



# Open Industry Session Recap: February 2023

March 9, 2023

Lactanet's Open Industry Session (OIS), traditionally held before each Genetic Evaluation Board meeting, is your opportunity to gather the latest information on genetic and genomic evaluations straight from the Genetics team and have your feedback heard. The most recent Open Industry Session covered topics related to body maintenance requirements, methane efficiency, calf health, and leukosis. See below for a summary of each OIS topic.

## Genetic Evaluations for Body Maintenance Requirements (BMR)

Evaluations for Body Maintenance Requirements (BMR) will be available in April 2023 for the Holstein breed, providing producers with another tool to reduce feed costs and increase profitability. They are separate from Feed Efficiency evaluations, which are used to select cows that use less feed at the same level of production and body size. Genetic evaluations for BMR consider feed for maintenance requirements as a function of metabolic body weight. This single-step genomic evaluation system with multiple records during the first three lactations will result in Relative Breeding

Value's (RBV) for BMR where a higher RBV represents lower body maintenance requirements (i.e.: a smaller animal). The estimated heritability for BMR is 47%, which ranks it among the most heritable traits offered by Lactanet, and genotyped heifers and young bulls will have an average BMR Reliability over 70%.

## Methane Efficiency

Lactanet will also be introducing Methane Efficiency (ME) evaluations for Holsteins in April 2023. The OIS included two presentations related to methane:

### Genetic Selection for Methane Efficiency (ME) in Holsteins

Since the October 2022 OIS, Lactanet geneticists have conducted further development on ME evaluations and decided to implement a four-trait model using the three individual production traits as the energy sinks. Methane Efficiency will therefore be genetically independent of milk, fat and protein yields allowing the selection for reduced methane emissions without impacting production levels. ME has an estimated heritability of 13%, has little to no correlation with other traits, and an RBV distribution that generally ranges from 85 to 115, like other functional traits. For each 5-point increase in a sire's RBV, producers will reduce methane by 3 kg per daughter per year, which translates to a 1.5% reduction in methane emissions and an expected 20-30% reduction by 2050.

### Lactanet's Data Collection Strategy for Sustainability Traits

The second presentation focused on Lactanet's delivery strategy for Methane Efficiency (ME) and the associated fee structure. Several steps

were instrumental to the development of ME evaluations including:

- Two international research projects that collected methane and milk mid-infrared (MIR) spectral data.
- Analysis of methane data by University of Guelph researchers leading to the pivotal result that a cow's milk MIR data can be used as a good predictor of its methane production.
- Lactanet's investment in the collection and storage of milk MIR spectral data and the collaboration agreement with Semex Alliance for the development of a single step genomic evaluation system for Methane Efficiency using predicted methane.
- Lactanet's investment in a long-term data collection strategy including the purchase of feed intake bins and sniffers to collect data for sustainability trait evaluations and update the machine learning algorithm for predicting methane.

Regarding the delivery of ME evaluations for females in Canada, the fee structure will mimic the current strategy applied for Feed Efficiency (FE). However, FE and ME will now be bundled as sustainability traits. As a reminder, these traits will be free and automatically published for females linked to a DHI herd inventory. Canadian-born or owned females not linked to a DHI herd inventory can purchase both traits for \$8 and a \$2 discount will apply to females linked to a classifying herd.

Keep an eye out for more extension material on BMR and ME as we approach the April release!

## Ongoing University of Guelph Research

Participants also had the opportunity to hear from two University of Guelph graduate students, Colin Lynch and Renee Bongers, studying calf health and leukosis, respectively.

## Looking Toward Genetic Evaluations to Reduce Calf Disease

Calf diseases are becoming an increasing concern on dairy operations with reported incidence rates between 25-45% for diarrhea and 10-25% for respiratory problems. Calf health records were supplied by Lactanet with over 69,000 Holstein diarrhea and respiratory problem events recorded from 2006 to 2021. Both single and multiple trait analyses were conducted with estimated heritabilities ranging from 3% to 8% and the genetic correlation between diarrhea and respiratory problems was moderate and positive. A clear difference between diseased daughters of the top and bottom 10% sires was also highlighted. Calves born from a bottom 10% sire were 1.5 times more likely to develop diarrhea and 1.4 times more likely to develop respiratory problems compared to daughters born from a top 10% sire. It was recommended the industry use a multiple trait model given the moderate to strong genetic correlation and benefit to heritability estimates, however, standardized collection of specific calf diseases is needed.

## Genomic Analysis Aimed at Improving Leukosis Susceptibility

Leukosis is a contagious chronic disease caused by the bovine leukemia virus and can result in decreased production, immunity, and fertility. To identify the prevalence of leukosis in Canada, data provided by Lactanet containing 96,779 cows across 950 herds was analyzed. On average, 87% of herds had at least one positive animal for leukosis. Consistent within-herd prevalence between 2007 and 2021 was seen indicating current management strategies in testing herds have been ineffective at reducing the prevalence of leukosis and genetic solutions may be warranted. The estimated heritability of leukosis resistance is 10% and a favourable correlation was observed with other traits meaning that animals with a higher genetic worth are less susceptible to leukosis. There are also

differences between daughters born to high and low genetic merit bulls with daughters born from a bottom 10% sire being 1.3 times more likely to test positive for leukosis than daughters from a top 10% sire. Industry recommendations included increasing the accessibility of proviral load tests and developing genomic evaluations for leukosis resistance.

For additional information including the presentation handouts, please see our [Virtual Open Industry Session](#) page and be sure to join us at the next session in October!

Previous OIS Recap : October 2022

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