

Annual Update 2019/20





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DataGene is an independent, industry-owned organisation that delivers world-class herd improvement products and services to Australian dairy farmers and their service providers. Our members include leading herd improvement service providers, genetics suppliers, breed associations and peak dairy industry organisations.































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Ross Joblin Chair DataGene

Chair's Report



A year dominated by a pandemic has underscored the dairy industry's contribution to feeding the nation and I am pleased to report that DataGene's services have continued with minimal disruption, despite very different working conditions for our team. We are grateful for their capability, adaptability, commitment and passion – which have provided stability during a period of unprecedented uncertainty.

A new 5-year agreement with Dairy Australia has also provided stability and continuity. The agreement provides funding for the significant portion of DataGene's work that is for industry good and directly benefits farmers. In the 2019/20 year, Dairy Australia's core funding represented 41% of DataGene's total income. Other income sources included genomic testing, export heifer certification, NASIS bull registration, phenotyping for complex traits, software services and IT projects. Income from IT projects includes some commissioned by Dairy Australia. It also includes a major project for the US equivalent of DataGene, the Council of Dairy Cattle Breeding (CDCB), to assist with the redevelopment of its genetic evaluation and related IT systems. This collaboration allows us to leverage our capability in genetic evaluation and IT systems to assist our counterparts while continuing to benefit through this expanded capability in our Australian services.

The 2019/20 financial year was expected to be a challenging one for DataGene. Earnings before Income Tax, Depreciation and Amortisation showed a surplus of \$375,000, leaving our cash position improved on the year before at \$810,000. After deducting depreciation and amortisation charges for our infrastructure, the result for the year was a smaller than budgeted loss. We are expecting the current financial year to continue to improve as our major internal developments slow and our external work increases.

As this was the first year operating under the revised Strategic Plan, the reports have been aligned to DataGene's four strategic pillars. These pillars, which arose from the consultation resulting in the revised Herd Improvement Industry Strategy last year, allow DataGene to focus its efforts on areas of high impact and importance to its stakeholders.

This report provides an opportunity to track indicators of the longer-term outcomes DataGene contributes to. In particular, it's pleasing to see consistent improvements in the level of genetic gain in the Australian dairy herd, with Holsteins improving at more than \$20/year every year since 2015 (page 10). The graph on page 3 shows long-term genetic trends, highlighting some of the key innovations that have contributed to these gains.

Many of these innovations have come through the DairyBio research pipeline, which develops and maintains Australian Breeding Values (ABVs). For example, the April 2020 ABV release saw the delivery of eight new or updated ABVs and associated supporting extension resources. Three of these related to animal health and welfare adding breeding to farmers' tool kits for managing these important issues.

A special note of thanks to our outgoing Director, Craig Lister, who has decided not to re-stand for election this year. His contribution to the Board and his insights into the needs of dairy farmers has shaped DataGene's direction over the past four years. The Board will miss his input and we wish him and his family well for the future.

I would like to take this opportunity to thank our stakeholders for their continued support. We have all worked in new ways and through trying times, and our collaboration with you drives us forward. Our staff have done a remarkable job maintaining a demanding delivery schedule with minimal impact in personally challenging times. The Board recognises the value of our dedicated staff and we thank them for their efforts. It has been rewarding to see DataGene contribute to the herd improvement industry's work with our farmers to help feed the nation.

<u>CEO's Report</u>

Matt Shaffer Chief Executive Officer DataGene



Having now completed four years of operations, this year presented two opportunities for formal feedback from our clients and stakeholders – the review of the National Breeding Objective (NBO) and Dairy Australia's Animal Husbandry and Genetics survey. The collective feedback gives us confidence that DataGene is delivering robust products and services that are valued by our stakeholders and delivering real benefits to farmers.

The NBO review focused on the weightings of traits in the key breeding indices: Balanced Performance Index (BPI), Health Weighted Index (HWI) and Type Weighted Index (TWI) that were introduced in 2015. The process involved a formal survey, analysis of issues identified by the Genetic Evaluation Standing Committee and a series of discussions with industry stakeholders. The outcome is four changes that will be implemented in the December 2020 ABV release. However, it is reassuring that these changes are refinements to a system that is highly regarded by industry. The Dairy Australia survey supported this sentiment, with 80% farmer awareness of the indices and almost all of those who were aware saying the BPI/HWI/TWI influenced their semen purchases.

This year has seen the new genetic evaluation system and central data repository (CDR) embedded in DataGene's routine processes with additional modules in development. Bull owners welcomed the addition of the NASIS module to DataVat, which gave users a more user-friendly and efficient interface for registering bulls in the national system. The next module released in August is a security feature that allows farmers to authorise trusted third parties (such as vets or advisers) access to their herd records and reports.

With the IT infrastructure now in place, a significant challenge is to facilitate a broad range of data suppliers to connect to the CDR. We are working on multiple opportunities with good progress through an international collaboration – iDDEN – which is working with major equipment manufacturers (such as DeLaval and GEA) to integrate with their farm management software systems. I thank Dairy Australia for its commitment to this important project, without

which our participation would not happen. We are also liaising with Australian data suppliers such as on farm software, breed associations and herd test centres.

While genetic evaluation is central to DataGene's role, our mandate covers herd improvement more broadly, including herd testing that delivers farm data into the Central Data Repository (CDR), which is vital for genetic evaluation. We have been keen to facilitate collaboration among herd test centres to promote herd test participation and support farmers in using the results to make data-driven decisions. I'm pleased to report that this year has seen good progress towards collaboration in the pre-competitive space. There are now some exciting projects underway that I look forward to reporting on next year.

We also completed foundational work for a larger project to accelerate the rate of genomic testing. While genomic testing rates have been growing, Australia's uptake has been slower than overseas, particularly of genomic testing of females. DataGene has secured Dairy Australia funding for an 'Accelerating Heifer Genomics' project that addresses issues with the pipeline to reduce the time taken to provide farmers with their results. The project will also include a communication campaign to promote genomic testing and extension resources to help farmers use the results to make data-driven decisions.

In closing I'd like to thank my team who showed amazing adaptability and commitment to provide continued service under COVID-19 restrictions. Our journey together took unexpected turns this year, but I have enjoyed the snapshots of people's lives, and pets, through the window of a Zoom call. Our stakeholders have continued to support us as we work to implement the herd improvement industry strategy to drive value for our farmers. This spirit of collaboration is the critical component of our collective success. We look forward to working with you to build on our collaboration in the coming year.

Solutions for herd development

About DataGene

DataGene is responsible for driving genetic gain and herd improvement in the Australian dairy industry. Its key activities are research, development and extension. DataGene performs many pre-competitive herd improvement operations, including genetic services, software development, herd testing, herd recording and data systems. DataGene is owned by industry. Its foundation members were Dairy Australia Australian Dairy Farmers and the National Herd Improvement Association of Australia (NHIA). Members include herd test centres, genetics companies, genomic service providers, breed associations and animal health companies (see inside front cover).

Vision

DataGene enables farmers and industry to maximise profit through data-driven decisions.

Mission

DataGene delivers world-class genetic evaluation, software and decisionmaking tools to enable Australian farmers to improve their herds and maximise their profit through data-driven decisions and innovative industry services.

Strategic relationships

DataGene has six key strategic relationships:

- 1. Dairy Australia is the primary funder and a founding member of DataGene. Dairy Australia also operates as a client of DataGene in the development of software solutions such as the updates to the Fertility and Mastitis Focus Reports.
- 2. Australian Dairy Farmers has a key role in ensuring that DataGene's priorities and activities reflect the priorities of the dairy farmer community. DataGene relies on ADF to be publicly supportive of, and a strong advocate for, herd improvement. DataGene also has a direct relationship with farmers through its products, services, extension and communications.
- 3. National Herd Improvement Association is a founding member of DataGene. DataGene also has direct relationships with NHIA members, who are also members of DataGene.
- 4. DataGene has relationships with non-NHIA members such as Zoetis, Neogen and Apiam for the delivery of DataGene products and services and the development pipeline for new products and services. Zoetis and Neogen deliver genomic services and Apiam provides software to the veterinary industry and is key collaborator for data and data services with DataVat.

Solutions for herd development

- 5. Agriculture Victoria/DairyBio is a DataGene client for certain projects. It is also an in-kind contributor to DataGene in terms of supporting overhead costs for some in the Genetic Evaluation team. It uses DataGene data and it is a strategic partner in providing research outputs to industry (see page 26).
- 6. International collaborators, such as the International Committee on Animal Recording (ICAR), Interbull, International Dairy Data Exchange Network (iDDEN) and the Council on Dairy Cattle Breeding (CDCB) work with DataGene on a range of projects. These are key relationships that enable DataGene to deliver better services in the Australian market and to connect knowledge from around the world to applications in Australia.



Strategic pillars

DataGene's activities are managed within four strategic priorities:

- 1. Improved decision making from data
- 2. Increased animal performance through herd improvement
- 3. Improved animal performance from R&D
- 4. Improved and diversified services

Pages 12-19 present achievements in each Strategic Pillar.

Four strategic pillars 2019-24



Strategic pillars

DataGene products and services are delivered to Australian dairy farmers either directly or via third parties. Fees are charged in specific cases where there is a direct economic benefit to the individual customer. Some products and services are not charged.



Products and services delivered directly	Fee for service
Good Bulls Guide and App	×
Website (information and data)	×
ABV(g) reports to genomic service providers	\checkmark
Bull proofs to bull companies	\checkmark
Project management services to industry organisations	\checkmark
Centre and inventory software to service providers	\checkmark
Software development services to industry	\checkmark
NASIS	\checkmark
Export heifer	\checkmark

Products and services delivered through third parties	Fee for service
HerdData App (via herd test centres)	\checkmark
Herd Test Dashboard (via herd test centres)	×
Genetic Progress Report / Genetics Futures Report	×
Extension messages	×

Performance metrics

DataGene monitors a range of metrics to track performance. This report highlights five of the key performance metrics: Genetic trends, numbers of females genomically tested, number of cows in CDR, numbers of bulls genomically tested and NASIS bull registrations.

Genetic trends

One of DataGene's key purposes is to provide tools and services to improve the rate of genetic gain in the Australian dairy herd. Genetic trends are tracked through the rate of genetic gain of sires of cows for BPI.

Target: long-term average \$30/year

Current: The average rate of genetic gain for BPI in sires of cows over the past five years (2015-2019) has accelerated to \$29.50/year in Holsteins and \$14/ year for Jerseys born from 2015 onwards.

This compares favourably to the longer-term trend of \$15 in Holsteins and \$12 in Jerseys from 2007. The 2018 to 2019 annual gain was \$44.50 in Holsteins and \$19.60 in Jersey cows. Note: data from the youngest heifers is subject to some bias because roughly one-third of animals are not recorded by farmers until they enter the milking herd at two years of age.

Female genomic testing

Female genomic testing is a game-changing opportunity for Australian dairy farmers because it allows them to accurately identify the most profitable replacements soon after birth. By quantifying the invisible, genomic testing creates opportunities to fast-track herd genetic gain and productivity as well as diversifying income streams and enhancing business agility.

Target: 15% increase in numbers of commercial cows tested.

Current: The rate of increase in genomic testing has accelerated in 2019/20 due to improved industry conditions. While this year's increase is encouraging, the number of animals tested remains relatively small compared to overseas. Increasing Australian testing rates is a high priority for DataGene in the coming three years with a major project (Accelerating Heifer Genomics) currently in development.



Performance metrics

Number of cows with phenotypes in CDR

DataVat's value will grow by expanding data sources beyond information from herd test centres. Tracking the number of cows in the CDR gives an indication of additional on-farm data sources connecting to DataGene.

Target: increasing annually

Current: Almost 15 million

The number of cows with phenotypes in the CDR is continuing to increase as new cows enter the milk recorded herd. This metric will be a leading indicator of progress as other on-farm packages are connected to the CDR from non-milk recorded herds.

Genomically tested bulls

Increasing the number of bulls that are genomically tested in the Australian genetic evaluation system gives farmers access to the best genetics available. By testing more bulls, the industry can find the best bulls, with the best combination of traits possible.

Target: >3,000/year

Current: 5,460

DataGene continues to work closely with its industry partners to streamline the process of genomically testing bulls from all over world. The release of NASIS on DataVat has made it easier for companies to manage their bulls.

NASIS-registered bulls

Many NASIS-registered bulls means dairy farmers have more choice and better quality bulls to select from.

Target: Maintain a minimum of 500 new bulls registered on NASIS each year.

Current: 608

This year saw NASIS registrations drop back to longterm average levels. The peak in 2019 was due to an administrative catch up (companies were encouraged to enter NASIS details of bulls already in the system with their NASIS field empty). In coming years, the number of new NASIS-registrations each year is expected to taper off as companies select fewer young bulls for their programs. Genomics enables them to accurately target young bull selection to their market needs.







Strategic Pillar 1: Data-driven decisions

DataGene manages the Central Data Repository(CDR) and DataVat on behalf of the Australian dairy industry. Combined, they offer new opportunities for improved decision-making based on data. The CDR is the IT infrastructure that connects and stores data from a variety of external sources. DataVat is the web portal that allows for customised secure access to various reports, tools and resources that draw upon data in the CDR, including information from the genetic evaluation system.

This strategic pillar also includes Ginfo, the industry's national reference data set of genetic information. Ginfo includes genotypes (genetic information) and phenotypes (performance information) which underpin the reliability of Australian Breeding Values (ABVs) and indices.

Priorities for 2019-2024 include:

- · Develop and support new decision tools
- · Expand and secure data from a variety of sources
- · Drive and support industry innovation.

Central Data Repository (CDR)

The CDR is an IT platform to connect data from a variety of external sources, such as herd test centres, breed associations, on-farm equipment and software, vets, milk companies, monitoring systems such as NLIS and the genetic evaluation system. Information and data from the CDR feeds into tools and resources available on the DataVat website (see below). With the IT platform for data exchange largely completed in 2019/20, the priority now is to expand the number of organisations exchanging data. While connecting to the CDR is entirely optional on the part of data suppliers, DataGene has a role in encouraging and supporting organisations to connect. This year saw several key organisations connect and the CDR now has more frequent data exchanges.



Key deliverables

- CDR connections to data sources
- DataVat enhancements
- Ginfo

DataGene continues to work with international partners to negotiate data exchange between major on-farm systems and the CDR. During the year, the partnership was formalised through iDDEN, a limited liability company registered in Germany, of which DataGene is a founding member. Dairy Australia has funded DataGene's participation in iDDEN, which brings together milk recording organisations and databases across 13 countries. The first priority is to purchase and enhance a software platform for data exchange. The first two milk recording organisations (one from Canada and the other from Denmark) are scheduled to be connected by December 2020, with other organisations, including DataGene, expected to be connected in the first half of 2021. In parallel, work will commence with major equipment manufacturers (Lely, DeLaval and GEA) to integrate with their farm management software systems. This international collaboration will provide industry databases with access to a range of data currently not captured. It is founded on strong principles of data governance and consent for data sharing. These issues will be of growing importance as the volume of data available on-farm increases and systems move to cloud-based solutions.

DataVat

DataVat is a web portal that allows customised, secure access to various reports, tools and resources that draw upon data in the Central Data Repository (CDR), including information in the genetic evaluation system. DataVat has been publicly available as a beta testing site while further functionality has been in development. This year saw significant additions in functionality, stability improvements and enhancements based on feedback from field testing. With a major security module scheduled for completion in the second half of 2020, preparations have been made for delivery to industry, including developing a customer service framework, help desk support, user manuals and demonstrations to key users.

DataVat content				
Open access	Herd tools	HI industry tools/services		
	Draw on herd records; require login and permission from data owner	Require login and account with DataGene		
Animal search	Genetic Progress Report	Bull ABVs		
Pedigrees	Genetic Futures Report	NASIS (bull registration)		
Genetic traits/haplotype	Female ABVs including	Services to genomic testing		
ABV lists	genomics	companies		
Good Bulls Guide	Fertility Focus Report			
Genomic Value Tool				
NASIS reports				

DataVat is home to a diverse range of tools and reports, some of which are publicly accessible, while others are available only to herd owners, or fee-paying customers of DataGene services (such as bull companies, and genomic service providers.) The graphic on page 13 outlines tools and reports currently available on DataVat, and there are several more in the development pipeline.

This year saw the transition of tools used by the herd improvement industry onto DataVat, including bull registration (NASIS), and NASIS files used by software providers. Feedback from regular users has been that DataVat provides a more user-friendly and direct interface with the Central Data Repository (CDR).

Ginfo

Ginfo is Australia's national reference herd for genetic information. Managed by DataGene and funded by Dairy Australia, Ginfo's genetic and performance information is used by DairyBio researchers to develop breeding values for traits that are difficult to measure and to increase the reliability of Australian Breeding Values (ABVs) and indices.

The reference population includes commercial dairy herds with excellent records located across Australia's eight dairying regions. Over the past 18 months we have expanded Ginfo. It now includes more than 50,000 cows from herds with Holstein, Jersey, Australian Red and crossbred animals.

Ginfo activities during the year included recruiting additional herds, classification of 2-year-old females, blood collection in spring, and lameness training and scoring. Hair sampling and blood collection was halted in March due to COVID restrictions.

Ginfo data underpinned the science that delivered the eight new and updated ABVs that were released in April 2020. DairyBio scientists continue to draw on Ginfo data for research that is investigating opportunities to breed for improved animal health, welfare, lower greenhouse gas emissions and milk with enhanced health properties.

Ginfo is a collaboration of DairyBio, DataGene, Dairy Australia, Holstein Australia, Jersey Australia and the Victorian Government.



"DataVat has modernised the NASIS tool for registering bulls. It's dramatically faster and easier to use than the old system. Plus, it has added functionality like multiple filters that make it much more efficient to track down the bulls I'm looking for." Tim Weller, Marketing Manager, World Wide Sires, Australia



"We are so grateful to the farmers who contribute herd records and the industry partners who look after Ginfo.

"Australia has the best dairy female genetic reference population in the world. It's a powerful tool for developing new traits, such as the mastitis resistance and gestation length ABVs that came out this year. And we are working on some very exciting developments that could be game-changes for dairy genetics."

– Prof. Jennie Pryce, DairyBio Animal Program Leader, and Principal Scientist, Agriculture Victoria

Strategic Pillar 2: Animal performance through herd improvement

Genetics contributes about 30% of production gains on Australian dairy farms. DataGene's genetic evaluation system underpins these gains. A key goal is to increase the number of farmers breeding replacements from bulls carrying the Good Bulls icon and using Australian Breeding Values and indices to make breeding decisions.

Priorities for 2019-2024 include:

- Increase reliabilities
- Improve service delivery
- · Increase farmer and industry service uptake
- · Increase the number of genomically tested females.

New/updated ABVs

DataGene published eight new or updated traits in the April 2020 release of Australian Breeding Values.

Three of these related to health and welfare:

- · Calving Ease ABV (updated with genomics)
- Gestation Length ABV (new)
- Mastitis Resistance ABV (new).

The other five related to type:

- Overall Type (updated)
- Dairy Strength (new)
- Feet and Legs (new)
- Rump (new)
- Mammary System (updated).



Key deliverables

- ✓ 8 new/updated ABVs
- Refreshed extension strategy
- Improving genomic pipeline
- GES enhancements

The release of new/updated ABVs for health traits created the opportunity to promote breeding for improved health and welfare.

The release was accompanied by an awareness campaign and comprehensive set of extension resources. An updated version of the Good Bulls App has been released, with the new/updated traits and some bug fixes. DairyBio provides the research pipeline to develop and maintain Australian Breeding Values.

Refreshed extension strategy

For several years, the Good Bulls strategy has underpinned DataGene's extension activities. The strategy has been well received by industry and successful in promoting the use of genetic merit bulls while giving breeders the flexibility to choose bulls that meet their individual breeding priorities.

A review of the extension strategy reinforced its value and identified the opportunity to accelerate the rate of genetic gain in females through the use of genomics. While Good Bulls remains the underpinning strategy to deliver faster genetic gain, the extension strategy has been refreshed to incorporate accelerating female genomics and integrate messages from the ImProving Herds project. Recognising the scale of opportunity that genomics presents to the industry, DataGene and Dairy Australia have developed a major project, 'Accelerating Heifer Genomics'. Initial work undertaken during the year, provides the foundation for further work in the coming year. The project has two streams of work:

- IT improvements to reduce the time for farmers to receive genomic results.
- Developing an extension strategy and resources to support farmers in applying the results to farm decisions.

Improving genomic pipeline

Until now, the turnaround time for genomic test results has been up to 49-70 days from receipt of hair samples. DataGene has initiated the first stage of a project to 'unblock the genomic testing pipeline', to reduce the turnaround time to about 28 days. A number of IT improvements to the genetic evaluation system have been fast tracked, including moving to weekly ABV runs (currently monthly), a National ID look up tool, automated daily loads from herd test centres and a more efficient process for fixing pedigree errors. Further IT developments will be required to achieve the 28-day turnaround, which are scheduled for 2020/21.

Genetic evaluation system (GES)

Australia's dairy Genetic Evaluation System (GES) is an IT system that processes a massive database of records to calculate Australian Breeding Values and indices. The redeveloped system has been in routine use since April 2019. During the year, a number of enhancements were made to the system, including automation of reports, the addition of the genomics module and improved flow of pedigree data. Programming was also completed for calculating the eight new/ updated ABVs that were first released in April 2020. The Good Bulls strategy includes the National Breeding Objective, ABV release campaigns (April, August and December) monitoring survey results, genomic testing males, improved bull search tools in DataVat, and making cow ABVs and reports more accessible.



167.972

Genetic Evaluation

System 2020

Strategic Pillar 3: Herd Improvement R&D and collaboration

Genomics and other technological advances present opportunities to improve animal performance through herd improvement R&D. DataGene's main strategic priority is to increase the rate of genomic testing of females in the Australian dairy population. The data collected by the Central Data Repository (CDR) and Ginfo enable the development of breeding values for traits that are difficult to measure, such as health traits, and enable the industry to use new technologies such as MIR.

Priorities for 2019-2024 include:

- · Deliver new health breeding values
- Use genomics and other technology (MIR) to predict future performance.

NBO review

The National Breeding Objective (NBO) describes the collective breeding priorities for Australian dairy herds and is expressed through DataGene's three breeding indices – BPI, HWI and TWI. DataGene has a policy to review the NBO and the indices every five years to ensure they evolve over time in response to the changing needs of dairy businesses, new knowledge and breeding technologies.

The Genetic Evaluation Standing Committee oversaw the process, which involved an issues paper, industry survey and analysis by an external consultancy, AbacusBio, in collaboration with DairyBio scientists, Dairy Australia and DataGene. The analysis considered 21 options for index refinements. From these, the Standing Committee identified five recommendations.

These recommendations were discussed at a series of stakeholder webinars during June 2020. Feedback from the webinars resulted in further refinements to the recommendations, which will be implemented for the December 2020 ABV release. The key changes are listed below.

1. Balanced Performance Index (BPI)

- Updated with current economic values for fat, protein, feed and labour.
- Greater emphasis on health and fertility and less emphasis on production traits, compared with 2019 BPI.
- Jersey BPI will exclude Feed Saved, reflecting significant differences between breed objectives and differences in the evaluation of the Feed Saved ABV.
- 2. Health Weighted Index (HWI)
 - Updated with current values for fat, protein, feed and labour.
 - Double weighting on Daughter Fertility.
- 3. Type Weighted Index (TWI).
 - Replaced by Good Bulls Guide tables that rank bulls by Overall Type and Mammary System.
- 4. The base (used to compare animals)
 - Remain consistent but add a breed purity filter so it is a truer reflection of the breed.

Key deliverables

- ✓ NBO review
- MIR applications.
- Collaboration with herd test centres



Changes to weightings in indices will see greater difference between the Balanced Performance Index and Health Weighted Index, with HWI having less emphasis on production and greater emphasis on health/fertility and feed saved.

MIR applications

Mid infrared (MIR) technology has the potential to analyse milk samples for indicators of health status such as fertility and lameness. DataGene is working with DairyBio researchers and herd test centres to investigate potential applications for the Australian dairy industry, both as a way to monitor current status of the herd and to develop ABVs for health traits.

The project involves collecting milk samples and data from herds with excellent records and detailed data from the Ellinbank research herd. One of the most promising applications is to use MIR to monitor fertility status from milk samples taken from cows in the lead up to joining. Real-time on-farm trials are scheduled for Spring 2020 to get an indication of the feasibility of developing an MIR Fertility Tool.

Collaboration with herd test centres

A number of collaborative projects are underway with herd test centres through the Herd Test Centre Committee. Projects in development for delivery next year include an interactive delivery platform for herd test reports via DataVat, a tool for predicting cow fertility from milk samples and a selective dry cow therapy tool.

Early work has also begun to develop non-competitive resources to promote herd testing.



Mid infrared (MIR) technology has the potential to analyse milk samples for indicators of health such as fertility.

Strategic Pillar 4: Service provision

DataGene needs to be continually improving and diversifying its services to fulfil its vision of enabling farmers and their industry to maximise profit through data-driven decisions.

Priorities for 2019-2024 include:

- · Build and maintain DataGene and industry infrastructure
- · Develop and maintain industry solutions
- Establish new revenue streams.

Consultation

A variety of formal and informal mechanisms give stakeholders influence over DataGene's priorities. Formal governance structures include the Board, Standing Committees and User Groups (see pages 20-25).

A major consultation project for the year was the review of the National Breeding Objective (refer to page 17).

Diversifying revenue

Until recently, DataGene received most of its funding from Dairy Australia, with some income from fees-for-services through genomic testing, export heifer certification, NASIS bull registration and IT projects.

Dairy Australia and DataGene have a five-year funding agreement that covers the significant portion of DataGene's work that is industry good for the benefit of farmers. A key goal for DataGene is to diversify service fee income to enable delivery of better services for its stakeholders. Rather than raising existing fees, DataGene is developing new services both within the Australian dairy industry and further afield where its expertise can add value, particularly in IT.

DataGene has been engaged by its equivalent in the US, the Council of Dairy Cattle Breeding (CDCB), to assist with the redevelopment of their genetic evaluation and related IT systems.

Work is underway for the first module and travel restrictions due to COVID required an adapted approach that has been working well. This project will also help maintain DataGene's significant capability in IT and genetic evaluation so that it can continue to develop services for the Australian dairy industry.

COVID-19

Like many organisations around the world, COVID-19 restrictions saw DataGene staff working remotely and meeting via Skype or Zoom. The transition occurred without major disruptions to core service delivery although travel restrictions required adaption for some projects.

Key deliverables

- Industry consultation
- Diversifying revenue
- Service delivery under COVID-19 restrictions

DataGene Board

DataGene is governed by a skills-based board. Members are elected on their knowledge and experience in dairy, herd improvement, finance, R&D and governance. The board must include three directors with direct expertise in dairy farm management. Directors are entitled to serve a three-year term and up to three consecutive terms (i.e. nine years). The ongoing rotation of Directors ensures the ongoing refreshment of skills and experience on the board.

Ross Joblin

LLB (Hons), Dip Corporate Management, FAICD, FCIS

Chair and Dairy Australia-nominated Director

Ross has a broad range of commercial experiences in operations management, corporate strategy, mergers, acquisitions, start-ups and human resources. He was a member of Dairy Australia's senior management team from 2010 to 2017. As Group Manager Business Operations, he was responsible for strategic planning, finance, issues management, corporate communications, human resources, IT and legal affairs. Prior to joining Dairy Australia, Ross held a range of roles as a corporate lawyer and senior manager in listed public companies. Ross has also worked with a number of industry boards in the areas of board governance and effectiveness.



The DataGene Board: Graeme Gillan, Craig Lister, Lucinda Corrigan, Ross Joblin, Simone Jolliffe, Anthony Shelly and Tim Jelbart.

DataGene Board

Lucinda Corrigan

BScAg (Hons), FAICD Director

Lucinda and her husband run 3,500 performance-recorded Angus cattle based at 'Rennylea' in the NSW Murray Valley near Albury. Over the past 30 years, they have developed one of Australia's leading genetics businesses via the dedicated use of Breedplan for genetic improvement and a highly accurate database of phenotypes and genotypes. Lucinda has significant experience in governance, business management, marketing, research and innovation via executive roles within the textile industry and as a director with the Graham Centre for Agricultural Innovation, four Cooperative Research Centres and Meat & Livestock Australia. In 2007, Lucinda received the Helen Newton Turner Medal from the Association for the Advancement of Animal Breeding and Genetics in recognition for her contribution to animal breeding and genetics.

Graeme Gillan

Director

Graeme Gillan is chair of the National Herd Improvement Association of Australia (NHIA) and former CEO of Holstein Australia. His involvement with dairy herd improvement spans more than 45 years working with several leading Australian genetics companies. Over this time Graeme has been involved at the coal face of herd improvement innovations including expanding the sources of genetics, the introduction of computerised mating programs and increasing the gene pool of the Jersey breed in the 1990s, overseas investment in Australian genetics in the 2000s and the promotion of genomics since 2010. He is passionate about the industry's role in influencing priorities for research, development and extension programs, to ensure herd improvement continues to deliver value to Australian dairy farm businesses.

Tim Jelbart

B. App. Sci (Hons) AAPI Director

Tim Jelbart is a dairy farmer from Inverloch, West Gippsland, Victoria. He manages Jelbart Dairy, a 1,000-cow Holstein herd that he owns with his brother. The business has used its herd improvement program to build a significant income stream from the sale of high genetic merit livestock. Before returning to the farm, Tim was a property valuer with Colliers International, where he developed strong analytical skills. He is excited to see the new genetic evaluation system now operating and looking forward to using DataGene's new tools, for example DataVat. These innovations will enable him to make informed and timely decisions based on his own herd and industry data. Jelbart Dairy was a Genetics Focus Farm in the ImProving Herds Project and hosted the National Muster field day which reported the project findings. The herd's detailed records have been used for industry R&D projects such as Ginfo and MIR for Health.

DataGene Board

Simone Jolliffe

BRurSc, GAICD

Director

Raised on a beef property and completing a Bachelor of Rural Science, Simone had a lifelong interest in animals, genetics and their production potential long before she joined her husband in the dairy industry. Together they milk about 250 cows near Wagga Wagga in NSW. Simone has held a range of industry roles at the local, state and national level over many years. They include the Australian Dairyfarmers and Dairy NSW boards and the NSW Primary Industry Minister's Advisory Council. She has also been actively involved in local Holstein Australia committees and a variety of community organisations.

Craig Lister

BBusMan(AgMan)

Director

Craig Lister is a dairy farmer and Holstein breeder from Calivil, Northern Victoria. Craig was Chair of the ImProving Herds project steering committee, and a former director of Murray Dairy and Chair of the Murray Dairy industry steering group. Craig has strong financial analysis, data interpretation and strategic planning skills. He holds a Bachelor of Business (Agricultural Management), backed up by experience in agricultural consulting, industry research and development projects and his own farm business. Craig is an advocate for the on-farm application of genetic evaluation and livestock improvement technologies. His herd currently ranks in the top 10 in Australia for Balanced Performance Index (BPI), the genetic merit index for profit.

Anthony Shelly

Anthony Shelly is CEO of Genetics Australia and a non-executive director of National Herd Improvement Association of Australia (NHIA). With more than 30 years' experience, Anthony has spent his entire career in dairy herd improvement. He has an exceptional understanding of the application of herd improvement at all levels of business. Anthony has formal training in leadership and agribusiness, and experience in governance through his role as a CEO and NHIA director. Anthony was appointed to the board in November 2019.

DataGene Standing Committees

DataGene's standing committees enable members to have direct influence over DataGene's priorities and program activities. These committees are not simply advisory bodies, but exercise authority as delegated by the Board in areas of industry policy and guidelines. These committees comprise individuals from within the dairy industry and herd improvement sector who possess relevant skills and experiences. Standing Committee members are nominated by stakeholders and appointed by the Board. Each Standing Committee is chaired by a member of the DataGene Board and includes at least one member of the DataGene management team.

Genetic Evaluation Standing Committee

The Genetic Evaluation Standing Committee provides advice and recommendations to the DataGene Board on specialist matters in relation to genetic evaluation and related technologies.

Committee members include:

- Simone Jolliffe (DataGene Board and Committee Chair)
- Rohan Butler (Holstein Australia)
- Jo Dickson (Farmer representative) to April 2020
- Janet Auchterlonie (Farmer representative) from April 2020
- Trevor Parrish (Farmer representative) from April 2020
- Patrick Glass (Australian Dairy Farmers representative)
- Christian Hickey (National Herd Development NHD)
- Tim Humphris (Farmer representative)
- Vaughn Johnston (Semex)
- Jennie Pryce (Agriculture Victoria)
- Bruce Ronalds (ABS Australia)
- Rohan Sprunt (Jersey Australia) to April 2020
- Glen Barrett (Jersey Australia) from April 2020
- Trevor Saunders (Farmer representative)
- Peter Thurn (Genetics Australia)
- Dairy Australia representative
- DataGene staff
- Agriculture Victoria/DairyBio staff.

The Genetic Evaluation Standing Committee met six times during 2019/20. The committee received regular progress updates and provided feedback on the genetic evaluation system (GES), the central data repository (CDR), DataVat and scientific issues, such as genetic trends, breeding values under development and industry projects.

DataGene Standing Committees

The committee oversaw the review of the National Breeding Objective. Its role included determining the themes to be investigated by the review, providing feedback on the issues paper and discussing results from the survey and technical analysis. From this, the committee recommended a number of policy changes to the NBO, which were discussed at a series of industry webinars. The committee took into account industry feedback in determining the final review outcomes (see also page 17).

Reports from each meeting are distributed to stakeholders and are available on request.

Herd Test Centre Committee

The Herd Test Centre Committee provides advice and recommendations to the DataGene Board on specialist matters in relation to herd testing and related software and technologies.

Committee members for 2019/20 were:

- Phil Wren (National Herd Development [NHD])
- Michael Lee (Herd Improvement Co-Operative [HICO]) to December 2020
- Daniel Espinosa (Herd Improvement Co-Operative [(HICO]) from January 2020
- Alan Blum (Yarram Herd Services) to April 2020
- John De Win (Yarram Herd Services) from May 2020
- Geoff Potts (Dairy Express/Agricultural Business Research Institute)
- Peter Nish (TasHerd)
- Nick Brasher (FarmWest)
- Matt Shaffer (DataGene)
- Chris Murphy (Secretariat)

Formed early in 2019, the committee met six times during 2019/20.

The committee received regular progress updates and provided feedback on DataVat and the Central Data Repository (CDR) and topics such as new services, upgrades to herd test reporting and engaging with other service providers. A joint effort involving DataGene, Dairy Australia and the herd test centres has been initiated on promoting the benefits and value of herd testing to farmers. This will draw extensively from the Improving Herds project, particularly the value of herd-test information in on-farm decision making.

DataGene Standing Committees

Data Services Standing Committee

The Data Services Standing Committee provides advice and recommendations to the DataGene Board on specialist matters in relation to opportunities for new tools and services that help farmers make data-driven decisions. This Committee was not activated in 2019/20.

User groups

User groups provide an additional level of industry consultation. Each informal group comprises a small number of active users on a specific DataGene software product or tool. Their role is to ensure a better alignment of resources to fulfil user needs and to identify and prioritise refinements and improvements to DataGene products. User Groups meet as required.

The Data Governance Group is a technical group that develops policies and processes for the use and sharing of data. This will be increasingly crucial as the Central Data Repository becomes operational. The Data Governance Group also makes detailed technical decisions about the way data is handled, presented and disseminated to industry. This group was not activated in 2019/20.

DairyBio: Developments in the pipeline

DairyBio's Animal Program provides a research pipeline for Australia's genetic evaluation system, including breeding values for new traits, improved reliability of existing ABVs and other innovations.

For example, the new/updated health and type traits published by DataGene in April 2020 were the outcome of DairyBio research and the Health Data for Healthy Cows project that was funded by the Gardiner Foundation (see page 15). The DairyBio team is also working on applications of mid-infrared (MIR) technology to predict cow performance from a milk sample (see page 18).

The graphic on page 27 shows how DataGene and DairyBio work with partners and stakeholders to deliver research outcomes that can be applied on farm. DataGene works closely with stakeholders and industry to understand farmer priorities which can be translated to research opportunities for innovative solutions. DairyBio's lead animal scientist, Professor Jennie Pryce, sits on DataGene's leadership team, enabling flow between farmer priority, research opportunity and application of outcomes.

Highlights from DairyBio research over the past three years include:

- · Custom SNP panel (XT chip) resulting in 4% increase in reliability
- Superfast genomic prediction method (BayesR3)
- · Economic validation of Balanced Performance Index (ImProving Herds)
- Heat Tolerance ABV
- · Gestation Length ABV
- · Genomic Calving Ease ABV
- Mastitis Resistance ABV
- Progress towards MIR prediction for fertility and health.

Work is underway to deliver the following from 2021 onwards:

- · MIR prediction of fertility
- Updated Feed Saved ABV
- Improved crossbred ABV(g)s
- · Red Breed ABVs with genomics
- Updated Fertility ABV



DairyBio is a bioscience research program focused on delivering outcomes of direct value to Australian dairy farmers. Conducting both animal and plant improvement research, DairyBio is joint initiative between Agriculture Victoria, Dairy Australia and the Gardiner Dairy Foundation.

The DairyBio team works in purpose-built facilities at the AgriBio Centre for AgriBioscience near Melbourne, as well as at Agriculture Victoria's research facilities in regional Victoria. The AgriBio research facility is home to Agriculture Victoria's molecular scientists and quantitative geneticists, as well as industry organisations such as DataGene, Holstein Australia, Jersey Australia and NHIA. Being co-located creates a unique mix of great scientific minds, cutting edge technology and real-world perspective.

Partnerships in the delivery pipeline





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DataGene Solutions for Herd Development

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