

Genome to Phenome: Integrating Precision Livestock Technologies and Genomics to Characterize Thermotolerant Dairy Cows



ANIMAL SCIENCE
TEXAS A&M UNIVERSITY

POSITION TITLE: PH.D. STUDENT
DEPARTMENT: ANIMAL SCIENCE
CAMPUS: COLLEGE STATION, TEXAS
MAJOR ADVISOR: DR. COURTNEY DAIGLE

Our research team is seeking applications for a graduate student researcher to characterize the genome to phenome relationships of dairy cattle relative to their ability to remain productive regardless of their environmental conditions. Relational databases will integrate precision livestock technology data (e.g., robotic milking system, rumen bolus, computer vision, productivity), ethology metrics (e.g., startle response), and genomic analyses to identify thermotolerant dairy cows. Applicants would ideally start in Spring/Summer 2025.

The student will collect data from a commercial robotic milking dairy to identify cows that can take the heat without skipping a beat (e.g., non-invasive phenotypic indicators of heat stress). The student will gain experience interfacing between academia and industry while working in a highly collaborative environment using robotic milking systems, body-mounted sensor technology, dairy cow reproductive management software, environmental data, video analytics, genomic analyses, and database development at the commercial scale.

Research topic: Evaluate the genome to phenome relationship relevant to thermotolerance in dairy cows using data from non-invasive body-mounted sensor, robotic, and video analytic technologies. This information will be combined with genomic analyses to identify individuals that are well suited (either behaviorally or physiologically) to cope with heat stress. Financial support will come from a project focused on optimizing dairy cattle welfare and productivity in a thermally challenging climate. The student will work with a commercial dairy to collect behavioral, reproductive, environmental, and robotic data; and synthesize these datasets with genetic analyses to identify non-invasive phenotypic indicators of heat stress in dairy cows.

Position details: Funding would be available for a 4-year doctoral degree program. In addition to their project-specific skills, students will also gain experience in systematic literature reviews, ethology, welfare assessments, and statistical analysis. Support for tuition, fees, and health insurance will be evaluated every semester based upon satisfactory performance and/or progress towards degree completion and availability of funding. Specifics will be provided, should you choose to apply.

Qualifications: Applicants must have earned a B.S. in Data Science, Animal Science, Genetics, Agricultural and Biological Engineering, Zoology, Statistics, Computer Engineering, Data Management, or a similar field with a minimum of a 3.0 GPA, M.S. is preferred. The ideal candidate must have a strong work ethic, think conceptually, have excellent written and oral communication skills, and is willing to travel and work collaboratively as part of a team. Spanish language skills would be beneficial. Data collection for this project will sometimes require the ability to walk and stand outdoors in hot conditions (up to 115°F or 46°C). Experience with sensor technology, video analytics, database development, coding, and dairy cattle management is strongly preferred.

How to apply: Contact Dr. Courtney Daigle (courtney.daigle@ag.tamu.edu) with your GPA, a CV and a statement of interest that explains how this lab and this position is a fit for you. After you connect with Dr. Daigle and you are encouraged to move forward, you will need to submit a formal PhD application <https://www.applytexas.org/>.