

NSERC Industrial Research Chair in Dairy Nutrition – A New Appointment

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NSERC IRC Overview

The Natural Sciences and Engineering Research Council of Canada (NSERC) promotes and supports discovery research and fosters innovation by encouraging organizations to participate and invest in postsecondary research projects. One of the ways they do this is through appointment of Industrial Research Chairs (IRC), to collaborate with the public and private sectors to support Canadian universities in major research endeavours and providing an enhanced learning environment for graduate students and post doctoral fellows. There are a number of IRCS in dairy cattle research across Canada, with two being held by researchers in Alberta. Alberta Milk is currently contributing funds to three IRCS: Herman Barkema at the University of Calgary, Anne Laarman at the University of Alberta and Dan Weary/Marina von Keyserlingk at the University of British Columbia.

Introducing Dr. Anne Laarman

PhD – University of Guelph (2015), Animal Science

MSc – University of Alberta (2011), Animal Science

BSc – University of Alberta (2008), Physiology

Dr. Laarman grew up on a hog and cash crop farm in the Netherlands and immigrated to Canada in 1996, where he lived in Alberta for 14 years before pursuing a PhD in Ontario. In 2019, Dr. Laarman returned to Alberta to become an assistant professor in dairy nutrition & physiology at the University of Alberta, after spending 4 years as an assistant professor in ruminant nutrition at the University of Idaho. Dr. Laarman's research program focuses on the development and adaptation of the gut, looking at how calves and cows absorb nutrients while maintaining gut health. Through his research, he hopes to develop and inform on-farm management strategies to improve dietary changes in dairy calves and cows.

Dr. Laarman's past research focused on the development and adaptation of the rumen to dietary changes common in the dairy industry. Past research on gut development includes the impact of various calf-starter and hay feeding strategies on rumen pH and calf performance. These studies demonstrated that calf rumens are physiologically distinct from cow rumens and have much greater resistance to subacute-ruminal acidosis. Further, Dr. Laarman's research investigated the use of supplements such as butyrate in cows and calves, and its impact on passive transfer of immunity, productivity, gut health, and nutrient absorption capacity. These studies showed that butyrate has wide-ranging impact on cows and calves and can be targeted to greatly improve nutrient absorption and productivity.

Dairy Nutrition IRC Financial Supporters



Dairy Nutrition IRC Goals

Within the dairy sector, 10-20% of costs are associated with the rearing of calves that eventually replace milking cows in the herd. One of the principal goals of calf rearing is gut development, which affects their ability to absorb nutrients and become healthy and productive once they are weaned. The specific goal of the IRC in Dairy Nutrition is to examine the key factors that drive the development of nutrient absorption capacity in calves. The research objectives will focus on the mechanisms regulating cell growth and development in the gut, as well as the interaction between the rumen and the intestines. The long-term goal of this research project is to advance strategies that improve production efficiency, health, and animal welfare of dairy calves and young ruminants in Canada.

The proposed IRC projects are focused on two themes. The first theme is to look at the impact of age, diet, rumen pH, and volatile fatty acids on ruminal development and nutrient absorption. A greater understanding of how nutrient absorption develops will lead to strategies that can improve calf success in early life, especially through weaning. The second theme of the IRC is the relationship between ruminal and intestinal development in early life. By supplying rumen bypass nutrients, these projects will determine the relative importance of ruminal nutrient supply and intestinal nutrient supply in developing the entire gut in young calves.

Interested in learning more about Dr. Laarmans's research?

- List of [scientific publications](#)
- [Rethinking Ruminal Acidosis in Dairy Calves](#) – WCDS
- University of Alberta [bio and contact](#)

Current Projects

- Probiotic Use in Calves
 - To determine the effect on passive transfer of immunity, gut development, gut health, and calf health from birth through the weaning transition
- Probiotic Use in Cows
 - Evaluating a commercial probiotic for its impact on cow productivity and inflammation during the transition period
- Improving the Weaning Transition
 - Evaluating feeding and weaning strategies for their effect on digestion, absorption, and metabolism of energy nutrients as well as gut inflammation

