

RESEARCH PROFESSIONALS

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- Post-doctoral researchers
 - Visiting scientists (international)
 - Qualified research technicians
 - Undergraduate, graduate and postgraduate students

MAIN PARTNERS

PUBLIC SECTOR

ECONOMIC SECTOR

- National and provincial producers' federations
- Industry associations
- Private industry

SCIENTIFIC SECTOR

- Canadian, U.S. and international universities



Legend: Bird's eye view of the Dairy and Swine Research and Development Centre

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L'équipe de recherche en production laitière

For more information, reach us at www.agr.gc.ca or
call us toll-free at 1-855-773-0241.



DAIRY RESEARCH TEAM

..... VISION

To provide dairy producers with the technological innovations and know-how to achieve economically viable production of high-quality milk in a manner that ensures animal health and welfare, while seeking to reduce their environmental footprint. That vision is a constant source of motivation for the dairy research experts of the Dairy and Swine Research and Development Centre.

Guided by this vision, the Agriculture and Agri-Food Canada scientific specialists combine their expertise to advance science and innovation in fields of importance to the dairy sector:

- metabolism and nutrition
- microbiology
- lactation biology
- genomics and nutrigenomics
- value-added milk production
- dairy waste management and treatment

Dairy and swine research
and development centre

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KEY AREAS OF RESEARCH

METABOLISM AND NUTRITION

Develop feeding and nutritional strategies to reduce enteric methane emissions and nitrogen excretion in order to lower production costs and reduce the environmental footprint of milk production.

❖ Chaouki Benchaar, PhD

Determine the B-vitamin requirements of dairy cows in order to improve metabolic efficiency and the transfer of B vitamins to milk through the cows’ diet, and identify nutritional strategies that can increase B-vitamin synthesis in the rumen.

❖ Christiane Girard, PhD, Agr.

Determine dairy cow protein and amino acid requirements and the amounts supplied in rations in order to better balance rations and increase the efficiency of conversion of dietary protein into milk protein, with the aim of reducing production costs and nitrogen losses to the environment.

❖ Hélène Lapierre, PhD, Agr.

Study protein metabolism in dairy cows, including endogenous secretions, to adequately predict animal needs with the aim of reducing nitrogen losses to the environment and increasing dairy farm profitability.

❖ Daniel Ouellet, PhD

Improve lipid metabolism, reproduction, immunity, milk production efficiency and the production of milk enriched in bioactive fatty acids and antioxidants.

❖ Hélène Petit, PhD

GENOMICS

Improve disease resistance in dairy cows by gaining a better understanding of the role that nutrition plays in the immune system and of the functional impact of genetic variation on health maintenance and resistance to infection.

❖ Nathalie Bissonnette, PhD

Study the role of nutrients in genetics and epigenetic regulation (particularly microRNA) of lipogenesis and dairy cow health.

❖ Eveline Ibeagha-Awemu, PhD

Improve dairy cow longevity and health through nutrigenomic interventions targeting oxidative stress and cellular energy metabolism.

❖ Jérôme Lapointe, PhD

Study, using nutrigenomics, the effects of various polyunsaturated fatty acids (e.g., flaxseed oil) and antioxidants present in lignans on dairy cow health at the start of lactation.

❖ Marie-France Palin, Ph.D

MICROBIOLOGY

Assess the effects of probiotics on the regulation of ruminal fermentation in order to counter the harmful effects of subclinical acidosis and to create rumen conditions conducive to enhanced digestion.

❖ Johanne Chiquette, PhD, Agr.

MOLECULAR MICROBIOLOGY

Study microbial communities to reduce pathogen survival (including antibiotic resistance genes) and emissions of methane (a greenhouse gas) from manure storage pits.

❖ Guylaine Talbot, PhD

LACTATION BIOLOGY

Promote lactation persistency in cows after peak lactation, improve cow health and longevity, and develop new methods of controlling bovine mastitis.

❖ Pierre Lacasse, PhD

DAIRY WASTE MANAGEMENT AND TREATMENT

Reduce the impact of livestock operations on natural resources through the development of biotechnologies for bioenergy production, the reduction of biological contaminants and the capture and reduction of greenhouse gases, ammonia and odours from farm buildings, manure pits and manure spreading activities.

❖ Daniel Massé, PhD

Promote the reuse of nutrients (nitrogen, phosphorus, potassium, trace elements) and minimize the use of potable water through the treatment of liquid manure and agri-food industry waste.

❖ Lucie Masse, PhD

FACILITIES

The dairy complex can house 140 cows: 108 in the main section and 32 in the temperature-controlled area.

The main section has 100 individual tie stalls and is characterized by:

- a double-six milking parlour with the capacity for precise measurement of milk production; and
- six large stalls for calving or animals with health problems.

The controlled-temperature area (metabolic) contains 32 individual tie stalls and is characterized by:

- additional space between the animals, with equipment required for more complex research;
- mobile milking units with integral weighing scale;
- a control system for maintaining a constant temperature year round;
- two controlled-environment chambers for measuring greenhouse gas emissions from cows; and
- a surgical room.

The complex includes various other sections, including:

- a room for preparing feed rations that allows significant flexibility and accuracy for adapting to the complexity of rations and to the number of different groups of animals to be fed;
- laboratories for preparing projects and sample analyses; and
- a livestock exercise area.

The Centre also has a separate Biosafety Level 2 building for research on mastitis-causing pathogens, such as Staphylococcus aureus bacteria.

TECHNOLOGY PLATFORMS

The research teams have access to a wide range of equipment for conducting research in the fields of cell biology, immunology (animal cell culture cabinets, cytometry), genomics, molecular biology (quantitative PCR, DNA sequencer, genotyping, microarray scanner, etc), and for performing physical-chemical analyses (nutrient analyzer, gas chromatography, etc.).

