Research Update
December 2025

Research Project: Healthy Flocks and Safe Alberta Lamb Meat

The ALP board of directors have approved this research project for in-kind support, with financial funding being awarded by RDAR. The project will be led by (Christine) Xiaoji Liu with Agriculture and Agri-Food Canada, Lacombe from January 5, 2026 thru to December 31, 2027. Disease-causing bacteria including *Clostridium perfringens*, pathogenic *Escherichia coli* and *Salmonella* result in economic losses to the Alberta lamb industry. No recent study on these bacteria has been conducted in domestic sheep flocks or lamb meat produced in Alberta. The research involves collecting and screening fecal and soil samples from commercial lamb flocks in Alberta. The goal is to help producers to identify hotspots in sheep production on farm where bacteria can enter flocks or pastures and infect sheep, increasing the chance of lamb carcasses being rejected by processing facilities. The study will also test the hypothesis that lower food safety risks are associated with Alberta-produced lamb compared to imported lamb meats.

Objective 1: Sample Collection
Farm Samples: Soil and fecal samples will be collected from at least three lamb farms in Alberta. Soil will be sampled from pastures, while fecal samples will be collected from lambs both indoors and on pasture.
Retail Meat Samples: Lamb meat, both Alberta-produced and imported, will be purchased from local grocery stores.

Objective 2: Bacterial Screening
Determine the number and percentage of farm and retail samples (soil, feces, meat) that test positive for disease-causing bacteria, including pathogenic E. coli, Salmonella, and C. perfringens.

Objective 3: Risk Evaluation
Assess the virulence and antimicrobial resistance genes in the identified pathogens.
Engage with producers to explore potential mitigation strategies to enhance biosecurity and reduce exposure risks in sheep flocks.

Objective 4: Comparative Risk Analysis
Compare bacterial risks across Alberta farm samples and data from the Diagnostic Services Unit (DSU) at the University of Calgary, Alberta-produced retail lamb meat, and imported retail lamb meat.
This will help identify risk amplification points in the production chain and highlight differences between domestic and imported lamb.

This study will benefit Alberta lamb producers by informing them of potential risks and encouraging discussions around biosecurity and handling practices. It will also foster collaboration with veterinarians and engineers to improve infrastructure and sanitation practices that prevent bacterial contamination.

Research Project: Developing Nanopore DNA Sequencing for Routine Molecular Diagnostics of Gastrointestinal Nematode (GIN) Parasites and Drug Resistance in Ruminants

This project will be led by Dr. John Gilleard and Sawsan Anmar, University of Calgary. ALP has approved this research project for funding and in-kind support, with the timeline of April 1, 2025 to March 31, 2027.

Gastrointestinal roundworm parasites are one of the most important causes of disease and production loss in small ruminants. Dewormer resistance is a global problem and there is an urgent need for more targeted and sustainable control. The effectiveness of different dewormers varies between roundworm species and, due to dewormer resistance, between different flocks. Hence, we need diagnostic tests to quantify the different roundworm species and determine their dewormer resistance status. However, fecal egg counts only provide information on total worm burden. This project aims to build on our previous work in which we produced molecular tools to apply to fecal samples to determine the roundworm species present and provide some information on dewormer resistance. At present, these tools are only suitable for research applications. Here, we propose to further refine and develop these tools to make them suitable as diagnostic tests for routine monitoring and to support dewormer stewardship.

Goals and Objectives of the Project
- Improving Production Performance
- Improving Business Performance and Profitability; Benchmarking
- Improving Animal Health and Welfare
- Future Farming and Progressive Research

Current approaches to parasite control, based on routine application of dewormers, are increasingly ineffective and unstainable due to dewormer resistance. This project builds on previous research to transition the novel research technologies that were developed for routine diagnostic use. The ultimate aim is to enable sheep producers to send in samples to a local diagnostic laboratory (the UCVM DSU), in conjunction with their veterinarians, and receive detailed information on the different parasite species present. This will enable an evidence-based assessment on the need for treatment and on dewormer choice and allow parasite control to be assessed and monitored.

A 2-year term is set (April 2026- April 2028) for this project to allow us to ensure that we secure enough appropriate samples from sheep flocks for Objective 2 and also to be able to use the ALP funding as matching funds in larger grant applications e.g. RDAR grants.
Objective 1: Improve the accuracy of the ONT nemabiome metabarcoding for gastrointestinal roundworm parasite species determination.

Objective 2: Application of ONT nemabiome metabarcoding to DNA prepared directly from ovine fecal samples

Objective 1 should be completed by April 2027 and Objective 2 by April 2028 (or sooner if we have sufficient suitable diagnostic submissions).

By the end of the project (April 2028), we aim to have a fully validated diagnostic test with optimized workflows. At this point we will then explore transferring the technology to the UCVM diagnostic services unit to undertake this method as part of their routine diagnostic service.

Research Project: Adaptation of the Anesthetic Care-Ring™ Ligation Band technology to prevent Fly Strikes, RDAR Application 2024N3436R

In 2022/2023, Alberta Lamb Producers received funding through the Canadian Agricultural Partnership to partner with Chinook Contract Research Inc. (CCR) to modify the anesthetic delivering elastration ligation band (the Care-Ring™) for use in Alberta's lamb industry. The product is now available as a prescription product through your veterinarian in Alberta as the LidoBand™ www.lidoband.com. At the project's conclusion, it was identified that the incorporation of an insecticide to prevent fly strike would be a welcome and important feature of the Care-Ring™ technology. The sheep blowfly, *Lucilia cuprina*, is the primary cause of fly strike in sheep. Fly strike is a serious financial and animal welfare issue for the sheep industry, costing up to $175 million per annum due to production losses (i.e., reduced wool growth and bodyweight gain, and animal death) and costs associated with treatment and prevention. Fly strike control relies largely on the use of insecticides. These chemicals are generally applied as prophylactic treatments given in advance of fly waves, although some are also used as dressing treatments in existing cases. A product that provides long-term fly strike prevention in combination with local anesthesia at the targeted site of action would offer tremendous advantages to the industry. Presently CCR has developed a patented prototype insecticide-containing version of the Lidocaine Loaded Band (LLB), coined "I-LLBs", to provide pain mitigation and work against the development of fly strike-related pathology through the prevention of myiasis (a parasitic infestation of maggots in livestock tissue). Preliminary data has shown promise, and, if successful, such I-LLBs would be tremendously useful, given that their use creates castration and/or tail docking wounds in animals under field conditions over a prolonged time (i.e., weeks). CCR has recently received additional funding through the Sustainable Canadian Agricultural Partnership, administered by Research Driven Agriculture Research (RDAR) 2024N3436R, to collaborate in a private-public partnership to investigate the adaptation of the Care-Ring™ to prevent myiasis and flystrike for use in the Canadian Lamb Industry.

CCR is partnering with Alberta Lamb Producers, Lakeland College, Alberta Agriculture and Irrigation, and Alberta Veterinary Laboratories (AVL)/Solvet of Calgary, Alberta to develop and eventually manufacture the device in Alberta.

The project has four objectives:

Objective 1: Stakeholder engagement with the membership of Alberta Lamb Producers to gather input for product adaptation to the lamb industry (i.e. what insecticides to incorporate, rotation of classes etc.).

Objective 2: Expand on the research and development efforts adapting the anesthetic releasing technology to accommodate the loading and delivery of potentially multiple classes of insecticides, repellants, and anesthetics.

Objective 3: Facilitate pilot adaptation studies to evaluate the suitability of the Care-Ring™ for use in Alberta's lamb industry for insecticide and anesthetic delivery during tail docking and castration applications. A series of small field trials in Alberta flocks will be designed and conducted. Early stakeholder engagement will be critical to the success of this work.

Objective 4: The ultimate technology transfer goal of this work is to provide producers with the Care-Ring™ anesthesia band with a specific label claim for insecticide and anesthetic delivery during lamb castration and tail docking.

Are you interested in making this great product even better?
We will be conducting two producer surveys during this project to get valuable input on what you want to see in this product (i.e. insecticides or repellants you are interested in being added to the band). The surveys will be conducted in November 2025 and November 2026.