CASE STUDY

GREEN MILK PROJECT

ENVIRONMENTAL GENETICS

- NZ's gross GHG emissions increased 19.6% from 1990 to 2016
- The amount of methane produced for each farm is directly related to the total feed intake for that farm
- NZ'S GHG emissions are composed primarily of carbon dioxide (43.8%), methane (42.8%) and nitrous oxide (11.6%).
- In 2017 half of New Zealand's GHG emissions came from agriculture. The dairy industry accounted for 46% of total agricultural emissions
- Methane is emitted from livestock digestion and is 25x more times effective than carbon dioxide at trapping heat.

AbacusBio have been part of a joint industry working group to look at genetic mitigation strategies for reducing greenhouse gas emissions from dairy cows. The working group involved organisations across New Zealand, such as the Ministry for Primary Industries, New Zealand Agricultural Greenhouse Gas Research Centre (NZAGRC), DairyNZ, AgResearch, Pastoral greenhouse gas research consortium (PGGRC), Livestock Improvement Corporation (LIC), and CRV Ambreed.

The working group aimed to steer New Zealand's dairy industry towards a reduction in overall industry greenhouse gas emissions without compromising product value. AbacusBio consultants Peter Amer, Jude Sise, Jo Kerslake, Sam Harburg, Luna Zhang and Fiona Hely are responsible for developing a preliminary business case that identified key aspects of research for the program and tools that could be implemented to effect change.

One key aspect included working with the industry to determine what sort of testing facilities would be required to identify young bulls that emit less methane than their contemporaries of a similar age and weight, and also of their daughters to ensure that the low methane trait was effective in the milking herd.

"If we prove that low methane bulls can be identified, we can then introduce this trait into the breeding index," stated Peter.

As part of introducing this new trait into the breeding index, we also needed to evaluate what the implementation factors were in ensuring uptake by the industry. "For this, we assessed the changes required within the dairy industry databases in allowing a methane trait to be recorded and included in the national evaluations, as well as some of the potential policy drivers that could be used to incentivise change," Jude adds.

The change in methane per unit of feed consumed is challenging to predict. However, the current index delivers approximately $10 worth of genetic improvement per breeding cow per annum. Looking into the future it is then important to evaluate the impacts of including methane in the breeding index, in terms of the methane reduction required to drive change and the trade-offs required to balance improvement rates with the current index.