

# Benji Lamp

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## Education

Texas A&M University

College Station, TX | Class of 2025

**Major:** B.S. Biomedical Sciences

GPA: 3.64

**Minor:** Bioinformatics

**Certificate:** Biomedical Research Certificate

**Coursework:** Biochemistry, Organic Chemistry, Biology, Microbiology, Statistics, Calculus, Biomedical Writing, Physiology, Anatomy, Genetics, Python, Bacteriophage Genomics

**Programming & Computing:** R, Python, MATLAB, Git, AWS Cloud Computing, TAMU HPRC Cluster Computing

**Certifications:** CITI Human Subjects Research & Responsible Conduct of Research (Exp. June 2027)

## Research Experience

### **Project: Analysis of Foal Monocytes Challenged by *Rhodococcus equi***

Texas A&M Department of Large Animal Clinical Sciences

February 2025 - Present

**Volunteer Bioinformatics Research Assistant**

P.I.: Angela Bordin, Ph.D. D.V.M.

**Overview:** Foal monocytes were isolated on days 2 and 28 to assess transcriptional responses to enteral exposure with virulent or avirulent *R. equi*, and to evaluate the immunological impact of a subsequent intrabronchial challenge with virulent *R. equi* at day 28.

#### **Contributions:**

- Full responsibility of bioinformatics pipeline and subsequent analysis
- Created standardized GitHub-based workflow environment for reproducibility and lab-wide reference.
- Taught lab members the fundamentals of data processing and high-performance cluster computing.

### **Project: Transcriptional Dynamics of Milk Production in the Bovine Mammary Gland**

Texas A&M Veterinary Integrated Biosciences

August 2023 - Present

**Undergraduate Bioinformatics Research Assistant**

Mentor: Monique Rijnkels, Ph.D.

**Award:** International Milk Genomics Consortium Student Speaker Award

**Interview:** <https://vetmed.tamu.edu/news/press-releases/bims-student-embraces-research-opportunities/>

**Overview:** Enriched mammary epithelium of Holstein-Friesian heifers were sampled from virgin to peak lactation stages; mRNA-seq and miRNA-seq data were used to assess development of the mammary gland.

#### **Contributions:**

- Developed an end-to-end bioinformatics pipeline for processing raw mRNA/miRNA sequencing data, including quality control, alignment, normalization, and differential expression analysis.
- Performed clustering and temporal analyses (hierarchical clustering, k-means) across multiple time points in a longitudinal study, grouping genes by statistically significant expression trends.
- Conducted functional and pathway enrichment to assess the biological significance of differentially expressed genes, identifying key regulatory and metabolic pathways.
- Prepared data and metadata for submission to public repositories (NCBI-GEO)
- Created an interactive R Shiny web application enabling real-time querying of temporal mRNA/miRNA expression patterns by gene symbol or ID.

**Publication in progress.**

## **Project: Analysis of Greengenes2 as a Taxonomic Reference Database for the Urobiome**

**Oregon Health & Sciences University**

June 2024 - Present

**Dept. of Medical Informatics and Clinical Epidemiology**

Mentor: Lisa Karstens, Ph.D.

**Overview:** An analysis of classification schemes to evaluate the feasibility of integrating the newly released Greengenes2 reference database into existing bioinformatics pipelines for 16S rRNA amplicon reads in the urobiome.

### **Contributions:**

- Formatted reference databases for integration into bioinformatics tools, contributing to community resources.
- Generated benchmark urobiome amplicon sequences from published data.
- Developed a working knowledge of Bayesian based predictive algorithms to evaluate existing tools
- Engaged in seminars on Equity and Ethics in Health Data, Biomedical Informatics, and Responsible Conduct of Research to enhance understanding of ethical frameworks in bioinformatics.
- Led and participated in the Urobiome Journal Club in collaboration with Lewis & Clark University.
- Invited to continue work remotely (beginning October 2024) as a student employee, supporting ongoing projects and training new lab members

**Publication in progress**

## **Presentations**

### **Undergraduate Research Week 2025**

College Station, TX | March 2025

*Poster Presentation:* "Data Processing Practices for Urobiome Taxonomic Identification"

### **International Milk Genomics Consortium Symposium**

Davis, CA | October 2024

*Speaker:* "Transcriptional Dynamics of the Bovine Mammary Gland"

### **OHSU Summer Intern Symposium**

Portland, OR | August 2024

*Speaker:* "Analysis of Greengenes2 as a Taxonomic Reference Database for the Urobiome"

### **Undergraduate Research Week 2024**

College Station, TX | March 2024

*Poster Presentation:* "Transcriptional Dynamics of the Bovine Mammary Gland"

## **Leadership and Activities**

### **Class Project: Novel Phage Annotation**

Texas A&M University | Spring 2025

### **Bacteriophage Genomics, BICH 464**

- Annotating novel bacteriophage genome using bioinformatics tools, identifying genes and regulatory elements, with the potential of earning co-authorship.
- Utilized Galaxy, Apollo, and other web-based tools for analysis
- Collaborated with peers to tackle complex problems and foster a shared learning environment

### **Teaching Assistant**

Texas A&M University | Fall 2024

### **Analysis of Genomic Signals, VTPP 438/638**

#### **Instructor: Ivan Ivanov, Ph.D.**

- Created and presented introductory R Markdown programming scripts and lectures for the computational analysis of microarray data, ensuring students gained practical, hands-on experience.
- Served as a peer mentor, assisting students with coursework, troubleshooting coding challenges, and guiding them through analytical concepts in -omic data analysis

### **Capstone: Curriculum Development**

Texas A&M University | Fall 2024

### **Foundations of Physiology, VTPP 123**

- Collaborating on revamping introductory curriculum for the Biomedical Research Certificate (BRC) program
- Engaged in town-hall style meetings to provide input on the trajectory of the program, effectiveness of courseload, and proposition of new syllabus for introductory class, Foundations of Physiology.

## **Organizations**

### **Aggie Originals Men's Organization**

Spring 2022 - Present

#### **General Member**

- Active participant in a men's social and service organization that promotes inclusivity and exemplifies Aggie Core Values
- Served as a founding member, demonstrating leadership by recruiting new members and coordinating group initiatives

### **Freshman Aggies in Medicine (FAiM)**

Fall 2021 - Spring 2023

#### **Service Committee Leader**

- Founding member of this freshman leadership organization (FLO), focused around service and social opportunities related to new A&M students interested in healthcare.
- Advanced from general member to Service Committee Leader, which involved planning and organizing service events, securing funding, and engaging members/the community in healthcare outreach on campus.
- Served as a peer mentor, assisting new members in their professional and personal development within the organization