

Contact Information

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Dept. of Animal & Dairy Science
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Research Interests

My research interest lies in the field of computational biology and bioinformatics. Specifically, multi-omics data integration. Currently, I am working on the evaluation of the effects of prenatal nutritional factors on the offspring epigenome and transcriptome. I also have interest in scientific software development.

Education

University of Wisconsin-Madison, Madison, Wisconsin USA

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

- Advisor: [Dr. Francisco Peñagaricano](#)

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](#)
- Committee: Dr. Francisco Peñagaricano, [Dr. Samantha Brooks](#) and [Dr. Matias Kirst](#)

Huazhong Agricultural University, Wuhan, P.R. China

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

- Joint program (50 credits for B.S.) at China Agricultural University, Beijing P.R. China
- Study abroad (18 credits for B.S.) at University of Florida, FL USA

Work Experience

Department of Animal and Dairy Sciences

University of Wisconsin-Madison, Madison, Wisconsin USA

- Graduate Research Assistant

09/2020 - Present

Department of Animal Sciences

University of Florida, Gainesville, Florida USA

- Graduate Research Assistant
- Graduate Teaching Assistant

09/2018 - 08/2020
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](https://doi.org/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 F2 α pulses on the bovine luteal transcriptome during spontaneous luteal regression*. *Biology of Reproduction*. 105 (4), 1016-1029. doi: [10.1093/biolre/ioab123](https://doi.org/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](https://doi.org/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](https://doi.org/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](https://doi.org/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](https://doi.org/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 .

Honors/Awards

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| 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 |

Technical Skills

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| BIOINFORMATICS & DATA ANALYSIS | • RNA-seq, WGB-Seq, Bioconductor, Tidyverse, Pandas/NumPy/SciPy, scikit-learn, Tensor-Flow |
| 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 |