JING LIU, PH.D.

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SUMMARY

I am a bioinformatician and research scientist with comprehensive expertise in integrating **bioinformatics**, **molecular biology**, and **microbiology**. I specialize in designing and executing wet lab studies, developing analytical pipelines, and optimizing methodologies for high throughput data cleaning, normalization, processing, analysis, and visualization using a variety of bioinformatics tools and databases. My current research interests include but are not limited to host-microbe interactions, microbiome exploration, and applying multi-omics data to translational research.

EDUCATION

Oklahoma State University 07/2024
Ph.D. in Animal Science *Stillwater, OK, USA*

Nanjing Agriculture University 06/2017
M.S. in Animal Science *Nanjing, Jiangsu, China*

Yangzhou University 06/2014
B.S. in Animal Science *Yangzhou, Jiangsu, China*

TECHNICAL SKILLS

Programming: Python, R, SQL, Perl, Linux, Bash, Slurm, SAS

Quantitative Bioinformatics Skills: 16S rRNA gene sequencing, bulk-RNA sequencing, single cell RNA sequencing (scRNA-seq), whole genome sequencing (WGS), metagenomics, metabolomics, metatranscriptomics, pan-genomics, variant calling, targeted sequencing, statistical computing, meta-analysis, machine learning in biomarker selection, database creation and maintenance.

Packages & Tools: QIIME2, Mothur, EZbiocloud, greengenes, RDP, silva, Deblur MetaPhlAn, DADA2, samtools, bedtools, bwa, bowtie2, minimap, BLAST, DIAMOND, HISAT, StringTie, Trinity, Kallisto, Salmon, CheckM, SPAdes, fastq-dump, Jupyter Notebooks, RStudio, Git

Data visualization: Matplotlib, Seaborn, Tableau, gglot2

Wet lab: DNA & RNA isolation & quantification, gel electrophoresis, primer design, next-generation sequencing library prep, RT-PCR, bacterial isolation & culture, mammalian cell culture, animal handling (mice, rat, chicken).

EXPERIENCE

USDA-ARS | Madison, WI 08/2024 – Present
Postdoctoral Bioinformatician

- Developed and optimized pipelines for scRNA-seq and metatranscriptomics data analysis to unravelling animal host-microbe interaction.
- Responsible for conducting comprehensive sequencing data analysis for multiple collaborative labs, including raw data quality control, processing, analysis, results visualization, and drafting of final reports.
- Performing meta-analysis to identify microbial antibiotic resistant genes in the dairy cattle.

Oklahoma State University | Stillwater, OK 05/2019 – 08/2024
Graduate Research Assistant

- Developed and optimized pipelines for bacterial taxonomy classification, diversity analysis (alpha and beta), statistical computing, and results visualization.
- Developed and optimized genome assembly and binning pipelines for bacterial metagenomic sequencing data for gene annotation and functional pathway analysis.
- Developed and optimized bulk-RNA sequencing data analysis pipelines for gene profiling and differential gene expression
- Performed various bioinformatic analyses used the pipeline I developed in support of several projects. Key outcomes include the identification of microbial biomarkers for health and disease in humans and animals, differential gene expression analysis related to Alzheimer's Disease, and the discovery of new microbial species.

SELECTED PEER-REVIEWED PUBLICATIONS

1. **Liu J**, Guo J, Whitmore MA, Tobin I, Kim DM, Zhao Z, Zhang G. Dynamic response of the intestinal microbiome to Eimeria maxima-induced coccidiosis in chickens. *Microbiology Spectrum* 0:e00823-24. [Link].
2. **Liu J**, Stewart SN, Robinson K, Yang Q, Lyu W, Whitmore MA, Zhang G. Linkage between the intestinal microbiota and residual feed intake in broiler chickens. *Journal of animal science and biotechnology*. 12 (2021): 1-16. [Link]
3. Lamichhane G, **Liu J**, Lee S-J, Lee D-Y, Zhang G, Kim Y. Curcumin Mitigates the High-Fat High-Sugar Diet-Induced Impairment of Spatial Memory, Hepatic Metabolism, and the Alteration of the Gut Microbiome in Alzheimer's Disease-Induced (3xTg-AD) Mice. *Nutrients*. 2024; 16(2):240. [Link]
4. **13** published in total, 4 first-author papers. A full list of publications can be found [here].

SELECTED HONORS AND AWARDS

- **1st Place of Oral Presentation**, Conference of Research Works in Animal Disease Jan. 2024
- **Williams Distinguished Graduate Fellowship**, Oklahoma State University Aug. 2023
- **Women's Faculty Council Student Research Award**, Oklahoma State University Apr. 2023