Wei Zhang

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Education

University of Miami — Miami, FL
PhD in Biostatistics | Advisor: Chen, X. Steven — *08/2019-08/2024*
Dissertation: Integrative Multi-Omics Analysis Using Multivariate Random Forest

The George Washington University — Washington, DC
MS in Statistics — *08/2017–05/2019*

State University of New York at Binghamton — Binghamton, NY
BS in Economics Analysis & Double Majors: Actuarial Math — *08/2014–05/2017*

Research Interests

My main research interests include biomarker detection, subtype clustering, and association analysis of high-dimensional genomic data, with application to cancers and neurodegenerative diseases. My thesis topic focuses on multivariate random forest for dimension reduction and subtype clustering in the integrative analysis of multi-omics data.

Research Experience

Post-doctoral Associate — Miami, FL
Translational Statistical Bioinformatics Lab, University of Miami Miller School of Medicine — *09/2024-Present*

- Develop and implement advanced computational and machine learning methods for the analysis of large-scale omics data, including genomics, transcriptomics, proteomics, and epigenomics
- Design and develop innovative bioinformatics software and statistical tools for analyzing single-cell sequencing and spatial transcriptomics data
- Conduct computational analyses to identify biomarkers and therapeutic targets using multi-omics data integration
- Develop and apply machine learning models for predictive analytics in biomedical research
- Maintain and optimizes computational clusters and cloud computing environments to support large-scale data analysis
- Publish in refereed journals in collaboration with the principal investigator
- Contribute to basic and applied research activities, including authorship of scientific publications, technical and agency reports, or patent preparation
- Write extramural proposals with the approval of the principal investigator/program director and the dean/designee as necessary
- Supervise research employees and/or non-exempt staff

Graduate Research Assistant — Miami, FL
Translational Statistical Bioinformatics Lab, University of Miami Miller School of Medicine — *05/2022–08/2024*

- Collaborated with a diverse team to research and analyze genomic data for association studies, biomarker discoveries, and disease predictions in late-onset Alzheimer's Disease, triple-negative breast cancer, and colorectal cancer
- Published multiple research papers contributing to the field of biomarker detection and disease prediction
- Demonstrated proficiency in R programming for comprehensive statistical analysis, handling diverse genomic data types, including RNA-seq, DNA methylation, and clinical data
- Supported in drafting and editing grant proposals, ensuring clarity and alignment with project objectives
- Developing an advanced R package for comprehensive DNA methylation data analysis

Selected Publications and Preprints

Key: * Indicates corresponding authors.

1. **Zhang W**, Young JI, Gomez L, Schmidt MA, Lukacsovich D, Varma A, Chen XS, Kunkle B, Martin ER, Wang L* (2024) Critical evaluation of the reliability of DNA methylation probes on the Illumina MethylationEPIC BeadChip microarrays *Epigenetics*, 19(1) (code)

2. **Zhang W**, Wu, C, Huang H, Bleu P, Zambare W, Alvarez J, Wang L, Paty, PB, Romesser PB, Smith JJ*, Chen XS* (2024) Enhancing chemotherapy response prediction via matched colorectal tumor-organoid gene expression analysis and network-Based biomarker selection *Preprint*

3. **Zhang W**, Young JI, Gomez L, Schmidt MA, Lukacsovich D, Varma A, Chen XS, Martin ER, Wang L* (2023) Distinct CSF biomarker-associated DNA methylation in Alzheimer's disease and cognitively normal subjects. *Alzheimer's Research & Therapy* 15: 78 (code)

4. **Zhang W**, Li E, Wang L, Lehmann BD*, Chen XS* (2023) Transcriptome meta-analysis of triple-negative breast cancer response to neoadjuvant chemotherapy. *Cancers* 2023; 15(8):2194

5. Lukacsovich D, Deirdre O'Shea, Huang H, **Zhang W**, Young JI, Chen XS, Dietrich ST, Kunkle B, Martin ER, Wang L* (2023) MIAMI-AD (Methylation in Aging and Methylation in AD): an integrative knowledgebase that facilitates explorations of DNA methylation across sex, aging, and Alzheimer's disease. *Manuscript in review* (database website)

6. Silva TC, **Zhang W**, Young JI, Gomez L, Schmidt MA, Varma A, Chen XS, Martin ER, Wang L* (2022) Distinct sex-specific DNA methylation differences in Alzheimer's disease. *Alzheimer's Research & Therapy* 14: 133 (code)

Presentations

1. Poster: An X chromosome-wide DNA methylation study of Alzheimer's disease, *Alzheimer's Association International Conference*, July 2024, Virtual Poster

2. Contributed Paper: Unlocking the potential of multi-omics data integration using multivariate random forest approach, *International Biometric Society Eastern North American Region (ENAR) Annual Meeting.* Mar 2024. Baltimore, MD, USA

3. Poster: Distinct CSF biomarker-associated DNA methylation in Alzheimer's disease and cognitively normal subjects, *Alzheimer's Association International Conference*, July 2023, Virtual Poster

4. Poster: Iterative Multivariate Random Forest for Feature Selection in Integrating Multi-Omics Datasets, *Annual American Statistical Association (ASA) Florida Chapter Meeting*, Mar 2023, Gainesville, FL, USA

Teaching Experience

Teaching Assistant

EPH705 Advanced Statistical Methods, Professor: Wang, Lily | University of Miami	Spring 2022-2024
STAT6201 Applied Linear Models, Professor: Barut, Emre | The George Washington University	Fall 2018

Honers & Awards

Student Competition Award, ASA Florida Chapter Meeting	Mar 2023
Travel Award, University of Miami	Mar 2023

Professional Society Memberships

International Biometric Society (ENAR)

American Statistical Association (ASA)

International Society to Advance Alzheimer's Research and Treatment (ISTAART)

Technical Skills

Proficient in R/Rstudio for package building, data analysis, and visualization
Comprehensive skills in SAS and Python for various statistical applications
Familiar with Linux system and command