Mason W. Matich

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EDUCATION

Washington State University Pullman, WA
B.S., Genetics and Cell Biology (*Summa Cum Laude*) December 2025
Relevant Coursework: Bioinformatics, Immunology, Molecular Biology, Probability and Statistics

WORK EXPERIENCE

The Jackson Laboratory Bar Harbor, ME
Biomedical Data Science in Context Course January 2025

- Applied Limma for Microarray data analysis, identifying genes relevant to scleroderma and sex-specific disease manifestation.

Mount Desert Island Biological Laboratory Bar Harbor, ME
NSF REU Summer Fellow with Dr. Joel H. Graber May 2025-December 2025

Investigating the Role of *C.elegans* Protein LOTR-1 in Germline RNA Interference

- Communicated complex bioinformatics analyses and computational methods to researchers and public audiences through oral presentations and written reports.
- Aligned, analyzed, and integrated numerous bulk RNA-seq datasets using standardized bioinformatics pipelines and quality control procedures.
- Created an interactive dashboard using R programming to visualize and compare differentially expressed gene (DEG) trends across multiple mutants.
- Performed meta-analysis of multiple experiments using the same knockout model to isolate strain effects using principal component analysis (PCA) and statistical methods.

Washington State University Pullman, WA
Research Assistant with Dr. Ryan R. Driskell August 2023-December 2025

Fibroblast and Endothelial Cells Display CXCL12 Dysregulation in Systemic Sclerosis Skin

- Performed sequence alignment and quality control of raw single-cell RNA-seq (scRNA-seq) data to generate count matrices for downstream statistical analysis.
- Conducted cell type-specific differential expression analysis using Seurat computational platform to identify dysregulated genes in disease-relevant cell populations.
- Applied CellChat to infer altered cell-cell communication networks and identify specific signaling molecules in dysregulated pathways between fibroblasts and endothelial cells in systemic sclerosis.

Wound Healing Dynamics Through Development and Aging

- Applied Seurat pipeline to single-cell transcriptomic data for end-to-end analysis examining age-related transcriptional dynamics in murine skin wound healing through differential gene expression analysis.
- Executed parallel processing and integrated analysis of multiple scRNA-seq datasets with batch correction and data integration methods.

Dermal Lef1 Expression Regulates Skin and Whisker Development, Maturation, and Aging in the Face of Mice

- Developed training datasets to optimize computer vision machine learning algorithms for high-throughput quantification of biological samples.
- Processed and analyzed phenotypic data from transgenic mouse models using custom computational tools and statistical analysis.

- Handled and phenotyped laboratory mice, managing multiple projects in collaborative research environment.

Deep Hair Phenomics: Implications in Endocrinology, Development, and Aging

- Performed tissue processing, staining (H&E and Herovici), and imaging of murine biological samples with rigorous quality control.
- Processed mouse fur samples for high-throughput analysis using light microscopy and quantitative image analysis workflows.

Washington State University Pullman, WA
Undergraduate Teaching Assistant January 2023-May 2023

- Trained and mentored undergraduate biology students in molecular biology laboratory techniques and standard protocols.
- Coached students through key molecular biology procedures including PCR, gel electrophoresis, restriction enzyme digest, DNA extraction, and data analysis, demonstrating strong communication skills.

RELEVANT EXPERIENCE

Washington State University April 2025
Center for Entrepreneurship - Business Plan Competition

Awarded Best Technology Innovation and 2nd Place Overall at the WSU Business Plan Competition (2025)

- Delivered formal oral presentations communicating complex technical concepts to diverse stakeholder audiences including judges and faculty panels.
- Participated in live demonstration to engage attendees and translate technical and scientific concepts for non-specialist audiences.
- Applied analytical thinking and scientific problem-solving to commercial product design and health technology innovation.
- Collaborated effectively in cross-functional team across scientific and business domains to translate academic research toward real-world applications, demonstrating strong project management skills.

PUBLICATIONS

Makkar, J., Flores, J., **Matich, M.**, Duong, T. T., Thompson, S. M., Du, Y., Busch, I., Phan, Q., Wang, Q., Delevich, K., Broughton-Neiswanger, L., Driskell, M, I., Driskell, R. R. (2024). Deep Hair Phenomics: Implications in Endocrinology, Development, and Aging. Journal of Investigative Dermatology. doi:10.1016/j.jid.2024.08.014.

PRESENTATIONS

Matich, M., Updike, D. and Graber, J. "Investigating the Role of *C.elegans* Protein LOTR-1 in Germline RNA Interference". MDI Biological Laboratory. Oral presentation delivered at the Summer Student Symposium, Bar Harbor, ME. August 2025

Matich, M. and Driskell, R. "Fibroblast and Endothelial Cells Display CXCL12 Dysregulation in Systemic Sclerosis Skin". Washington State University. Poster presentation delivered at the Showcase for Undergraduate Research and Creative March 2025

Activities, Pullman, WA.

Matich, M., Rimmer, B., Harwood, H., Hobson, G. and Driskell, R. "Wound Healing Dynamics Through Development and Aging". Washington State University. Poster presentation delivered at the College of Veterinary Medicine Research Symposium, Pullman, WA. November 2024

Matich, M., Berry, N., Johnson, J., Karnik, A., Kreyenhagen, G., Searle, G. Penrod, S. and Driskell, R. "Dermal Lef1 Expression Regulates Skin and Whisker Development, Maturation, and Aging in the Face of Mice". Washington State University. Poster presentation delivered at the Showcase for Undergraduate Research and Creative Activities, Pullman, WA. March 2024

SKILLS and TECHNIQUES

Computational Techniques

- Applied Claude to gain biological insights from data and accelerate code development.
- Sequence alignment algorithms (*Cell Ranger*) for processing raw next-generation sequencing data with quality control procedures.
- End-to-end analysis of single-cell RNA-seq (scRNA-seq) and bulk RNA-seq data using computational platforms including *DESeq2, Limma,* and *Seurat* for differential expression analysis, batch correction, data integration, and statistical assessment.
- Data visualization and interactive dashboard development using R programming (*ggplot2*, *Plotly*, *flexdashboard*) to communicate complex bioinformatics results and prepare publication-quality figures.
- Cell-cell communication network analysis using *CellChat* for ligand-receptor interaction inference in scRNA-seq datasets.
- Cloud computing experience with *AWS* storage and compute services for large-scale bioinformatics workflows and high-performance computing.
- Workflow management systems including *Nextflow* for reproducible bioinformatics pipeline development.
- Experience with *MemVerge* for AWS spot instance management in computational workflows.
- Advanced statistical analysis and programming proficiency in *R* and *Python* for data manipulation and interpretation of biological datasets.

Wet Lab Techniques

- Tissue processing (microtome sectioning), histological staining (H&E, Herovici), and quantitative imaging (light microscopy) of biological samples.
- Standard molecular biology laboratory protocols including PCR, SDS-PAGE, plasmid isolation, DNA/RNA extraction, and aseptic technique.

Professional Skills

- Strong written and verbal communication skills with ability to communicate complex information clearly to technical and non-technical audiences.
- Proven ability to work independently and collaboratively in multidisciplinary, team-oriented research environments.
- Experienced in presenting bioinformatics analyses and research findings at scientific conferences through oral and poster presentations.
- Strong organizational skills with ability to manage and prioritize multiple projects simultaneously while meeting deadlines.

- Data presentation and scientific documentation using PowerPoint, Word, and Canva.

HONORS and AWARDS

- National Science Foundation (NSF) Research Experience for Undergraduates (REU) Summer Fellowship (2025)
- President's Honor Roll, Washington State University (five consecutive semesters)
- University Achievement Award, Washington State University

REFERENCES – Available Upon Request

Ryan R. Driskell, Ph.D.
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School of Molecular Biosciences
Washington State University, Pullman
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Benjamin S. Morledge-Hampton, Ph.D.
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