Wei Zhang

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Education

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

The George Washington University — Washington, DC
M.S. in Statistics — *05/2019*

State University of New York at Binghamton — Binghamton, NY
B.S. in Economics Analysis & Double Majors: Actuarial Math — *05/2017*

Research Interests

Multi-omics Integration, Random Forests, Variable Selection, Meta-analysis, Biomarker Detection, Subtype Clustering, Statistical Genomics, Epigenetics, Neurodegenerative Disease and Cancers

Research Experience

University of Miami — Miami, FL
Postdoctoral Associate | Translational Statistical Bioinformatics Lab — *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 optimize 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

University of Miami — Miami, FL
Graduate Research Assistant | Translational Statistical Bioinformatics Lab — *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

Publications and Preprints

Key: * Indicates corresponding authors.

1. **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. *Translational Oncology*, In Review

2. **Zhang W**, Young JI, Gomez L, Schmidt MA, Lukacsovich D, Kunkle B, Chen XS, Martin ER, Wang L* (2024) Blood DNA Methylation Signature for Incident Dementia: Evidence from Longitudinal Cohorts. *Alzheimer's & Dementia*, In Review

3. **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)

4. Lukacsovich D, Deirdre O'Shea, Huang H, **Zhang W**, Young JI, Chen XS, Dietrich ST, Kunkle B, Martin ER, Wang L* (2024) 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. *Database*, 2024, baae061 (miami-ad.org)

5. **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)

6. **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 (code)

7. 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

Oral

1. 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

Poster

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

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

3. 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	*03/2023*
Travel Award, University of Miami	*03/2023*

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