxidative stress in *Drosophila*

**Publications (selected)**

- Habibi E et al. Single-generation epigenetic adaptation in Delta Smelt conservation hatchery. *Molecular Ecology*, submitted 2024
- Habibi E et al. Genetic monitoring of Upper McCloud River Redband Trout. *Conservation Genetics*, 2022
- Campbell MA, Habibi E et al. McCloud River Trout subspecies description. *Zootaxa*, 2021
- Habibi E et al. Feasibility of Caspian trout AFLP markers. *Turkish J. Fish Aquat Sci*, 2013
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**Awards & Fellowships**

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|---|------|
| • Ursula Abbott Travel Award, UC Davis (\$1,500)              | 2022 |
| • Henry A. Jastro Graduate Research Award, UC Davis (\$3,000) | 2020 |
| • Ursula Abbott Travel Award, UC Davis (\$2,000)              | 2019 |
| • Marin Rod & Gun Club scholarship (\$2,000)                  | 2019 |
| • Animal Biology Graduate Group Fellowship (\$1,800)          | 2018 |
| • Top student in class of 2007 (out of 50 students)           | 2007 |

**Selected Presentations**

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|--|------|
| • Preconception stress and oocyte methylation, UC Davis Epigenomics Club, Human Genomics Symposium – 2024–2025 |      |
| • Domestication selection in Delta Smelt, AFS Conference   | 2022 |
| • Colon cancer eQTL discovery, Stanford Medicine   | 2021 |

**Teaching & Mentoring**

- Programming semi-automated snmC-seq2 protocol (for scWGBS library prep) at the current lab

- Mentor to undergraduate and graduate students on wet lab and data analysis (2021–present)
- TA, Population and Quantitative Genetics (GGG201D), UC Davis 2019

## Professional Memberships

- American Genetic Association (2021–present)
- American Fishery Society (2019–present)
- Genetics Society of America (2019–present)

## Outreach & Service

- Peer review of two papers for the journal of Molecular Ecology 2023, 2024
- Mentoring undergraduate in Conservation Biology Mentoring Event 2022
- GVL Lab meeting coordinator & moderator 2021-22
- Peer review assistance of two papers for the journal of Molecular Ecology 2021
- Moderator Genomic Symposium at the AFS & TWS joint conference 2019
- GVL exhibition, UC Davis Picnic day 2018-19
- UC Davis intramural basketball Championship 2018
- Iranian Organization of UC Davis 2017-18

## Presentations and workshops

### Recent:

- Maternal stress before conception alters DNA methylation in primate oocytes, Reproductive Aging Conference, San Jose **(Poster)** May, 2025
- Maternal stress before conception alters DNA methylation in primate oocytes, UC Davis Postdoctoral Symposium **(Poster)** Apr. 2025
- Preconception Stress Effect on DNA Methylation in Oocytes from Rhesus Macaque, Woman's History Month, UC Davis Conference Center **(Poster)** Mar. 2025
- Preconception Stress Effect on Oocyte Methylation using Single Cell Whole Genome Bisulfite Sequencing, *Epigenomics club, UC Davis Medical School* **(Oral)** Mar. 2025
- Preconception Stress Effect on Oocyte Methylation, *Human Genomics Symposium, UC Davis Medical School* **(Oral)** Nov. 2024
- “Know Your Strength” workshop, UC Davis Career Center Apr. 2024
- Examining genomic and epigenomic markers associated with domestication selection in the conservation hatchery for endangered Delta Smelt, American Fishery Society (AFS) **(Oral)** Aug. 2022
- Is Domestication Selection Happening in the Refuge Population of Delta Smelt? *Interagency Ecological Program (IEP) Workshop* **(Oral-Virtual)** Mar. 2022
- Detecting genomic markers associated with domestication selection in endangered Delta Smelt, American Genetic Association, Salt Lake City, Utah, USA **(Poster)** Oct. 2021
- Development of a novel genetic assay for hybridization and genetic diversity assessment in Lahontan Cutthroat Trout, American Genetic Association, Salt Lake City, Utah, USA **(Poster)** Oct. 2021

- Update on Delta smelt domestication selection project, Virtual meeting, State Water Contractor, California (**Oral-Virtual**) Feb. 2021
- Introduction to Analysis of Epigenetic Data, Online Workshop, UC Davis Bioinformatic Core Dec. 2020
- Examining domestication selection in the conservation hatchery of Delta smelt, American Fishery Society (AFS) and the Wildlife Society (TWS) joint Conference (**Oral**) Oct. 2019
- Examining genetic marker associated with domestication selection in endangered Delta smelt, Animal Biology Colloquium, UC Davis, Davis, CA, USA (**Oral**) Nov. 2019
- Examining genetic marker associated with domestication selection in endangered Delta smelt, Animal Biology Colloquium, UC Davis, Davis, CA, USA (**Poster**) Nov. 2019
- Examining genetic marker associated with domestication selection in endangered Delta smelt, IEP Genetic PWT meeting, DWR, West Sacramento, USA (**Oral**) Nov. 2018
- *Salmo trutta caspius*, Native Fish Society Workshop, Scott River, CA, USA (**Oral**) Jul. 2018
- ConGen Conference; Population genomics and conservation genetics, Missula, MT, USA Sep. 2018
- Examining genetic marker associated with domestication selection in endangered Delta smelt, Interagency Ecological Program, Folsom, CA, USA (**Poster**) Dec. 2017
- Mitochondria and nuclear genome interaction effect on fitness in *Drosophila melanogaster* Boutzen Ph.D student meeting, Bautzen, Germany (**Oral**) Mar. 2017