Lihe Liu — Jan 2024

Contact Information

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Research Interests

My academic pursuits are centered in the realm of computational biology and bioinformatics. With a background in Animal Sciences, my PhD work has involved using omics techniques to assess the impact of environmental factors on the animal epigenome and transcriptome. In my latest professional endeavor, I have been utilizing computational methods to analyze multi-omics data with the aim to decipher the changes in the tissue microenvironment that potentially elevate cancer risks.

Education

University of Wisconsin-Madison, Madison, Wisconsin USA

Ph.D., Animal Sciences, 09/2020 - 12/2023

- Dissertation: Revealing the Impact of Environmental Perturbations on the Bovine Epigenome

University of Wisconsin-Madison, Madison, Wisconsin USA

M.S., Computer Sciences, 09/2021 - 05/2023

University of Florida, Gainesville, Florida USA

M.S., Animal Sciences, 08/2018 - 08/2020

- Thesis: Deciphering Complex Biological Processes Using Gene Coexpression Networks

Huazhong Agricultural University, Wuhan, P.R. China

B.S., Animal Sciences, 09/2014 - 07/2018

Professional Positions

Sanford Burnham Prebys Medical Discovery Institute, La Jolla, California USA

- Postdoctoral Computational Biologist — **01/2024 - Present**

Department of Animal and Dairy Sciences
University of Wisconsin-Madison, Madison, Wisconsin USA

- Graduate Research Assistant — **09/2020 - 12/2023**

Department of Animal Sciences
University of Florida, Gainesville, Florida USA

- Graduate Research Assistant — **09/2018 - 08/2020**
- Graduate Teaching Assistant — **Fall 2019**

Peer Reviewed Journal Articles

2023

8. R Amorín*, **L Liu***, P Moriel, N DiLorenzo, PA Lancaster, F Peñagaricano (2023) ***Maternal diet induces persistent DNA methylation changes in the muscle of beef calves.*** *Scientific Reports.* 13, 1587. doi: 10.1038/s41598-023-28896-3

2022

7. CM Sheftel, **L Liu**, SL Field, SR Weaver, CM Vezina, F Peñagaricano and LL Hernandez(2022) ***Impact of Fluoxetine Treatment and Folic Acid Supplementation on the Mammary Gland Transcriptome During Peak Lactation.*** *Frontiers in Pharmacology.* 13:828735. doi: 10.3389/fphar.2022.828735

2021

6. **L Liu**, R Amorín, P Moriel, N DiLorenzo, PA Lancaster, F Peñagaricano (2021) ***Maternal methionine supplementation during gestation alters alternative splicing and DNA methylation in bovine skeletal muscle.*** *BMC Genomics.* 22, 780. doi: 10.1186/s12864-021-08065-4

5. MA Mezera, W Li, **L Liu**, R Meidan, F Peñagaricano, MC Wiltbank (2021) ***Effect of natural pre-luteolytic prostaglandin F2α pulses on the bovine luteal transcriptome during spontaneous luteal regression.*** *Biology of Reproduction* . 105 (4), 1016-1029. doi: 10.1093/biolre/ioab123

4. SL Field, MG Marrero, **L Liu**, F Peñagaricano, J Laporta (2021) ***Histological and transcriptomic analysis of adipose and muscle of dairy calves supplemented with 5-hydroxytryptophan.*** *Scientific Reports.* 11.1: 1-10. doi: 10.1038/s41598-021-88443-w

2020

3. **L Liu**, R Amorín, P Moriel, N DiLorenzo, PA Lancaster, F Peñagaricano (2020) ***Differential network analysis of bovine muscle reveals changes in gene coexpression patterns in response to changes in maternal nutrition.*** *BMC genomics.* 21.1: 1-12. doi: 10.1186/s12864-020-07068-x

2. H Louvandini, PS Corrêa, R Amorín, **L Liu**, EH Ieda, CR Jimenez, SM Tsai, CM McManus, F Peñagaricano (2020) ***Gestational and lactational exposure to gossypol alters the testis transcriptome.*** *BMC genomics.* 21(1), 1-11. doi: 10.1186/s12864-020-6487-2

1. A Sigdel, **L Liu**, R Abdollahi-Arpanahi, I Aguilar, F Peñagaricano (2020) ***Genetic dissection of reproductive performance of dairy cows under heat stress.*** *Animal Genetics.* 51(4), 511-520. doi: 10.1111/age.12943

Editorial Activities

Ad Hoc Reviewer

- Number of manuscripts reviewed (by journal name; not counting revisions): Animal gene (1), Contrast Media & Molecular Imaging (1)

Software Development

R package

- EnrichKit - R /Web: a toolkit for omics data analysis in animal species .

Technical Skills

Bioinformatics & Data Analysis	• RNA-seq, WGB-Seq, Bioconductor, Tidyverse, Pandas/NumPy/SciPy, scikit-learn, TensorFlow
Programming Languages	• Python, Java, R, Shell (Bash), SQL (MySQL), C++, JavaScript/HTML/CSS, MATLAB
Framework	• Django, Spring Boot, ReactJS, NodeJS, JUnit, CUDA, OpenMP
Developer Tool	• Git, Docker, Conda, Nextflow, Slurm, GCP, AWS (EC2, RDS, S3), Elasticsearch, Jira

Honors/Awards

2022	• ***Neal A. Jorgensen* Genome Travel Awards** | PAG Conference 30 (San Diego, CA)
2019	• ***Top-up Award*** | University of Florida, ANS Department
2017	• ***Study Abroad Scholarship*** | China Scholarship Council (CSC)
2016	• ***National Scholarship of P.R.China (Undergraduate)*** | Ministry of Education
2014-2015	• ***Outstanding Undergraduate Award*** | Huazhong Agricultural University, China