



Research Highlights 2016 – 2017

The Canadian Dairy Network, through its research committee called DairyGen, is financing 10 research projects to advance dairy genetics and genomics in association with sector partners that include Dairy Farmers of Canada, Agriculture and Agri-Food Canada, the Natural Sciences and Engineering Research Council of Canada (NSERC) and Genome Canada.

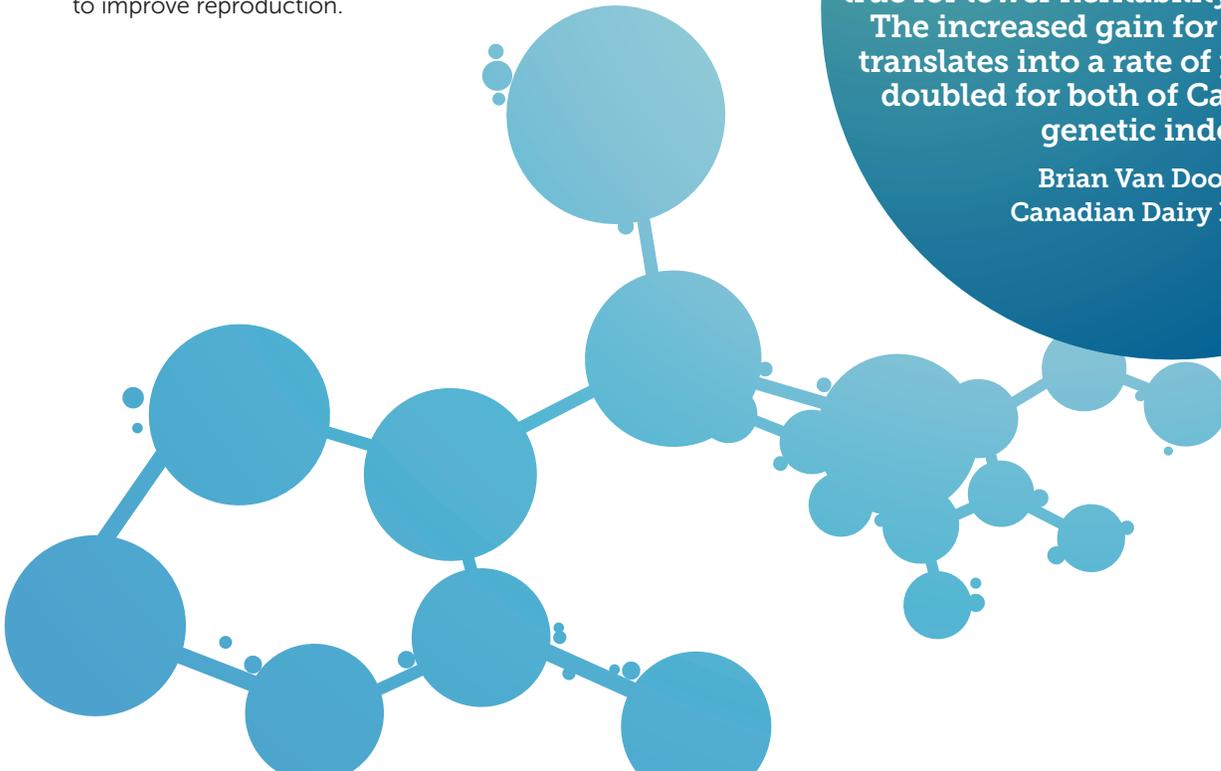


Expected Outcomes of Ongoing Research:

- Increased rates of genetic and genomic progress, better and increased selection values for a greater number of traits like:
 - Cows that are more disease resistant and have better immunity;
 - Cows that digest feed more efficiently and produce less methane;
 - Cows that have better hoof health.
- Advanced application of technologies for early identification of animal health status and nutritional quality of milk;
- Application of epigenetics and other approaches to improve reproduction.

"Genetic gains have increased substantially across the board since the implementation of genomics in Canada. While all traits have benefitted from the increased accuracy the technology provides, this is particularly true for lower heritability functional traits. The increased gain for individual traits translates into a rate of progress that has doubled for both of Canada's national genetic indexes."

Brian Van Doormaal,
Canadian Dairy Network



Ongoing Projects:

1. Development and testing of new methods for genomic evaluation in dairy cattle – Principal Investigator (PI): Flavio Schenkel, University of Guelph
2. Improving hoof health in Canadian dairy farms – PI: Filippo Miglior, University of Guelph
3. Improving cow health and the nutraceutical value of milk with Infra-red technology – PI: Filippo Miglior, University of Guelph
4. Canada's ten thousand cows genome project – PI: Flavio Schenkel, University of Guelph
5. Testis-specific isozyme of Angiotensin Converting Enzyme (tACE) as a fertility marker in bulls – PI: Jacob Thundathill, University of Calgary
6. Genetics of bovine milk cholesterol – PI: Xin Zhao, McGill University
7. Improving feed efficiency and reducing methane emissions from dairy cows using milk Mid-infrared spectroscopy to support "green Alberta milk" – PI: Zhiqun Wang, University of Alberta
8. Increasing feed efficiency and reducing methane emissions through genomics: A new promising goal for the Canadian dairy industry – PI: Filippo Miglior, University of Guelph and Paul Stothard, University of Alberta
9. Analysis of runs of homozygosity from next generation sequence data in Canadian dairy cattle – PI: Christine Baes, University of Guelph
10. Development and validation of genetic markers for resistance to ketosis in dairy cattle – PI: Jim Squires, University of Guelph

Research Success Story

The rapid rate of genetic progress and improvement in Canada is achieved through ongoing research investments and the prompt incorporation of research results within genetic indexes that can support farmers in their strategies to select the best combination of traits when breeding cows.

Last August 2016 marked one year since the Canadian Dairy Network's introduction of Pro\$, as one of Canada's new national genetic selection indexes. This genetic selection tool maximizes genetic response for lifetime profitability, leading to realized profits on farms. The index contains information on the accumulated profit a cow achieves over her lifetime and several other contributing factors, all of which are reflected in the Pro\$ index. In December 2016, the Metabolic Disease Resistance index was introduced and by December 2017, a new trait will be added for hoof health, specifically Digital Dermatitis, thus further improving the ability to select cows for better performance and health.

Since its inception, Pro\$ has been well received by both dairy producers and industry personnel. Canadian dairy farmers using the index can further develop a herd of profitable, healthy cows.

"The new Pro\$ serves to complement the strength of the Lifetime Profit Index nationally and internationally while recognizing that lifetime profit can be defined differently from farm to farm, depending on sources of revenue and associated expenses."

Gary Bowers, former Chairman of the Canadian Dairy Network and a dairy farmer from Quebec



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