COMPANY PROFILE

A STRONG VISION

Created by Quebec dairy farmers and processors, Novalait is accelerating the development of scientific knowledge and skills for the dairy industry of tomorrow.

A UNIQUE BUSINESS MODEL

Novalait brings together all businesses that produce or process milk in Quebec – from small-scale cheese factories to family farms to multinational companies – making contributions to the research investment fund equivalent to $1.27/100 l of managed milk. They are represented within Novalait by three groups of shareholders: Les Producteurs de lait du Québec holds 50% of Novalait’s shares, Agropur Cooperative, which represents dairy cooperatives, and the Conseil des industriels laitiers du Québec, which brings together private dairy processors, split the other half of Novalait’s shares.

Calling upon the creativity and expertise of researchers from all disciplines and horizons, Novalait ensures that it meets its shareholders’ research priorities. Novalait’s committees evaluate the proposals received according to the potential for commercial opportunities and applications on farms and in plants. Novalait invests in the development and monitoring of the R&D projects selected.

It collaborates with actors in the sector to valorize and transfer the research results. In everything it does, Novalait aims to optimize research benefits.

Novalait involves its shareholders in all of its activities, including:

- Establishing research priorities
- Selecting and monitoring projects
- Transferring research results

SHAREHOLDING AND ORGANIZATIONAL STRUCTURE

<table>
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<tr>
<th>Les Producteurs de lait du Québec</th>
<th>Agropur Cooperative</th>
<th>Conseil des industriels laitiers du Québec</th>
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General meeting of shareholders

Board of directors

Executive direction

Research council

Start-up committees

Selection committees

Steering committees
Dear Shareholders,

Novalait’s mission is to feed innovation in your company. To do so, it must innovate in its practices. Always on the lookout for innovative solutions to meet the priorities of its shareholders, this year Novalait set up a process to accept letters of intent on a rolling basis. This formal step initiates the evaluation process to determine the relevance of promising research ideas and the project co-development process. Thirteen proposals were evaluated in 2020–2021 and Novalait’s funding offers surpassed $600,000. Thank you to our researchers for answering the call!

This year, the interactions between our expert committees and research teams to develop and monitor projects multiplied through the use of video conferences. Novalait’s capacity to deliver depends on the support of experts delegated by our shareholders. Thank you for consistently sharing your ideas and opinions!

Novalait also innovated in 2021 with a virtual edition of the Forum Techno. The event itself was integrated into International Cheese Technology Week, in partnership with IDF Canada, Université Laval and the Quebec Cheese Expertise Center (CEFQ). The record participation and strong online consultation of post-forum presentations confirms the value of the virtual formula for the transfer of research results. Thank you to our transfer coordinator, Valérie Bélanger, for rising to the challenge and making the first Virtual Forum Techno a success. Novalait, together with CEFQ and Lactanet, also launched an exploration of other opportunities to communicate research results more effectively to the same target audiences.

Thank you to our shareholders and our inspiring partners who make all of Novalait’s achievements possible.

Élise Gosselin
General Director
2020-21 IN NUMBERS

NOVALAIT MAINTAINS A REMARKABLE LEVERAGE EFFECT

Novalait and its partners have committed a total of $14.1 million to ongoing research in 2020-2021, including $3.5 million for new projects.

SHARE OF GOVERNMENT FUNDS AND PRIVATE PARTNERSHIPS

Projects selected by Novalait are successful in provincial and federal funding programs. Novalait also partners with agri-food and industry suppliers to share costs and accelerate the accessibility of research tools and services to its shareholders.

DIVERSIFIED MEANS OF INVESTMENT

Novalait invests its funds according to different formulas to solve a targeted problem (Team projects), to validate R&D results on the farm or in the plant (Pilot projects), to mobilize scientific and financial resources on large-scale issues (Initiatives) and to create or renew researchers’ positions (Chairs).

COMMITTEES’ ACTIVITIES

Numerous meetings for the development and follow-up of projects.

**8**

Boards of Directors

**3**

Selection committees for 13 proposals evaluated

**20**

meetings of Steering committees for projects and chairs

Novalait is involved in several organizations as a member of a committee or board of directors:

- Strategic planning of the dairy sector
- Quebec consortium for industrial bioprocess research and innovation (CRIBIQ)
- Quebec cheese expertise center (CEFQ)
- National dairy research council (DFC)
- Cheese Symposium organizing committee (IDF-Canada)
- Dairy cattle committee (CRIFAQ)

COMMUNICATION

Website

Activity on Novalait.ca is increasing and contributes to Novalait’s influence.

**Website activity**

In the last year:

- **9,848** visitors
- **20,854** pages viewed

**Graphic representation**

- **848** registrations including participants in the International Symposium on Sciences and Cheese Technology
- **200** viewings of content in the following months of the Forum
- **480** newsletters to know everything about Novalait’s activities
- **200** subscribers

**Forum Techno**

**Forum Techno 2021**

- **480** viewings of content in the following months of the Forum

**Lait’Xpress**

- **400** subscribers
- **Subscribe today!**

Several video clips and content of the Forum are available on novalait.ca.
the priorities of Quebec’s dairy farmers and processors. The researchers answered the call. Here are the new research initiatives that have grown out of this partnership.

CURRENT RESEARCH PROJECTS

Novalait and CRIBIQ have been working together for a number of years now to fund research projects that meet the needs of the Quebec’s dairy production and processing sector. This collaboration has proven to be beneficial for the growth and development of both organizations. Here are some of the current research projects that are being supported by this partnership:

1. Deficient silage and non-compliant dairy products. Raw milk is known to be an excellent growth medium for microorganisms. Although strict hygiene conditions can be imposed in the production system which makes developing biosafety standards challenging.

2. Identification of potential pathogens in milk. In dairy processing plants, these microorganisms may lead to non-compliant or atypical products. The resulting economic losses are estimated to be over $1 million per incident in the province of Quebec; in addition to creating unnecessary waste. These microorganisms are heat-resistant and can survive all stages of dairy production. The benefits are promising: they can help reduce the risk of introducing emerging diseases and reduce the prevalence of diseases like paratuberculous, leukosis, salmonellosis, bovine viral diarrhea, and digital dermatitis.

3. Risk of contamination. The research program will cover three themes: validate rapid, robust, and effective diagnostic strategies to support rigorous biosafety programs, with a focus on diagnostic tools that can be performed without requiring a high level of technical expertise.

4. Collecting microorganisms from atypical products. Raw milk is known to be an excellent growth medium for microorganisms. Although strict hygiene conditions can be imposed in the production system. This project will develop decision-making tools for dairy companies to support their valorization processes using Simulait software.

5. Valorizing milk co-products. Increasing the recovery of sodium-nitrate-free (SNF) in milk and processing co-products is one of the objectives in the dairy sector’s strategic plan and has been a research priority since Novalait’s creation. In 2019, it is estimated that the Canadian dairy sector generate an increase of 75,000 tonnes of SNF (in the form of milk powder), in addition to 265,000 tonnes of milk solids in the form of non-compliant or atypical products. The resulting economic losses are estimated to be over $1 million per incident in the province of Quebec. The research program will cover three themes: (1) map the volumes of SNF and permeates in Quebec; (2) develop a tool for dairy companies to support their decision-making on SNF and permeate valorization; (3) create a general register of valorization pathways.

6. New Research Chair in Dairy Production Biosafety. The research program will cover three themes: (1) identify key practices and develop more robust biosafety programs to control the prevalence of infections within and prevent the introduction of external bio-safety or bio-exclusion; (2) develop rapid, robust, and effective diagnostic strategies to support rigorous biosafety programs, with a focus on diagnostic tools that can be performed without requiring a high level of technical expertise.

Natural antimicrobial compounds to combat bacteria in silage

Sporulated (thermotolerant) bacteria including clostridia cause a lot of headaches when it comes to silage. These bacteria from the Clostridium genus contaminate the silo before fermentation and alter its nutritional value. In addition, Clostridium spores can be found in milk. Sporulated bacteria are highly heat-resistant and can survive all stages of dairy processing. Quebec processors estimate the losses associated with Clostridium to be nearly $10 million per year. Israel Floss’s team at Université Laval is proposing using bacteriocins — lactic acid bacteria which can be heat-resistant and can survive all stages of dairy processing. Université Laval aims to create an inventory and characterize these undesirable microorganisms in dairy production. The collection of data on the microorganisms will allow for a better assessment and more precise identification of the problem strains. A better understanding of these undesirable microorganisms is essential in order to develop effective control strategies.

Reproduction: In vitro fertilization or artificial insemination?

More and more bulls and cows of high genetic value are now reproduced through in vitro fertilization (IVF). So the question is no longer whether there has been a phenotypic monitoring (registration) set of traits of animals produced through this reproduction method, nor has there been any structured analysis of the effects of IVF. However, different stakeholders including Lactanet record fertility data, can be found in milk. This information is provided by researchers Simon Dufour and Juan Carlos Arango Salgado.

Leukosis, salmonellosis, paratuberculosis, mastitis, digital dermatitis, Fasosporia, these infectious diseases that are well-known to farmers ravage herds of dairy farms. Some emerging diseases, such as Salmonella Dublin and Clostridium spp., as well as bovine viral diarrhea, can also have devastating effects. They all pose a constant threat to animal health, production safety, and the ability to export Quebec’s milk.

Ismail Fliss’s team at Université Laval is searching the phenotypic effects of IVF to give farmers and genetics companies, it is important to be able to identify the presence or absence of a phenotypic effect of IVF in order to use as many genetic gains as possible. It should also be considered that the phenotype that could result from IVF is sensitive to the environment and could potentially be modulated through specific control conditions (such as feed). Université Laval researcher Maxime-Antoine Sirois is researching the phenotypic effects of IVF to help farmers using in vitro fertilization a competitive advantage.

Collecting microorganisms from atypical products. Raw milk is known to be an excellent growth medium for microorganisms. Although strict hygiene conditions can be imposed in the production system which makes developing biosafety standards challenging. The new NSERC-MAPAQ-NOVALAIT -DFC Industrial Research Chair on Biosafety in Dairy Production, based at Université de Montréal, proposes enhancing scientific expertise in biosafety and disease monitoring and control programs to assist dairy farmers, governments and veterinary physicians in their daily work to combat and in certain situations, eradicate different infectious diseases.

The research program will cover three themes: (1) identify key practices and develop more robust biosafety programs to control the prevalence of infections within and prevent the introduction of external bio-safety or bio-exclusion; (2) develop rapid, robust, and effective diagnostic strategies to support rigorous biosafety programs, with a focus on diagnostic tools that can be performed without requiring a high level of technical expertise; (3) develop disease monitoring and control programs to assist dairy farmers, governments and veterinary physicians in their daily work to combat and in certain situations, eradicate different infectious diseases.
CURRENT RESEARCH PROJECTS 2020–2021

Current research projects aim to find answers to the research priorities established by Quebec dairy farmers and processors. Want to know what Novalait is working on? The current projects are grouped below according to the different research themes.

Innovative practices on the farm
Performance and behaviour of dairy heifers according to their milk diet
Edith Charbonneau, Université Laval

Vitamins post-calving: a way to increase cow fertility?
Marc-André Sirard, Université Laval

Educational Leadership Chair in Sustainable Agricultural Building Design
Sébastien Fournel, Université Laval

Lactic acid bacteriocins: a natural approach to controlling sporulated thermoduric bacteria in silage
Ismail Fliss, Université Laval

Animal welfare, reproduction and health
NSERC-Novalait-Dairy Farmers of Canada-Valacta Industrial Research Chair in Sustainable Life of Dairy Cattle
Elsa Vasseur, McGill University

Using the fatty acid profile of milk to detect and prevent ruminal acidosis in cows
Stéphanie Claveau, Agrinova

Validation of a genomic tool to improve health and fertility traits in dairy cows
Claude Robert, Université Laval

Deciphering the molecular mechanisms of infertility in dairy cows with subclinical acidosis
Réj Cugy, McGill University

Comparing of cows produced through in vitro fertilization versus artificial insemination based on fertility, health and productivity criteria
Marc-André Sirard, Université Laval

NSERC-MAPQ-NOVALAIT-DFC Industrial Research Chair on Dairy Production Biosecurity
Simon Dufour et Jean-Claude Angevin, Université de Montréal

For more information on each of the projects: novalait.ca

Technology and process eco-efficiency
Increasing eco-efficiency by concentrating dairy fluids
Yves Pouliot, Université Laval

Educational Leadership Chair in Cheese Technology
Julien Chamberland, Université Laval

Characterizing the structure of stirred yogurt through digital technology and the mapping of critical processing points
Sylvie Turgeon, Université Laval

Valorization of co-products
New approaches to transforming carbohydrate-rich co-products into high-value products
Salwa Karboune, McGill University

An eco-efficient approach to valorizing buttermilk
Guillaume Brisson, Université Laval

Prospective study on the valorization of solids-not-fat in milk and processing co-products
Alain Doyen, Université Laval

Dairy production and feed efficiency
Improving cows’ protein diet through new models tested in Quebec
Doris Pellerin, Université Laval

Optimizing the efficiency of proteins in rations
Cristiano Cortes, Agrinova

Education and process eco-efficiency
Increasing eco-efficiency by concentrating dairy fluids
Yves Pouliot, Université Laval

Educational Leadership Chair in Cheese Technology
Julien Chamberland, Université Laval

Characterizing the structure of stirred yogurt through digital technology and the mapping of critical processing points
Sylvie Turgeon, Université Laval

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NSERC-MAPQ-NOVALAIT-DFC Industrial Research Chair on Dairy Production Biosecurity
Simon Dufour et Jean-Claude Angevin, Université de Montréal

For more information on each of the projects: novalait.ca

Alternatives for the preservation of dairy products
Identifying bioactive cultures that extend the shelf life of dairy products
Pierluigi Lurati, NERI-Institut Armand Frappier

Developing an intelligent platform to identify natural and multifunctional ingredients
Salwa Karboune, Université Laval

Developing active packaging solutions to extend the shelf life of food products
Richard Boudreau, Polytechnique Montréal

Milk quality
How do milk’s natural microflora and composition contribute to its quality?
Stéphane Lafortune, Université Laval

Presence and impact of microbial biofilms on milk quality, from the farm to dairy plants
Dennis Roy, Université Laval

Establishment of an inventory of microorganisms associated with non-compliant and atypical dairy products
Julie Jean, Université Laval

Consumer expectations
Naturalness of food products: Gaining a better understanding of consumer perceptions and behaviours
Joanne Labrecque, HEC Montréal

Novalait welcomes project ideas on an ongoing basis
Novalait is always looking for new projects to meet the research priorities of Quebec dairy farmers and processors and is now accepting research proposals on a rolling basis.

This research projects described by Novalait are virtually always the result of a process of co-creation between researchers, industry representatives and our industry committees. The submission of research projects is the first formal step in initiating this process.

This helps diversify the research offer, expand the network of researchers, and develop the portfolio of projects under Novalait’s development.
Projects completed during the 2020–2021 fiscal year delivered innovative results for dairy farms and plants. Longer-term research initiatives continued their activities and made promising advances. Two pilot projects currently underway are also presented.

**FASTER DETECTION OF ACIDOSIS**

Sub-acute ruminal acidosis is a metabolic disorder that develops when the rumen pH is less than 5.8 for a minimum of five hours per day. In these conditions, the growth of bacteria responsible for digesting fibre decreases, which reduces feed efficiency. This project was designed to use fatty acids in milk to detect ruminal acidosis. Researchers from Agrinova and Université Laval first measured rumen pH in real-time using boluses ingested by more than 100 cows from 12 different farms. The pH data was collected over the course of 50 days and analyzed using artificial intelligence tools. In addition, the fatty acids profile of the milk under study was analyzed using chromatography and infrared spectroscopy.

The relationship between the rumen pH data and the fatty acids profile of the milk is currently under analysis. The preliminary results are promising for predicting acidosis based on fatty acids profiles. The researchers are continuing work to achieve greater accuracy in the prediction model. Acidosis is a difficult disease to detect and has a major economic impact, and this project will provide a more affordable and accessible acidosis detection tool for Quebec dairy farmers.

**RESULTS**

Building for the future

Directed by professor Sébastien Fournel, the Educational Leadership Chair in Sustainable Agricultural Building Design aims to support dairy farmers in making informed decisions about building construction. Four courses were created or updated and cover topics including analyzing the environmental needs of animals and the interior design of livestock buildings. Students are also trained on the thermal efficiency of buildings. Sébastien Fournel has also developed a collaborative research program with a network of researchers and supervises seven graduate students.

**LEADERSHIP IN TEACHING**

The two Educational Leadership Chairs at Université Laval are at work to advance the innovative training of future professionals in the dairy sector. Novalait has invested in these initiatives to consolidate the critical masses of researchers in strategic areas for the dairy sector. The following are progress reports from the leaders of these chairs.

Technology at the service of cheesemakers

The holder of the Educational Leadership Chair in Cheese Technology, professor Julien Chamberland, has established a new graduate training course called “Advanced Cheese Technology.” The first cohort will begin in the winter of 2022. The course is geared toward students wishing to deepen their knowledge of cheese technology in order to accelerate their integration into companies. The training covers the different stages of the cheesemaking process, from milk conditioning to cheese packaging. The winter of 2022 will also mark the beginning of the graduate microprogram in cheese technology, which aims in particular to provide continuous training to meet the needs of dairy plant managers. The chair takes original approaches to hybrid learning (in-person and online) and offers a range of educational activities and real-life case studies. Professor Chamberland is also involved in a number of research initiatives on efficiency in cheese manufacturing processes aimed at increasing the competitiveness of the Quebec cheese sector.

**MILK ANALYSIS: THAT PREDICTS COW WELL-BEING AND HEALTH**

Assessing a cow’s level of well-being requires extensive data collection. Could a simple milk sample be used to determine a cow’s level of well-being? This project aimed to develop an easily identifiable bioindicator in a milk sample to assess the health and well-being of cows. The team of researchers led by Elsa Vasseur at McGill University correlated physiological indicators in milk and blood measured using infrared spectroscopy with behavioural measurements collected to assess the cow’s activity and mobility in the stall. The analysis identified multiple links between modifications to housing and the different bioindicators. The results showed that it is possible to use regularly collected milk samples to identify cows with high or low levels of well-being. More work is needed to refine the method and pinpoint the impacts of specific modifications to stalls on cow well-being. This method is unique in that it allows for remote, non-invasive, and low-cost tracking through milk recording samples.
Getting cows moving

Animal well-being is also integral to sustainability in the dairy industry. A study was conducted to determine the overall well-being of Quebec dairy herds using data from the ProAction program collected on nearly 2,700 farms between 2016 and 2019. Five distinct herd well-being profiles were established. The profile with the highest overall well-being also had the highest longevity, profitability, and productivity.

A good start could be the key to longevity

Longevity is a key aspect of sustainability in the dairy industry. The longer productive cows remain in the herd, the more profitable the herd. The research team evaluated the impact of early-life indicators on the longevity of Holstein heifers in Quebec herds. The results showed that small birth size, calving complications, and prematurity gestation increased the risk of early culling during a cow’s productive life. These findings provide new perspectives on anticipating the selection of candidates for replacement.

Determining herd well-being

What does it mean, in practice, to provide cows with access to exercise areas? A series of experiments conducted in tie-stalls has shown that when an outdoor or indoor exercise area is provided, regardless of its size, cows will walk more, but not that much more—they don’t work out! Access to an exercise area improved cows’ ability to walk and farmers’ ability to handle them. The project also demonstrated that outdoor access can be provided in any season, without affecting the animals’ thermal comfort. The next initiatives will aim to quantify the frequency and adequate duration of access to exercise areas in order to maximize benefits for cows while proposing practices to more easily manage exercise periods.

Chair summary:

- New professor-researcher position at McGill University
- Training of highly qualified personnel:
  - 11 master’s degree students
  - 3 PhDs
  - 8 post-doctoral fellows
- Meetings of the scientific committee:
  - 6 meetings
- Scientific articles:
  - 25 new articles
- Presentations:
  - 90 public science articles and video capsules
- Popular science articles and video capsules: 10
Natural microbiota of cheeses under study

Variations in the composition of the natural microbiota of milk and cheese are a constant challenge for cheesemakers. One of the objectives of the projects developed by the team led by Steve Labrie at Université Laval, as well as Claude Champagne, Michel Beaton and Marie-Claude Gentile at AAFC, is to measure the impact of milk concentration, rennetization of cheeses, and natural antimicrobial systems on proteolysis and microbiota development during maturation. In their analysis of summer and fall cheese-making milk, the researchers observed seasonal variations in milk composition. Researchers are completing an in-depth study of “summer decalciﬁcation” of casein micelles. In cheddar, natural mineralization of cheeses, and natural antimicrobial systems appear to be little affected by milk thermostiﬁcation. Lactoferrin, lysozyme and lactoperoxidase concentrate up to three times in fresh cheeses. The evolution of these antimicrobial systems will be tracked in the next year, as the cheeses mature.

PILOT PROJECTS UNDERWAY

Some results from Novalait-supported research require a subsequent developmental stage for their use on the farm or in plants. Pilot projects aim to validate, in commercial conditions, compelling research results which have been identiﬁed by the members of the steering committees during project follow-ups. Here are the advances made by the two pilot projects underway.

Improving cow health and fertility traits

The team led by researcher Claude Robert has developed a new genomic analysis tool that generates a genetic diversity score for cows’ health and fertility traits. With equal genetic value, the objective is to identify the bull that will generate a genetically more divergent progeny for these traits. This pilot project validates the genomic analysis tool on a large amount of data. Through a partnership with Lactanet, genotypic data and breeding values for more than 150,000 cows were introduced into the project database. These data are correlated with those of multiple bulls and the more the cows are heterozygous for the sections of the genome found, the better the longevity. Work continues in parallel with validation analyses to improve the tool’s graphical interface. The team led by researcher Sylvie T urzge at Université Laval is aiming to validate a fast and easy method for characterizing the structure of stirred yogurt using digital technology. The tool will be accompanied by mapping of the critical manufacturing points for stirred yogurt.

Thank you to the participating farms and plants

Sampling at farms and cheese plants is currently underway for both projects in the dairy research cluster. Thank you to our dairy farmers and cheesemakers for opening your doors to researchers. Your contribution is essential to knowledge advancement.
Novalait fuels innovation in companies in the dairy sector through the training it provides within the framework of PRODUCTION AND PROCESSING COMPANIES TO THE CHALLENGES FACED BY DAIRY IMPACTS AND BENEFITS.

**CONSOLIDATING STRATEGIC EXPERTISE FOR THE DAIRY SECTOR**

The creation and renewal of research positions in Quebec is a priority for Novalait to provide the dairy sector with a continuous succession of scientific experts.

**New expert in biosecurity in the dairy sector**

With support from NSERC, MAING, Dairy Farmers of Canada and Novalait, the Chair in Biosecurity in Dairy Production was established at the Faculty of Veterinary Medicine at Université de Montréal. Its co-directors, researchers Simon Dufour and Juan Carlos Arango Sabogal. Mr. Arango Sabogal obtained his position as a researcher under the framework of the Chair. The research activities focus on three main areas: understanding the epidemiology of infectious diseases in dairy cattle; 2) evaluating diagnostic tests and screening strategies; and 3) developing prevention and control programs and surveillance tools. The impacts and benefits stemming from these activities on the interactions between the environment and animals in a context of climate change is expected to reduce the risk of the introduction of emerging diseases and reduce the prevalence of diseases like listeriosis and tuberculosis. Anti-continuous monitoring, traceability, and digital tools.

Veronique Ouellet
Assistant Professor, Department of Animal Sciences, Université Laval.

Both at the master’s and PhD levels, I have always wanted to participate in research projects that provide concrete solutions to the problems observed on Quebec’s dairy farms. For example, I had the chance to do a master’s degree in calving detection and a PhD on reseeding the dairy farming sector due to climate change. Throughout my graduate studies, I gained perseverance, resilience, communication skills, and a range of skills needed to conduct research. My participation in different projects along the way has guided my current research program on the interactions between the environment and animals in order to make our dairy farms more resilient in the face of a changing climate.

Juan Carlos Arango Sabogal
Co-Director of the Research Chair in Dairy Production Biosecurity, Faculty of Veterinary Medicine, Université de Montréal.

We will be undertaking projects that align with the priorities of dairy farmers. The research will provide an ideal opportunity to train highly qualified personnel in biosecurity, epidemiology and animal health. By targeting the prevention and control of high-priority infectious diseases for the dairy industry, our research activities will help limit the economic losses caused by the introduction or presence of these diseases on farms. In Quebec and Canada, ultimately, Canadian consumers will benefit from increased access to high-quality dairy products produced by animals not only raised in exceptional conditions that promote their welfare, but also with a minimal use of antimicrobials. I count myself lucky to be able to combine my research interests, my passion for research and epidemiology, and my teaching profession in the Chair in Dairy Production Biosecurity.

Véronique Ouellet
Assistant professor, Department of Animal Sciences, Université Laval.

**New recruit for dairy production at Université Laval**

As a student that actively involved in a Novalait-supported project, a Canadian Dairy Commission grant recipient, Véronique Ouellet quickly distinguished herself through her skills for understanding the dairy sector’s issues. Université Laval recruited her in 2020 as an assistant professor in the Department of Animal Sciences. The new researcher wants to focus her activities on the interactions between the environment and animals in a context of climate change to increase not only the resilience of cows but that of the entire dairy sector.

**IMPACTS AND BENEFITS**

**DEDICATED PROFESSIONALS RESPOND TO THE CHALLENGES FACED BY DAIRY PRODUCTION AND PROCESSING COMPANIES**

Huilelise Florêche-Fortin completed her master’s degree as part of the Metabolic Industrial Research Chair in Metabolic Activity and the Functionality of Bioprotective Lactic Cultures. She studied the antifungal activity of fermented milk produced by Lactococcus raudli and analyzed its potential application as a natural preservation agent. She is now in tune with the expectations and challenges of food processors as a project manager for the Québec City-based research cluster Créneau d’excellence Aliments Santé de la Capitale-Nationale. The aim of the research cluster is to develop and market new, healthy, value-added and innovative food products to meet the needs of tomorrow’s consumers.

Huilelise Florêche-Fortin
Project Manager, Aliments Santé, Créneau d’excellence Aliments Santé de la Capitale-Nationale.

I had the great privilege of being one of the students supported by Novalait, having the opportunity to combine my research interests, my passion for research and communication abilities, and a range of skills needed to conduct research. My participation in different projects along the way has guided my current research program on the interactions between the environment and animals in order to make our dairy farms more resilient in the face of a changing climate.

Véronique Ouellet
Assistant professor, Department of Animal Sciences, Université Laval.

During my master’s, I developed my critical thinking, organizational, and leadership skills. I had the great privilege of being one of the students supported by Novalait, having the opportunity to combine my research interests, my passion for research and communication abilities, and a range of skills needed to conduct research. My participation in different projects along the way has guided my current research program on the interactions between the environment and animals in order to make our dairy farms more resilient in the face of a changing climate.

Thomas Messier
Industrial Research Chair in Metabolic Activity and the Functionality of Bioprotective Lactic Cultures, Université Laval.

During my master’s degree, I faced numerous technical and theoretical challenges. From the start, I was able to hone my expertise in the dairy sector and acquire knowledge of new concepts in genomics, which is a fast-growing field. The experience taught me a rigorous way of working that I needed in order to carry out my research project. In my work, the many follow-ups with my research partners helped me develop my analytical and communication skills. In my current job in innovation and development, I now see how my transition to a master’s degree was critical to my career and the development of my professional skills.

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Thomas Messier
Industrial Research Chair in Metabolic Activity and the Functionality of Bioprotective Lactic Cultures, Université Laval.
2021 FORUM TECHNO: DAIRY RESEARCH GETS CENTRE OF ATTENTION

Novalait held the first entirely virtual edition of its Forum Techno on June 8 and 10, 2021, in conjunction with the International Dairy Federation Symposium in Cheese Science and Technology. The collaboration provided excellent exposure for Novalait with 480 registrations for the week of events, including more than 200 participants at the Forum Techno. Participants had access to the latest research results of projects supported by Novalait and its partners in a virtual yet interactive format. Participants exchanged live with researchers and discussions thanks to the smart-couch Techno. Even the future generation was in attendance!

Wide-ranging sessions

Novalait’s research aims to bring concrete solutions to dairy farms and plants of all sizes that produce a wide range of products. Topics including new pathways to improve cow genetics, the use of more digestible alfalfa, the diagnosis of ruminal acidosis, and cow longevity were covered during the half-day program on dairy production. In the processing products. Topics including new pathways to improve cow genetics, the use of more digestible alfalfa, the diagnosis of ruminal acidosis, and cow longevity were covered during the half-day program on dairy production. In the processing products. The themes of naturalness, natural antimicrobials and the valorization of dairy processing co-products rounded out the program. Participants were able to replay the sessions, available on the digital platform for one month following the event.

Youth professionals in the spotlight

Novalait dedicates more than 25% of its research budget to graduate student salaries. Over the past 25 years, more than 300 professionals have been trained through our applied research programs. Many still work in the dairy sector. The Forum Techno facilitated exchanges with students as part of the virtual sessions and the "My thesis in 180 seconds" presentations.

Awards to the best presenters

Participants also had the chance to vote for their favourite presentations, given by students who took up the challenge of presenting their research project in 180 seconds. The recipients included:

- Félix Huot: Characterization of ruminal pH measured continuously on 12 commercial farms. Received a $150 prize.
- Rachel Deshaies-Langlois: Buttermilk under high pressure. Received a $350 prize.
- Nissa Niboucha: Protein nutrition: Can we do more with less? Received a $150 prize.
- Annie Fréchette: The important role of Klebsiella pneumoniae in clinical mastitis of dairy cows raised on recycled manure bedding. Received a $350 prize.
- Jean-Philippe Lariche: Production of dairy biofilms on stainless steel surfaces in a bioreactor and development of an efficient collection method. Received a $350 prize.
- Serine Touhami: Lactofructan under high pressure.

Congratulations to the recipients of the IFD-CANADA Excellence Awards

In one of the competitions, 21 students presented their research project in the form of a short video. They were evaluated, in particular, on their oral and written communication skills. Thank you to our evaluators for the student evaluations, as well as IFD-CANADA, who kindly donated the student awards. The awards recognize excellence among professionals trained through Novalait’s research projects. Congratulations to the recipients!

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Novalait holds the first entirely virtual edition of its Forum Techno on June 8 and 10, 2021, in conjunction with the International Dairy Federation Symposium in Cheese Science and Technology. The collaboration provided excellent exposure for Novalait with 480 registrations for the week of events, including more than 200 participants at the Forum Techno. Participants had access to the latest research results of projects supported by Novalait and its partners in a virtual yet interactive format. Participants exchanged live with researchers and discussions thanks to the smart-couch Techno. Even the future generation was in attendance!

Wide-ranging sessions

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