

JIACHEN AI

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EDUCATION

University of California, Los Angeles, Fielding School of Public Health, USA Sept. 2023 – Current
Major: Biostatistics (Master of Public Health) **GPA:** 4.00/4.00 (four quarters)

- Steve Wallace Policy Fellowship Jun. 2024
- APEX Funding at Department of Human Genetics May 2024
- Twice Fielding School of Public Health Dean's Leadership Grant Apr. 2024 & May 2023

Skills:

- Methods in Biostatistics, Statistical Learning, Regression Analysis, Probability Theo and Statistics, Linear Algebra
- R, Python (NumPy, Pandas, Matplotlib), SAS, STATA, SQL, LaTeX
- Linux scripting, Git/GitHub
- Container technology (Docker)
- Data wrangling (Tidyverse), Data visualization (ggplot2)
- Databases: OLAP (DuckDB), Google BigQuery
- Frontend development (shiny, web app)
- Cloud computing (GCP, AWS, Azure, OCI)
- High-performance computing (HPC) on cluster (Hoffman2)
- Deep learning with Keras + TensorFlow/PyTorch

Southwest University, School of Life Sciences, China Sept. 2018 – June 2022

Major: Biological Sciences (Bachelor of Science) **GPA:** 3.84/4.00 (2nd/65)

- Outstanding Graduate, Outstanding Intern, Outstanding Undergraduate Graduation Thesis June 2022
- International or Overseas Research Award Dec. 2021
- Twice Third-Class Scholarships for Academic Excellence Dec. 2021 & Dec. 2020
- Second-Class Scholarship for Academic Excellence, Merit Student Award Dec. 2019

Skills:

- Bioinformatics, Biochemistry, Cell Biology, Molecular Biology, Genetics, Microbiology, Physiology, Neurology
- PCR, qPCR, DNA/RNA extraction and quantification, CRISPR/Cas9, cloning, electrophoresis, next-generation sequencing library preparation
- RNA-seq, ChIP-seq, single-cell RNA-seq, Bisulfite sequencing, GWAS (Genome-Wide Association Studies)
- Western blotting, ELISA, mass spectrometry, protein-DNA interaction assays, chromatin immunoprecipitation (ChIP)
- Cell culture, transfection, microscopy (confocal, fluorescence), immunofluorescence, flow cytometry

RESEARCH

Non-Linear DNA Methylation Biomarkers of Aging in Male Mice Colon Los Angeles, USA
Graduate Student Researcher (supervised by Prof. Feng Gao) Sept. 2024 – Current

- Applying k-means based unsupervised hierarchical clustering (Clust) on CpG methylation matrices from mice colon tissue and detecting differentially methylated regions (DMRs) across three distinct aging stages: young, midlife, and late-life.
- Characterizing age-related biomarkers (DMRs) by neural network.

Epigenetic Regulation of Influenza Vaccination Immune Response: A Multi-Omics Analysis within the UGA6 Cohort Los Angeles, USA
Volunteer Graduate Student Researcher (supervised by Prof. Matteo Pellegrini) Mar. 2024 – Current

- Via multivariate linear regression with LOOCV, establishing prediction models for associations between DNA methylation profile and sero-protection measured at day0 and day28 after influenza injection and sero-conversion levels at day28. And mapping significant CpG sites to biological processes, molecular and cellular components.
- Building similar models for RNA-seq and cytokine datasets from the same cohort and integrating multi-omics data through tensor-based coupled matrix-tensor factorization, and thereafter elaborating biological signaling pathways involving influenza vaccines immune response.

Statistical Data Analysis for Biology and Biomedicine Research Chongqing, China
Undergraduate Research Assistant Jun. 2021 – Jan. 2023

- Based on stochastic process theory, abstracted random walks into a time-homogeneous Markov chain and studied their recurrent and transient properties by reviewing derivations and proofs.
- By multivariate regression in R and found significant correlation between rice yield and irrigation amount in 5 growing stages.
- Via R, performed logistic regression and found 3 categorical variables that correlated with semen quality.

Lymphocyte Regeneration after Thymocyte Damage in Zebrafish Chongqing, China
Volunteer (supervised by Prof. Li Li) Oct. 2019 – June 2020

- Built a damage model of zebrafish thymocytes by treating zebrafish with 2 mM Metronidazole for 12 hours in vivo. Detected apoptosis and a significant reduction of thymus lymphocytes through whole mount in situ hybridization (WISH) and confocal microscopy.
- Discovered that the CXCL12/CXCR4 chemokine signaling pathway plays a key role in the repair of zebrafish T lymphocytes by real-time PCR (RT-qPCR). WZ811, a CXCL12/CXCR4 receptor antagonist, significantly inhibited lymphocyte recovery.

PUBLICATION

- Ai, J. (2021) Lifestyle does affect semen quality: factor determination in a statistical way. *Lecture Notes in Medicine and Life Sciences*, 4, 163–171. [DOI: 10.23977/behdp.2021021](https://doi.org/10.23977/behdp.2021021).

TEACHING

Graduate Teaching Assistant at UCLA
MCD BIO 187AL: Research Immersion Laboratory in Genomic Biology

Los Angeles, USA
June 2024 – July 2024

- Lead lab session and TA session to demonstrate the usage of bioinformatics tools, including NCBI Blast, InterProScan, JPRED4, PSIPRED, DeepTMHMM, WoLF PSORT, SignalP, AlphaFold3 server, ChimeraX, etc.

EXPERIENCE

2024 Computational Genomics Summer Institute (CGSI)
Warren Alpert Computational Biology and AI Network Fellow

Los Angeles, USA
July 2024 - Current

- Participating in the CGSI for two consecutive summers (2024 and 2025). Engaged in workshops on genomic biobanks and computational genomics with a focus on computational medicine.
- Working with fellows across institutions to develop a collaborative research project focusing on the analysis of epigenetics data under mentorship from CGSI faculty. Responsibilities include project proposal presentations, final presentations, and comprehensive write-ups.

Higher Education in Public Health
Panel Member

Los Angeles, USA
Apr. 2024

- Presented the UCLA FSPH master's program of biostatistics for incoming undergraduate students and answered questions.

SWU Life Science Administrative Office
Office Assistant (6 semesters)

Chongqing, China
Oct. 2018 – Jun. 2021

- Held 5 meetings per semester. Liaised between administrative teachers and the whole class (65 schoolmates), including giving feedback to inquiries from students.
- Provided guidance to approximately 40 freshmen regarding their academic performance, elective courses, clubs, research mentors, etc.

SWU Central Library
Volunteer (40 hours)

Chongqing, China
Oct. 2019 – Jan. 2020

- Organized a charity evening for over 200 people sponsored by the SWU Library Volunteer Association, including being responsible for venue reservation and decoration.

SWU Social Study
Team Leader in a project—Ecological Civilization Construction in Jinyun Mountain

Chongqing, China
Nov. 2019 – Dec. 2019

- Led a team of 5 whose influence reached the top 10/150 with over 1000 votes from strangers to do a field study, interviewed 3 pundits and gathered 226 effective questionnaires about ecosystem preservation and tourism development.

INTERNSHIP

Western Biomedical Technology Inc.
Intern, Immunization Team of IT Department

Chongqing, China
Mar. 2021 – June 2021

- Applied Python and convolution method, developed a light-band recognition program, and improved the precision in western-blot by 20%.
- Devised a program of calculating standard concentration curves in ELISA utilizing R, increasing the calculation speed by 60%.
- Presentation every two weeks. Responsible for experiments and reports in Immunology, Histopathology, and Molecular Biology.
- Promoted the work efficiency of the whole team by virtue of liaising with customers and colleagues in different departments.