

Faculty Mentored Research Projects available Fall 2026

Dr Jennifer Van Os – Dairy Cattle | <https://andysci.wisc.edu/directory/jennifer-van-os/>

The students will primarily be assisting with computer-based analysis of videos of dairy calf and heifer behavior. To do this, they will be trained to follow an ethogram, which is a strict set of definitions of the behaviors of interest. The data will be used directly to gain insights into cattle behavior and welfare and will also be used to develop and validate an automated computer-vision/machine learning system. They will learn more broadly about the scientific process, applied animal behavior, and animal welfare science. They may also help with data entry and might have some limited opportunities to gain exposure to live dairy cattle.

Dr Hasan Khatib – Small Ruminants, No Live Animals (cell structure, bioinformatics, etc.) | <https://andysci.wisc.edu/directory/hasan-khatib/>

In this project, we will investigate the effects of paternal and maternal nutrition on traits across subsequent generations. Methionine, a key methyl-group donor, will be supplemented to the F0 generation of growing prepubertal rams and periconception ewes. We will generate F1 and F2 generations from methionine-supplemented and control animals and collect growth, carcass, and reproductive phenotypes in both generations. Associations between parental diet and offspring traits will be evaluated. In addition, we will examine the epigenetic mechanisms by which paternal diet influences offspring outcomes, focusing on DNA methylation and sperm transcriptomics. We hypothesize that increased methionine intake provides methyl groups that modify sperm DNA methylation patterns and that these epigenetic marks are transmitted to the offspring. The student will be involved in animal data collection, gene expression, and DNA methylation analyses of sheep samples and will receive training in bioinformatics analysis.

Dr Jimena Laporta – Dairy Cattle. | <https://andysci.wisc.edu/directory/jimena-laporta/>

Undergraduate students participating in research projects in the Laporta Lab during Fall 2026 and Spring 2027 will gain both laboratory and hands-on experience working with dairy cows and calves. During the fall semester, projects will be based at the Blaine Dairy Research Facility in Arlington, WI, and will focus on animal health, physiology, and welfare. On-farm activities may include assisting with thermoregulation and health assessments, blood collection, and general animal husbandry, all under close supervision. Students will coordinate farm visits and transportation with senior graduate students or may travel independently using their own vehicles. In addition to on-farm work, students will be actively involved in campus-based research activities, providing flexibility for those who are unable to travel regularly to the farm. These experiences may include processing blood samples, performing ELISA assays to measure hormones and metabolites, organizing and analyzing datasets, and conducting image and video analyses to evaluate cow behavior and activity. Students may also assist with ultrasound image analysis and other data-driven components of ongoing projects. Throughout the experience, students will learn how scientific questions are developed, how data are collected and analyzed, and how research findings are interpreted and communicated. Projects are mentored, collaborative, and tailored to each student's interests and level of experience.

Dr Guilherme Rosa – Beef Cattle, Dairy Cattle, Small Ruminants, Poultry

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All of our projects involve the analysis of large datasets, including genomics, imaging, and sensor data. Students interested in gaining experience in data management, data visualization, and data analysis using both statistical and machine learning tools are welcome to join our lab to develop these skills.

Dr Hilario Mantovani – Dairy Cattle, No Live Animals (cell structure, bioinformatics, etc.)

<https://andysci.wisc.edu/directory/hilario-c-mantovani/>

Students will participate in one of the following research projects: 1) Promoting gut health and disease resilience in dairy calves through calf-native probiotics: The gastrointestinal microbiome plays a pivotal role in calf health, influencing nutrient fermentation, immune maturation, and pathogen resistance. This project will focus on the isolation and functional characterization of beneficial bacteria isolated from calf feces selected to promote beneficial functions such as pathogen exclusion, immune modulation, and efficient nutrient fermentation. Students will perform phenotype microarrays to evaluate the metabolic diversity of cultured bacteria from the gut microbiome of dairy calves. Antimicrobial activity of secreted metabolites will be screened using enteric pathogens as the target organisms. Production of volatile fatty acids produced by potentially probiotic bacteria will be quantified using liquid chromatography (HPLC). Selected strains will be subjected to whole genome sequencing followed by genome assembly, taxonomic classification, and functional annotation. 2) Alternative therapies to control bovine mastitis: Bovine mastitis is an inflammatory disease caused by microbial infections that compromise milk production, milk quality, and the overall health of the herd. Mastitis remains one of the main challenges for the dairy sector due to its high prevalence and incidence, and difficulties in diagnosis and treatment, being the most expensive disease in dairy cattle production in the US and worldwide. The goal of this project is to develop antibiotic-free or antibiotic-reduced antimicrobial formulations to prevent or treat udder infections in dairy cattle. Combinatorial drug screening using dose-response matrices will be applied to identify combinations displaying synergism against mastitis pathogens.

Dr Mark Richards – Post-harvest processing of meat, preparation of meat products

<https://andysci.wisc.edu/directory/mark-richards/>

The goal of this project is to develop and manufacture sausages with novel ingredients that add value to the food product. One prototype involves using salmon as an ingredient. This provides an ample amount of long chain omega-3 fatty acids noted for vascular health and improved cognition. One challenge is to avoid oxidation of these fatty acids during storage that generates off-odors and off-flavors in the sausage. Novel stabilization techniques of the salmon-containing sausage will be explored. Adding other health-promoting ingredients is also part of the project. The undergraduate student will learn how to i) form a batter that uniformly distributes the ingredients, ii) remove air pockets, iii) stuff batter into casings, iv) thermal processing, v) yield measurement, vi) cook loss measurement, and vii) lipid (fat) oxidation measurements. Expectations are to make multiple batches of a given formulation to comparatively assess aspects of quality compared to other test formulations.

Dr Sebastian Arriola – Dairy Cattle | <https://admin.cals.wisc.edu/people/faculty/?username=arriolaapelo>

Some of the students involved in this project and applying to the fellowship are currently participating in the animal trial, preparing treatment solutions for daily abomasal infusions, checking infusion lines, measuring body weight and manure score on a regular basis, and collecting and processing milk and blood samples from dairy cows for future analysis. For the Mentored Research Project, students will be trained in a wide variety of molecular biology techniques and will gain understanding on statistical approaches to investigate the impact of treatment interventions on metabolic and physiological responses during late lactation. They will learn to process and analyze biological fluids by ELISA, colorimetric assays, western blotting, and liquid chromatography-mass spectrometry under the supervision of graduate students and research scientists, will learn data processing in R, and be exposed to the statistical methods used. Students will be responsible for preparing results for presentation, and will present their results at lab meetings, and research symposiums at department- and/or campus level.

Dr Allie Andrukonis – Companion Animals |

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Dogs' detection ability of both live and deceased humans has been well documented. However, less is known on how dogs respond to the scent of recently deceased conspecifics. Thus, current project will explore dogs' reactions to recently deceased (30 minutes – 1 hour) conspecifics. Blankets will be rubbed on both live and recently deceased conspecifics (30 minutes – 1 hour). Unfamiliar dogs will be presented with blanket samples in odor ports. The dogs' behavior will be video recorded for five minutes. Video data will be coded for time in proximity to the samples and the dogs' behavioral reactions. Student roles will include facilitating dog testing sessions coding dog behavior.

Dr Vanessa Leone – Poultry, Laboratory Animals, Post-Harvest Processing of meat |

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I have several projects: 1) Discovery of novel uses for porcine gallbladder 2) The role of microbes and their microbial products selected by western diet on activating hepatic immune cells in liver fibrosis 3) The isolation and characterization of novel microbes and their microbial products to alleviate metabolic dysfunction associated steatohepatitis (MASH)

Dr Wei Guo – Post – Harvest processing of meat, preparation of meat products

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Meat is one of the major protein sources for Americans in the US. During meat processing, almost half of the carcass is discarded as waste. Here, we propose to identify animal biologics—functional biological molecules recovered from animal tissues or co-products that retain biological activity and can be developed into health, agricultural, or industrial applications—to add value to these waste co-products focusing on small proteins (SPs). Several SPs, such as insulin and GLP-1s, have been identified and have become mainstream functional biological molecules for the treatment of diabetes and obesity. Yet, many SPs are still undiscovered due to technological restrictions. Recent technological advancements in top-down proteomics may allow us to identify new SPs with bioactivities from animal co-products. We expect to not only solidify a procedure for the isolation and identification of SPs from animal co-products, but also to find SPs with relevant biological activities that can increase their value.

Dr Laura Hernandez – Dairy Cattle, Laboratory Animals (mice, rats, etc.)

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Currently we have research projects focused on the mammary gland's response to various dry-off treatments, and mammary development in heifers in response to hormonal treatments. Additionally, we have a project we will be starting to assess the impacts of bioactives in cheese on maternal depression in rodents.

Dr Yun Jiang – Dairy Cattle | <https://andysci.wisc.edu/directory/yun-jiang/>

The student will be integrated into an active research group and trained in essential laboratory practices, including organization, accurate record keeping, basic sample handling, and standard safety procedures. Through simple but meaningful tasks, such as preparing materials, processing feed or biological samples, and assisting with routine lab workflows, the student will learn how careful, consistent work contributes to larger research goals. When opportunities arise, the student may also gain exposure to field research at the university dairy facility. This may include observing or assisting with feed sampling, experimental procedures, and animal-related data collection, helping the student understand how laboratory analyses connect to real-world dairy management and nutrition. Beyond technical skills, the student will attend lab meetings, interact with graduate students and research staff, and receive mentoring on scientific thinking and problem solving in animal science and related fields. The overall goal is to provide a learning experience that helps the student explore research interests, develop skills, and better understand opportunities in animal sciences.

Dr Sofia Ortega – Dairy Cattle, Beef Cattle | <https://andysci.wisc.edu/directory/sofia-ortega/>

Variation in Sperm Capacitation and Fertilizing Ability Among Sires With Divergent Fertility - The objective of this study is to determine how much of the variation observed in sires on producing embryos is associated with sperm capacitation and fertilization itself. For this, sperm from sires with different abilities to produce embryos will be stained for capacitation and DNA, and followed through in vitro embryo production to determine fertilization in "real time". This project aims to establish the actual fertilizing ability of the sperm to better delineate paternal contributions to embryo development.

Mentored Non-Research Project available for Fall 2026

Dr Victor Cabrera – Outreach & Communication

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This introductory, mentored non-research project will engage an undergraduate student in science communication and outreach activities in support of the Department of Animal & Dairy Sciences Extension Relations Committee. The student will assist with developing, organizing, and disseminating content that highlights departmental research, Extension programs, student activities, and impacts aligned with the Wisconsin Idea. Working closely with faculty and staff mentors, the student will help identify timely topics and translate technical information into accessible, audience-appropriate communications for departmental social media channels and web platforms. Activities may include drafting short posts or summaries, assisting with basic visual content, coordinating information across faculty and Extension programs, and supporting updates to departmental outreach webpages. Emphasis will be placed on accuracy, clarity, professionalism, and consistency in messaging. This experience is intentionally designed for students with limited prior experience in research or Extension. Mentoring will focus on introducing students to principles of science communication, public engagement, and how land-grant universities communicate research and Extension impact to diverse audiences, including producers, students, and the general public. The student will develop transferable skills in communication, teamwork, time management, and professional responsibility. This project provides meaningful experiential learning while strengthening the department's capacity to communicate its mission, activities, and impacts effectively.