DAIRY RESEARCH CLUSTER 3

FOR A PRODUCTIVE, INNOVATIVE AND SUSTAINABLE SECTOR

RESEARCH PROJECTS AND INVESTMENTS
2018-2023

dairyresearch.ca

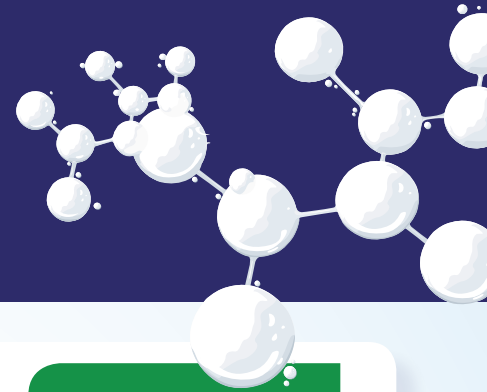CANADIAN AGRICULTURAL PARTNERSHIP

DAIRY FARMERS OF CANADA

Lactanet

Novalait

Canada

Dairy Farm Efficiency and Sustainability

PROJECT

Understanding the impact of cutting-edge genomic technologies on breeding strategies for optimum genetic progress in Canadian dairy cattle

This project will analyze and compare the benefits of novel tools (e.g. gene editing) and new technologies (e.g. genotyping by sequencing) with the aim to optimize Canadian dairy cattle breeding programs for future genetic improvement and profitability.

RESEARCH TEAM

Christine Baes, University of Guelph

Flavio Schenkel, Getu Hailu, Angela Canovas (University of Guelph)

PARTNERS
Agriculture and Agri-Food Canada

Lactanet

PROJECT

Accelerating genetic gain for novel traits in Canadian Holstein cows

The project aims to increase the size of the cow reference population to improve the accuracy and reliability of genomic estimated breeding values (EBVs) for novel traits and develop tools to increase the rate of genetic progress for Canadian Holstein cows.

RESEARCH TEAM

Flavio Schenkel, University of Guelph

Christine Baes, Angela Canovas, Janusz Jamrozik, Stephen LeBlanc, Filippo Miglior, Eduardo Ribeiro (University of Guelph), Xin Zhao (McGill University), Ronaldo Cerri (University of British Columbia)

PARTNERS
Agriculture and Agri-Food Canada

Lactanet

PROJECT

Optimizing health and production of cows milked in robotic systems

The project aims to identify the optimal nutritional and housing strategies for cows milked automatically to improve cow health, milk production and efficiency of robot use.

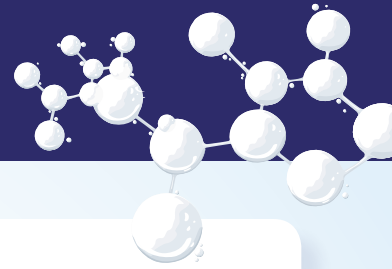### RESEARCH TEAM

Trevor DeVries, University of Guelph

Greg Penner, Tim Mutsvangwa (University of Saskatchewan), Karin Orsel, Ed Pajor (University of Calgary), Todd Duffield (University of Guelph), Richard Cantin, Débora Santschi, René Lacroix (Lactanet)

PARTNERS
Agriculture and Agri-Food Canada

Dairy Farmers of Canada

Lactanet
(In-kind contribution)

PROJECT

Reducing the water footprint of milk production in current and future climates

The project will evaluate management practices and strategies with the aim to improve cows' resilience to heat-stress, improve water-use efficiency on dairy farms, and reduce the water footprint of milk production.

RESEARCH TEAM

Andrew VanderZaag, Agriculture and Agri-Food Canada (AAFC)-Ottawa and Robert Gordon, University of Windsor

Roland Kroebel, Sean McGinn, Tim McAllister (AAFC-Lethbridge), Merrin Macrae (University of Waterloo), Tom Wright (Ontario Ministry of Agriculture, Food and Rural Affairs), Édith Charbonneau (Université Laval), Terra Jamieson (AAFC-Halifax), Ward Smith, Budong Qian, Ray Desjardins (AAFC-Ottawa), Keith Reid (AAFC-Guelph), Tim Nelson (Livestock Research Innovation Corporation), John McCabe (Nova Scotia Department of Agriculture)

PARTNERS
Agriculture and Agri-Food Canada

Dairy Farmers of Canada

PROJECT

Increasing the production and utilization of alfalfa forages in Canada

The project aims to increase the nutritive value, yield, and persistence of alfalfa-based forages through breeding and crop management.

RESEARCH TEAM

Annie Claessens, AAFC-Quebec and Bill Biligetu, University of Saskatchewan

Gaëtan Tremblay, Patrice Audy, Annick Bertrand, Julie Lajeunesse, Solen Rocher, Marie-Noëlle Thivierge, Gilles Bélanger (AAFC-Quebec), Shabtai Bittman, Derek Hunt (AAFC-Agassiz), Kathleen Glover, Yousef Papadopoulos (AAFC-Kentville), Daniel Ouellet (AAFC-Sherbrooke), Vern Baron (AAFC-Lacombe), Surya Acharya (AAFC-Lethbridge), Mike Schellenberg (AAFC-Swift Current), Édith Charbonneau, Caroline Halde (Université Laval), Ralph Martin (University of Guelph), Philippe Seguin (McGill University), Charles Brummer (University of California), Josef Hakl (Czech University), Huguette Martel (Ministère de l'Agriculture, des Pêcheries et de l'Alimentation du Québec)

PARTNERS
Agriculture and Agri-Food Canada

Dairy Farmers of Canada

PROJECT

Identifying best management practices for high quality silage production

The project will compile information from across Canada about management practices and chemical, microbial and digestibility analyses of silage with the aim to identify the most efficient techniques to produce nutritious feed for dairy cattle and improve farm productivity.

RESEARCH TEAM

Nancy McLean, Dalhousie University and Linda Jewell, AAFC-St. John's

Kees Plaizier, Kim Ominski, Emma McGeough, Francis Zvomuya (University of Manitoba), Carole Lafrenière (Université du Québec en Abitibi-Témiscamingue), Shabtai Bittman (AAFC-Agassiz), Emmanuel Yiridoe (Dalhousie University), David Dykstra (New Brunswick Department of Agriculture, Aquaculture and Fisheries), Fred Waddy (MILK 2020)
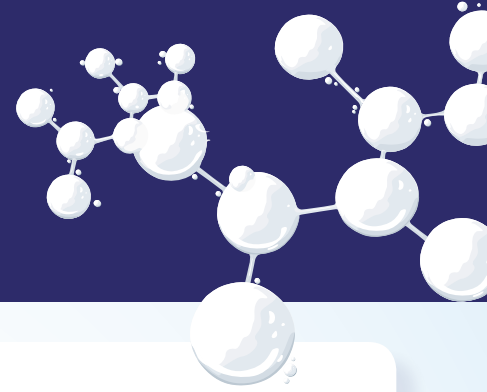
PARTNERS
Agriculture and Agri-Food Canada

Dairy Farmers of Canada

PROJECT

The Mastitis Network: Continuing the advancement of milk quality in Canada

The project aims to develop novel strategies and tools to prevent and treat mastitis and reduce the need for antimicrobials, ensuring animal health and welfare and high-quality milk production.

RESEARCH TEAM

Simon Dufour, Université de Montréal and Pierre Lacasse, AAFC-Sherbrooke

Mario Jacques, Jean-Philippe Roy (Université de Montréal), Herman Barkema, Eduardo Cobo, Vineet Saini (University of Calgary), Greg Keefe, J Trenton McClure (University of Prince Edward Island), Trevor DeVries, David Kelton (University of Guelph), Xin Zhao, Jennifer Ronholm, Lawrence Goodridge (McGill University), François Malouin, Richard Blouin (Université de Sherbrooke), Christopher Luby (University of Saskatchewan), Rachel Gervais (Université Laval), Robert Hancock (University of British Columbia), Graham Plastow (University of Alberta), Marcos Colazo (Alberta Agriculture and Forestry), Min Lin (Canadian Food Inspection Agency - University of Ottawa), Marvin Miller (University of Notre Dame), Pamela Adkins, John Middleton (University of Missouri)

PARTNERS
Agriculture and Agri-Food Canada
Dairy Farmers of Canada

PROJECT

Unraveling the genetic susceptibility to Johne's disease

The project will identify genetic and epigenetic variations associated to Johne's disease (JD) with the aim to better understand the dynamics of bacterial strains in JD positive cows and how they affect disease progression and JD prevalence at the herd level.

RESEARCH TEAM

Nathalie Bissonnette, AAFC-Sherbrooke and Kapil Tahlan, Memorial University of Newfoundland
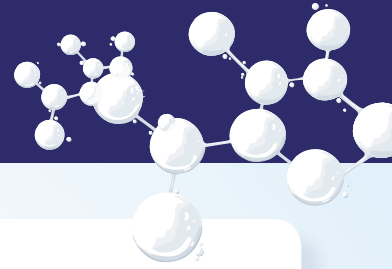
David Kelton, Flavio Schenkel (University of Guelph), Eveline Ibeagha-Awemu (AAFC-Sherbrooke), Gilles Fecteau (Université de Montréal), Frank Biet (Institut national de la recherche agronomique - France)

PARTNERS
Agriculture and Agri-Food Canada
Lactanet
Holstein Canada
(In-kind contribution)

PROJECT

Extending cow longevity on dairy farms by improving calf management practices in the first year of life

The project will investigate the impact of early life management practices on achieving calf genetic potential as measured by adult cow productivity, health, and longevity.

RESEARCH TEAM

Greg Keefe and J Trenton McClure, University of Prince Edward Island

Elsa Vasseur (McGill University), Luke Heider (University of Prince Edward Island), Débora Santschi (Lactanet)

PARTNERS
Agriculture and Agri-Food Canada

Dairy Farmers of Canada

PROJECT

Providing opportunities for movement to dairy cows by redefining indoor and outdoor spaces and best management practices

The project will develop, document and pilot-test solutions to increase the opportunity for movement for cows kept in tie-stalls, taking into account farmers' workloads, the financial investments required, improvements to animal welfare, Canadian climate and environmental regulations.

RESEARCH TEAM

Elsa Vasseur, McGill University

Stéphane Godbout (Institut de recherche et de développement en agroenvironnement), Sébastien Fournel, Doris Pellerin (Université Laval), Yan Martel Kennes, Pierre Ruel (Centre de recherche en sciences animales de Deschambault; CRSAD), Jeff Rushen, Anne-Marie de Passillé (University of British Columbia), Steve Adam (Lactanet), Marianne Villetaz Robichaud (Université de Montréal)
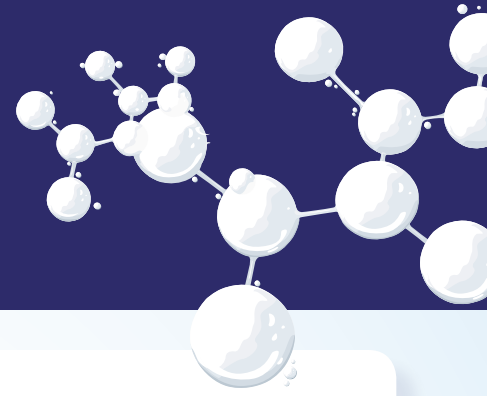
PARTNERS
Agriculture and Agri-Food Canada

Dairy Farmers of Canada

CRSAD
(In-kind contribution)

Theme: Milk Quality

PROJECT

Surveillance of antimicrobial use and resistance to improve stewardship practices and animal health on dairy farms

The project will develop an on-farm surveillance system and a research platform for antimicrobial use and resistance with the aim to optimize antimicrobial stewardship practices.

RESEARCH TEAM

Javier Sanchez and Luke Heider, University of Prince Edward Island

J Trenton McClure, Greg Keefe (University of Prince Edward Island), Kapil Tahlan (Memorial University of Newfoundland), Simon Dufour, David Francoz, Jean-Phillipe Roy, André Ravel, Marie Archambault (Université de Montréal), David Kelton, Scott McEwen, Scott Weese, Jan Sargeant (University of Guelph), Christopher Luby, Cheryl Waldner (University of Saskatchewan), David Leger, Richard Reid Smith (Public Health Agency of Canada), Herman Barkema, Jeroen De Buck (University of Calgary)

PARTNERS

Agriculture and Agri-Food Canada

Dairy Farmers of Canada

Public Health Agency of Canada

PROJECT

Understanding the contribution of milk composition and microflora during ripening of cheeses

The project will highlight the origin of the main sources of microorganisms in the secondary ripening microflora, analyse their interactions with the natural antimicrobial system of milk and determine their impact during ripening of two types of cheeses (Cheddar and washed-rind). The study will take into consideration the effects of the season as well as milk concentration prior to cheesemaking.

RESEARCH TEAM

Steve Labrie, Université Laval and Claude P. Champagne, AAFC-Saint-Hyacinthe

Sylvie Turgeon, Yves Pouliot (Université Laval), Michel Britten, Daniel St-Gelais (AAFC-Saint-Hyacinthe)

PARTNERS

Agriculture and Agri-Food Canada

Novalait

PROJECT

Occurrence and impact of microbial biofilms on milk quality from farm to cheese vats

The project will study the origin, structure, composition and formation of detrimental and beneficial biofilms at the farm and cheese plants, and recommend best management practices and equipment sanitation protocols to farmers and cheese producers.

RESEARCH TEAM

Denis Roy, Université Laval and Evelyne Guévremont, AAFC-Saint-Hyacinthe
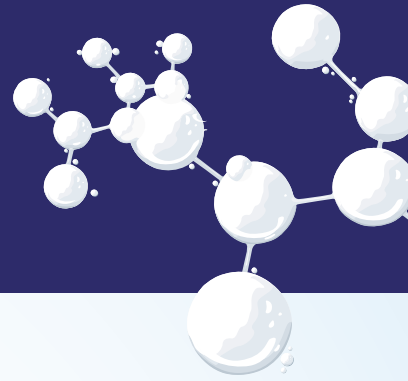
Julie Jean, Ismail Fliss (Université Laval), Mario Jacques, Simon Dufour (Université de Montréal), Gisèle LaPointe, David Kelton (University of Guelph)

PARTNERS

Agriculture and Agri-Food Canada

Novalait

Dairy Farmers of Ontario

Theme: Dairy and Cardiometabolic Health

Cardiometabolic health is a term that includes: obesity, Type 2 diabetes, hypertension, metabolic syndrome* and cardiovascular disease.

PROJECT

Effects of long-term consumption of dairy products on satiety, body weight and glycemic control

This project aims to assess the potential beneficial role of consuming milk, yogurt and cheese on satiety, blood glucose levels and body weight in adults. The project outcomes could have implications to help address Type 2 diabetes and obesity, two major health burdens facing many Canadians.

RESEARCH TEAM

G. Harvey Anderson, University of Toronto

Bohdan Luhovyy (Mount Saint Vincent University), John Sievenpiper (University of Toronto)

PARTNERS
Agriculture and Agri-Food Canada

Dairy Farmers of Canada

PROJECT

Role of dairy products on body weight and metabolic health in families

This project aims to demonstrate the potential beneficial effect of consuming dairy products on body weight, appetite control, diet quality and metabolic health in adults and children using an innovative web-based approach. The project outcomes could have implications to help address obesity, a major health burden facing many Canadians.

RESEARCH TEAM

Angelo Tremblay and Vicky Drapeau, Université Laval

Sylvie Turgeon, Jean Doré, Vincenzo Di Marzo, André Marette (Université Laval), Eric Doucet (University of Ottawa), Marion Hetherington, Graham Finlayson (University of Leeds - England)

PARTNERS
Agriculture and Agri-Food Canada

Dairy Farmers of Canada

Metabolic syndrome is a clustering of at least three of the five following medical conditions: excess abdominal fat, hypertension, insulin resistance, high triglycerides, and low HDL-Cholesterol. Metabolic syndrome is associated with the risk of developing cardiovascular disease and Type 2 diabetes.

The third Dairy Research Cluster builds on the success of the Dairy Research Cluster 1 and 2 (2010-2018) to stimulate productivity, sustainability and profitability on farms and to improve knowledge on milk and dairy products health benefits. Joint industry and government commitments to Dairy Research Cluster 3 total $16.5 million, including $11.4 million from Agriculture and Agri-Food Canada under the Canadian Agricultural Partnership AgriScience Program, $2.8 million from Dairy Farmers of Canada, $1 million from Lactanet, $736,300 from Novalait Inc., $75,700 from Dairy Farmers of Ontario and in-kind contributions from dairy sector partners.

Dairy Research Cluster 3 funding by
NATIONAL DAIRY RESEARCH STRATEGY PRIORITY

Reduced environmental footprint

Forage breeding and management

Dairy cattle nutrition

Calf management

Reproduction

Genetic improvement

Infectious diseases mitigation

40%

17%

Lameness

Sustainable barn design

14%

29%

Dairy cow transition period

Barriers to adoption of BMPs

Dairy and Cardiometabolic health

Microbiology/ Milk quality

Antimicrobials use/ Alternative tools