

## Annual Update 2020/21



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.



AGRI-GENE



AUSTRALIA



Genetics AUSTRALIA  
Breeding better Australian herds



Holstein AUSTRALIA



NU-GENES  
HERD IMPROVEMENT SPECIALISTS



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# Chair's Report

Ross Joblin  
Chair  
DataGene



This year marks five years since DataGene was formed and the second year affected by the COVID-19 pandemic. Throughout this period, the DataGene team and board have been focussed on delivering innovative solutions for the industry's current and future needs. Indeed, many of DataGene's projects span across several years, involving complex technology solutions requiring adaptation to complications along the way. Because of the time scale involved, it is easy to lose sight of what's been achieved, so I'd like to take this opportunity to reflect on our first five years.

DataGene was formed in 2016 to bring together responsibilities for many pre-competitive herd improvement functions, including genetic evaluation, software to run herd test centres, and herd recording and data systems.

Back in 2016, the genetic evaluation system was 25 years old and no longer fit for purpose. Redevelopment had proven more challenging than expected. Additionally, the industry had long recognised the need for a Centralised Data Repository (CDR), but the idea was just a dream. Bringing these to fruition was among DataGene's initial tasks.

Fast forward five years and the industry has a modern genetic evaluation system, a CDR refreshed daily and DataVat, a user-friendly platform for delivering individualised results, tools and services. The trifecta has opened up opportunities that were once unimaginable, such as farmers granting electronic access to their advisors for herd test results, mastitis focus reports, fertility focus reports and genetic futures reports.

One of the most visible outcomes has been much more frequent genetic evaluation runs. Back in 2016, there were two public ABV releases a year and nine 'private releases'. DataGene now runs 45 evaluations a year with three public releases. More frequent genetic evaluation paved the way for the adoption of female genomic testing as farmers get the results in time to make early decisions. In the past year we saw a doubling of the number of females genomically tested. This will continue the momentum of faster genetic gain in Australian herds that started when genomic testing of bulls took off in Australia.

Collaboration has been central to DataGene's brief as reflected by its membership of 27 industry participants. And it's my firm belief that collaboration has been the key to its success. For example, the CDR provides the technology for data access and collaboration across a wide group of industry organisations. It is exciting to see the collaboration extend internationally as DataGene works with other countries and dairy equipment

manufacturers to develop the capacity to exchange data collected on farm. Another example of the collaboration is the work with Dairy Australia and DairyFeedbase which saw DataGene take over responsibility for calculating the Forage Value Index for the first time in 2020. Collaboration is at the core of what DataGene does every day, from DairyBio and Dairy Australia to bull companies and herd test centres, from international counterparts to research organisations.

The past five years has also seen a distinct change in DataGene's funding sources. The organisation was established with in-kind contribution from industry (with the transferring of ownership of ADHIS intellectual property) and in its first few years, DataGene relied almost exclusively on Dairy Australia for operational funds. While a 5-year agreement continues to provide core funding, DataGene has expanded its service offerings further into software development and IT strategic consulting, with more than 50% of income now coming from sources other than Dairy Australia.

This change can be seen in the financial results over this period, with sales revenue rising from \$3.7 million in 2017 to \$5.4 million in 2020/21 and a strong balance sheet. The 2020/21 accounts show a small surplus at the end of June, a result of prudent expense management as well as work with new organisations.

One constant throughout the past five years has been a strong and cohesive board. It has been a pleasure to work with people sharing a vision and the capacity for respectful debate. I'd like to thank our outgoing director, Simone Jolliffe. Simone has brought a much-valued farmer and industry perspective to discussions around the board table. She also played a critical role as the Genetic Evaluation Standing Committee inaugural chair.

And to our stakeholders, thank you for your continued support and collaboration over the past five years. We have together faced challenges which at times involved adapting our plans and making hard choices about priorities. Thank you for your patience and flexibility.

On behalf of the board, I'd like to thank the staff for their dedication under the leadership of Matt Shaffer. We are fortunate to have a strong team who are passionate about the dairy industry and so willing to go the extra mile when needed.

# CEO's Report

Matt Shaffer  
Chief Executive  
Officer  
DataGene



This is the second CEO's report written in lockdown. What was an unimaginable concept two years ago, has now been our reality for the best part of 18 months. I am immensely proud that the DataGene team has provided uninterrupted services mostly working from home and I am grateful for their flexibility and determination in what has sometimes been very challenging circumstances.

This made it even more special to be able to meet face-to-face for Herd '21 in March during a brief window of eased restrictions. About 150 delegates joined us at Bendigo to catch up and hear the latest developments in dairy herd improvement. International speakers are a much-valued feature of Herd conferences and while it wasn't possible to have them in the room, reliable technology and fabulous presenters gave us a very successful online format. Hearing from our extended family of DairyBio researchers reminded me of how fortunate we are to have world-class scientists based in Melbourne and dedicated to developing new innovations in dairy genetics and herd improvement.

It's been a busy year on the genetic evaluation front. Completion of the review of the National Breeding Objective (NBO) saw the implementation of updates to the Balanced Performance Index (BPI) and Health Weighted Index (HWI) in the December public release of Australian Breeding Values (ABVs). The same run included the release of an enhanced Feed Saved ABV with improved reliability. DataGene's brief is to continually adapt the genetic evaluation system to meet industry's evolving needs. Those evolving needs include the need for more sustainable systems. Our colleagues at DairyBio have developed an index for selecting animals with lower environmental impact and we are looking forward to implementing it in 2022.

We are delighted to now be publishing genomic breeding values for red breeds. This challenging task had been on the industry's 'to do' list for some time. The task was more difficult than expected due to the limited data sets and the implementation of new evaluation methodology (single step analysis).

I am very excited to report a doubling of the number of females genomically tested during the year to about 50,000. This was achieved by a combination of process/technology improvements and a collaborative awareness campaign between DataGene and Dairy Australia and the broader industry. Process/technology improvements have cut the turnaround time for providing genomic results from eight weeks to four, which means farmers get the results in time to make early decisions about which heifers to keep as replacements and alternative pathways for the

rest. Collaborating with Dairy Australia on an awareness campaign enabled us to reach a broader audience and actively involve regional programs, genomic service providers and others in the herd improvement sector. This collaboration will continue in 2021/22 with another awareness campaign and follow up extension activities.

HerdPlatform is another collaborative project to deliver exciting results this year. This has involved working with herd test centres and the Animal Business Research Institute (ABRI) to deliver herd test results and reports in an interactive format via DataVat. From August 2021, participating herd test centres will progressively roll out HerdPlatform to their customers.

With the ever-growing offering of tools delivered via DataVat, we can expect to see greater use by Australian dairy farmers and their trusted advisers. An ongoing challenge is to continue to expand the number of data suppliers connecting to DataVat. This remains a work in progress but we have a number of initiatives in place that are expected to bring more data into the system in the coming years, including our international collaboration in the International Dairy Data Exchange Network (iDDEN).

Our team has been lucky enough to work with a variety of organisations in 2020/21 which leverage our expertise in IT, strategy and implementation. New clients have included the Cotton Research and Development Corporation, the Animal Genetics and Breeding Unit at the University of New England and the Food Agility CRC. We continue to work closely with our counterpart in the United States, the Council on Dairy Cattle Breeding. By leveraging our skills and experience, DataGene can maintain extensive capability, diversify its income sources and create additional opportunities for collaboration. We look forward to working with these organisations into the future to help deliver value for their businesses and the dairy industry.

I would like to take this opportunity to thank the DataGene team, both the team based here in Australia and those partners based overseas. This has been a challenging 12 months on a variety of fronts, professional and personal. The team has continued to focus on delivering for our stakeholders and their dedication and commitment throughout has been a joy to see. I look forward to the new normal where we can again see each other, and our stakeholders, over a cup of tea.

# 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 decision-making 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 (ADF) 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 (NHIA) 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 21).
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.

DataGene's activities are managed within four strategic priorities.

Pages 12-20 present achievements in each Strategic Pillar.

## Four strategic pillars 2019-24

### Improved decision making from data



#### STRATEGIC PRIORITIES

- Develop and support new decision tools
- Expand and secure data
- Drive and support industry innovation

### Increased farm profitability through herd improvement



#### STRATEGIC PRIORITIES

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

### Improved animal performance from R&D



#### STRATEGIC PRIORITIES

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

### Improved and diversified service offerings

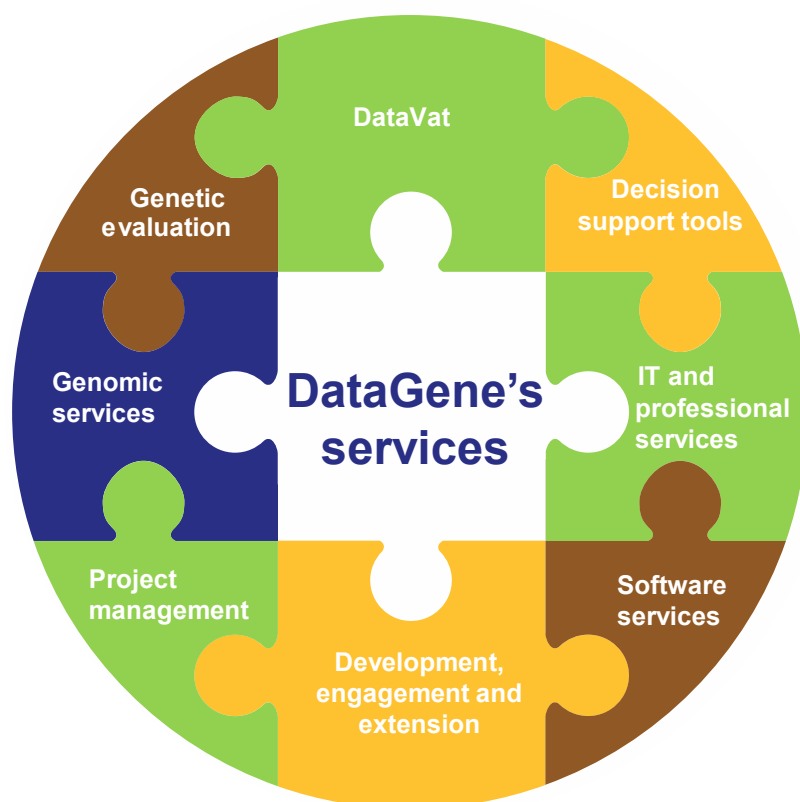


#### STRATEGIC PRIORITIES

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

# Products and services

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	✓
Bull proofs to bull companies	✓
Project management services to industry organisations	✓
Centre and inventory software to service providers	✓
Software development services to industry	✓
NASIS	✓
Export heifer	✓

Products and services delivered through third parties	Fee for service
HerdData App (via herd test centres)	✓
HerdPlatform (via DataVat / 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 the CDR, numbers of bulls genomically tested and NASIS bull registrations.

## Genetic trends

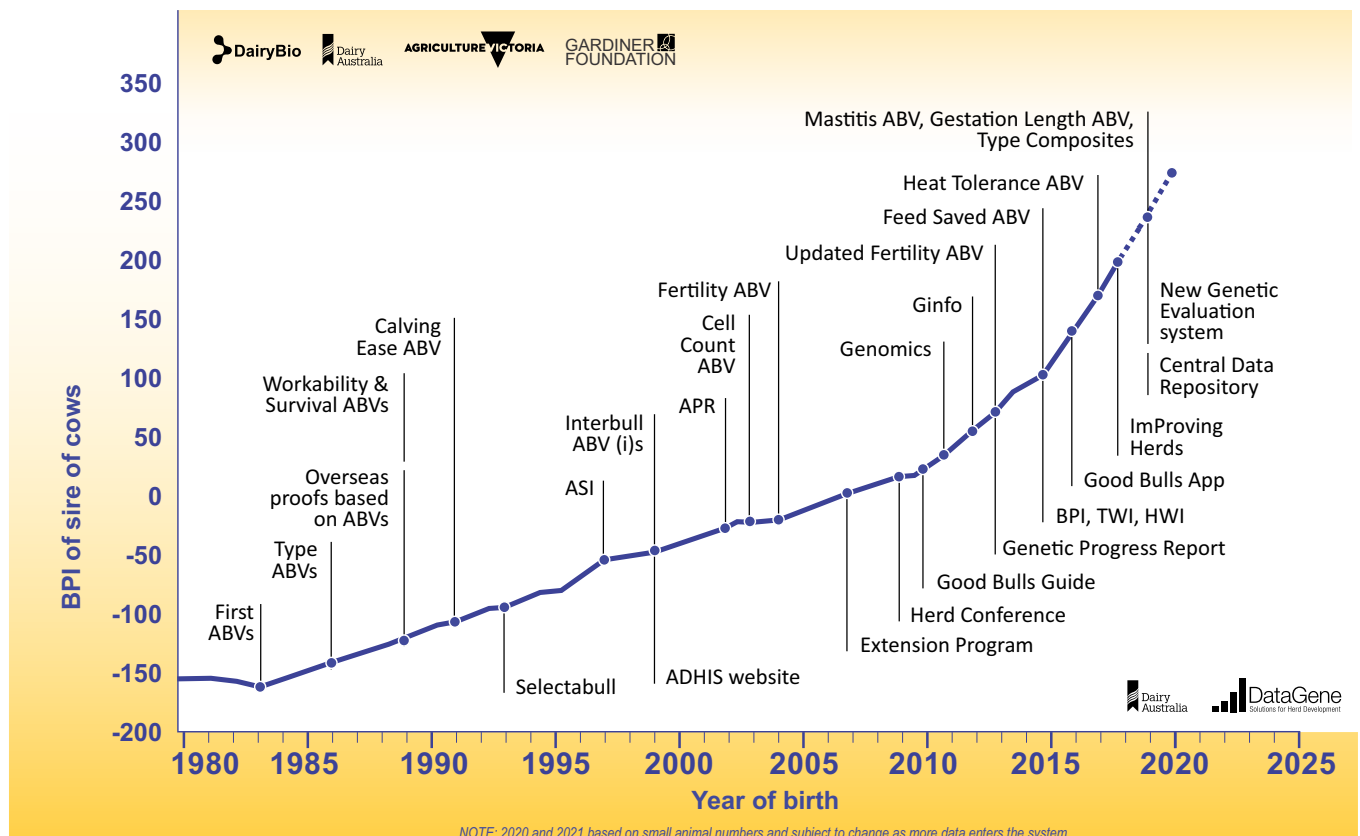
One of DataGene's key purposes is to provide tools and services to improve the rate of genetic gain in the Australian dairy herd. Genetic trends are tracked through the rate of genetic gain of sires of cows for BPI.

**Target:** long-term average \$30/year

**Current:** The average rate of genetic gain for BPI in sires of cows over the past five years (2016-2020) has accelerated to \$30.41/year in Holsteins and \$23.08/year for Jerseys born from 2016 onwards.

This compares favourably to the longer-term trend of \$21.78 in Holsteins and \$16.84 in Jerseys from 2008 to 2018. The 2019 to 2020 annual gain was \$39.46 in Holsteins and \$18.55 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.

## Australian genetic trends (Holstein)



# Performance metrics

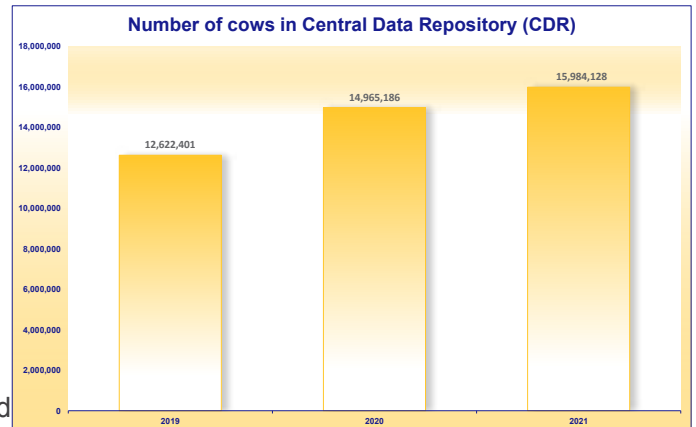
## Number of cows with phenotypes in CDR

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 16 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.

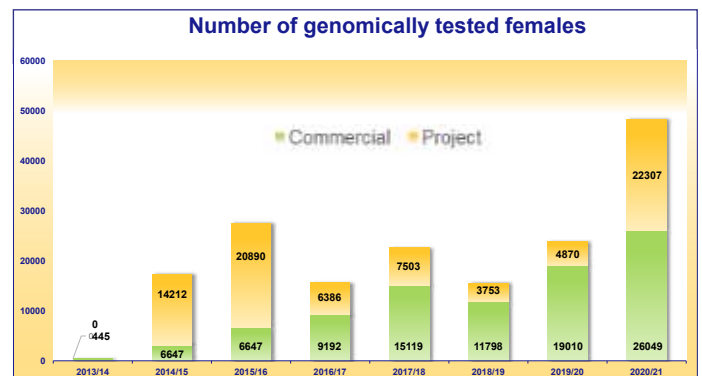


## Female genomic testing

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 doubled in 2020/21. This is likely in response to a combination of things: results being available faster; a Dairy Australia/DataGene awareness campaign and favourable 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 years through a major extension project in collaboration with Dairy Australia.



# Performance metrics

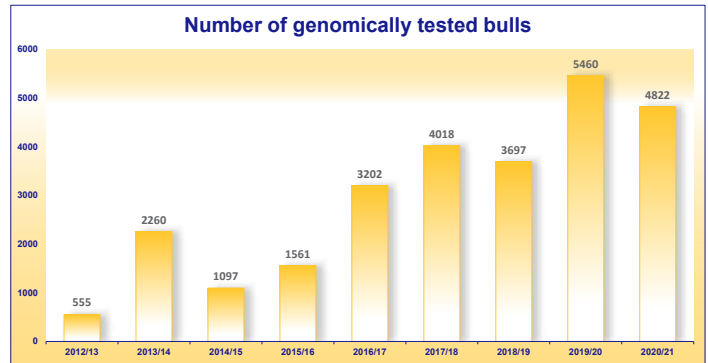
## Genomically tested bulls

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:* 4,822

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



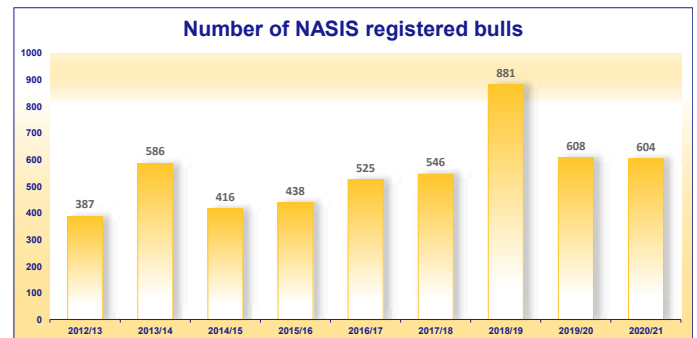
## NASIS-registered bulls

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:* 604

NASIS registrations this year were consistent with long-term 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.



## Workability

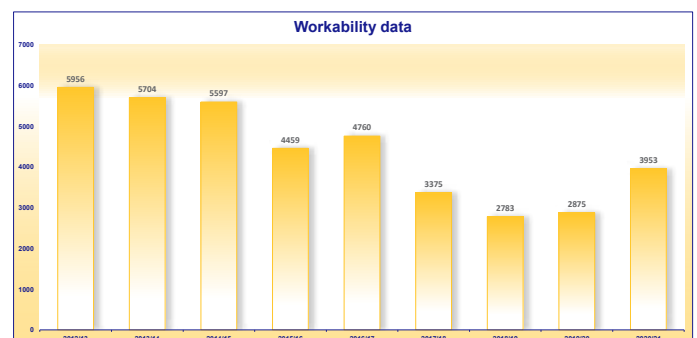
DataGene needs a minimum number of workability reports to calculate reliable ABVs for Milking Speed, Temperament and Likeability ABVs (and these traits are included in the BPI and HWI).

Farmers are asked to report workability scores on all 2-year-old heifers via their herd management software (Easy Dairy, Mistro Farm) or their herd test centre.

*Target:* 3,000/year

*Current:* 3,953

This year saw an increase in the number of workability records, predominantly as a result of changes in Easy Dairy software to automate the transfer of workability data to herd test centres.



# Highlights 2020/21

## Strategic Pillar 1: Data-driven decisions

### 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

### DataVat enhancements

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 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).

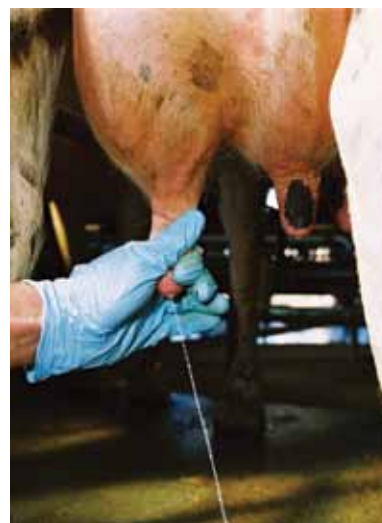
A major additional functionality added to DataVat this year was a security module which allows dairy farmers to manage access of their records and reports to service providers such as vets, nutritionists or breed advisers. With COVID restrictions in place for much of the year, demonstration and training has been delivered mostly via online platforms, with positive feedback.

During the year, DataGene worked with Dairy Australia to redevelop the Mastitis Focus Report for delivery via DataVat. The report draws upon herd records to provide an overview of udder health and potential risks, identify management options and track progress. The redeveloped report has improved functionality, has been updated with recent research findings and has addressed data glitches. In the second half of 2021, vets and advisers will be offered training in using the report through Dairy Australia's Countdown program.

More tools were added to DataVat this year for use by the herd improvement industry including Export Heifer and Progeny Tracking modules. Roll out included training and support for regular users.

### Key deliverables

- ✓ DataVat security module
- ✓ HerdPlatform
- ✓ Mastitis Focus report
- ✓ More frequent updates to CDR
- ✓ Ginfo forum



Dairy Australia's Mastitis Focus Report is now delivered through DataVat, drawing upon a herd's own records.

# Highlights 2020/21

Development work was undertaken for new tools which are scheduled for roll out later in 2021, including HerdPlatform and a tool to identify animals for selective dry cow treatment.

HerdPlatform delivers herd test results and new insights in an interactive format through DataVat. Development of the tool involved collaboration between DataGene and the Australian Business Research Unit (ABRI) and herd test centres. From 2021/22, participating herd test centres will be able to add HerdPlatform to their service offering.

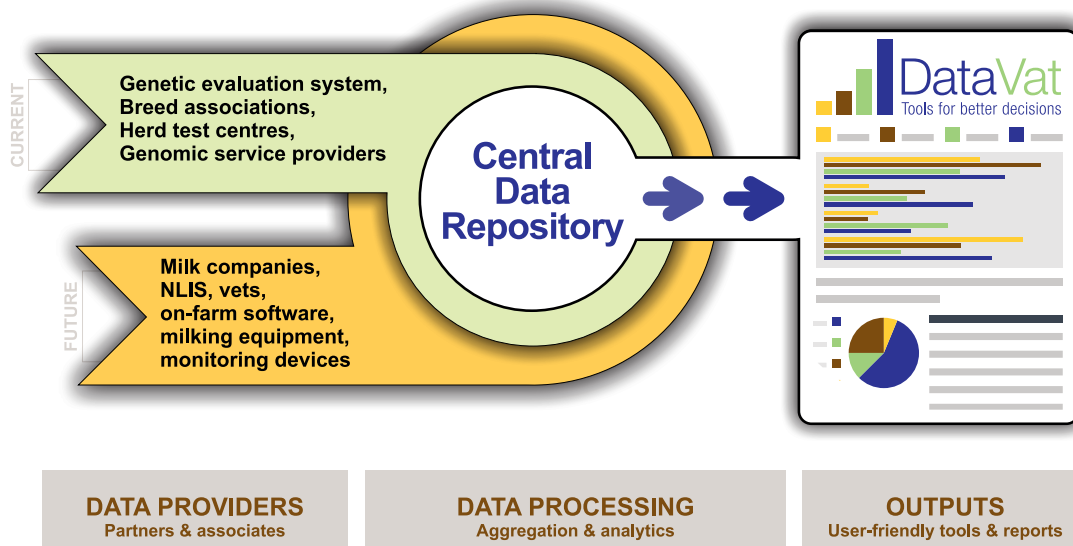
## Central Data Repository (CDR)

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 delivered via DataVat.

IT enhancements implemented this year enable daily updates of the CDR with data from herd test centres, breed associations and genomic service providers. This updated information flows through to DataVat with each routine ABV release (roughly weekly). The bottom line is that DataVat reports used by farmers and their advisers are based on recent data.

An ongoing challenge is expanding the number of data suppliers connected to the CDR. While connecting is entirely optional on the part of data suppliers, DataGene has a role in encouraging and supporting organisations to connect.

DataGene is a member of the International Dairy Data Exchange Network (iddEN), which is negotiating data exchange with major on-farm software systems. A data exchange platform and hub have been built and development is now underway with three of the major equipment manufacturers (DeLaval, GEA and Lely). DataGene is scheduled to be integrated in 2021/22. This will give a significant number of Australian farms the opportunity to feed their on-farm data into the CDR.



# Highlights 2020/21

## 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. It includes more than 50,000 cows from herds with Holstein, Jersey, Australian Red and crossbred animals. Additional herds may be recruited to maintain a representative cross section of the Australia dairy population, for example some of the breeds with small numbers in Australia.

Ginfo data underpinned the development of genomics for red breeds which were published for the first time in August 2021. Ginfo data is also being used in a wide range of DairyBio research projects which are developing breeding values and herd improvement tools that will be delivered in the future.

About 40 people attended a 'Ginfo Forum' held in March at Bendigo (with others joining in online). Ginfo farmers received an update about the project and some previews of herd improvement research in progress. During the year, we also piloted a 'virtual discussion group' concept with the view to offering more online opportunities for Ginfo farmers to connect with DataGene.

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



*Participants at the 2021 Ginfo Forum, held at Bendigo in March. A significant number of other participants joined the forum online.*

# Highlights 2020/21

## 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 keeping the best genetic animals in their herds by 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.

### Updated BPI, HWI

An updated model for calculating the Feed Saved ABV was implemented in November 2020, resulting in an improvement in reliability of 11% for Holstein bulls.

The Balanced Performance Index (BPI) and Health Weighted Index were updated in line with the outcomes of a review of the National Breeding Objective, which reflects the collective breeding priorities for Australian dairy herds. Implemented in the December 2020 public ABV release, the updated BPI has more emphasis on health and fertility and less emphasis on production traits. The updated Health Weighted Index has double weighting for Daughter Fertility. The updated Jersey BPI excludes Feed Saved reflecting significant breed differences.

The Type Weighted Index (TWI) was replaced by Good Bulls Guide tables that rank bulls by Overall Type and Mammary System.

### Weekly genetic evaluation runs

DataGene began weekly genetic evaluations from January 2021, with private reports provided directly to bull owners. Female results are reported directly to animal owners via DataVat (and reporting from their genomic service providers). Major IT improvements have underpinned the transition to more frequent genetic evaluation runs, which in 2015 occurred just nine times a year.

### Key deliverables

- ✓ Updated BPI, HWI
- ✓ Enhanced Feed Saved ABV
- ✓ Weekly genetic evaluation runs
- ✓ Genomics for red breeds
- ✓ Accelerating female genomic testing

# Highlights 2020/21

## Genomics for red breeds

A priority for the year was the development work to underpin genomics for red breeds, which were first published in August 2021. There are two major steps in delivering new breeding values: the scientific research done by DairyBio and the development work to integrate these findings into the genetic evaluation system, which is carried out by DataGene.

Red breed genomics has been challenged by the limited scale of performance data (e.g. herd test, workability, fertility, etc) of Australian red breed animals. It is also the first Australian breed to be evaluated under single step analysis, which is a new methodology that combines all information about an animal into a single analysis. Like other overseas genetic evaluation systems, DataGene will explore progressively moving to single step methodology over time.

## Accelerating female genomic testing

DataGene and Dairy Australia are collaborating on a multi-year project to dramatically increase the rate of genomic testing of heifers. DataGene undertook major IT development and process refinements to cut the turnaround time for providing genomic results from eight weeks to four. We also worked with Dairy Australia to develop a campaign and supporting resources to raise awareness of heifer genomics, with more promotion and extension activities planned for the 2021/22. There are early indications that the message is getting through, with 48,356 animals nominated for genomics during 2020/21 which was 12% above target and more than double the number nominated in the previous year.



*DairyBio provided the research pipeline for the development of genomic breeding values for red breeds.*



# Highlights 2020/21

## 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

### MIR applications

Mid infrared (MIR) technology has the potential to analyse milk samples for indicators of health status such as fertility. DataGene has worked with DairyBio researchers 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. A fertility prediction tool is in development which is expected to be ready for roll out to some herd test centres in 2021/22. This will give farmers more insight into which cows are most and least likely to get into calf. The fertility prediction algorithms are specific to the brand of herd test equipment, so further development will be needed for herd test centres with a different brand.

### Key deliverables

- ✓ MIR tool development
- ✓ Collaboration



*A tool is in development that will enable herd test centres to use in-house MIR technology to help predict a cow's fertility status from a milk sample.*

# Highlights 2020/21

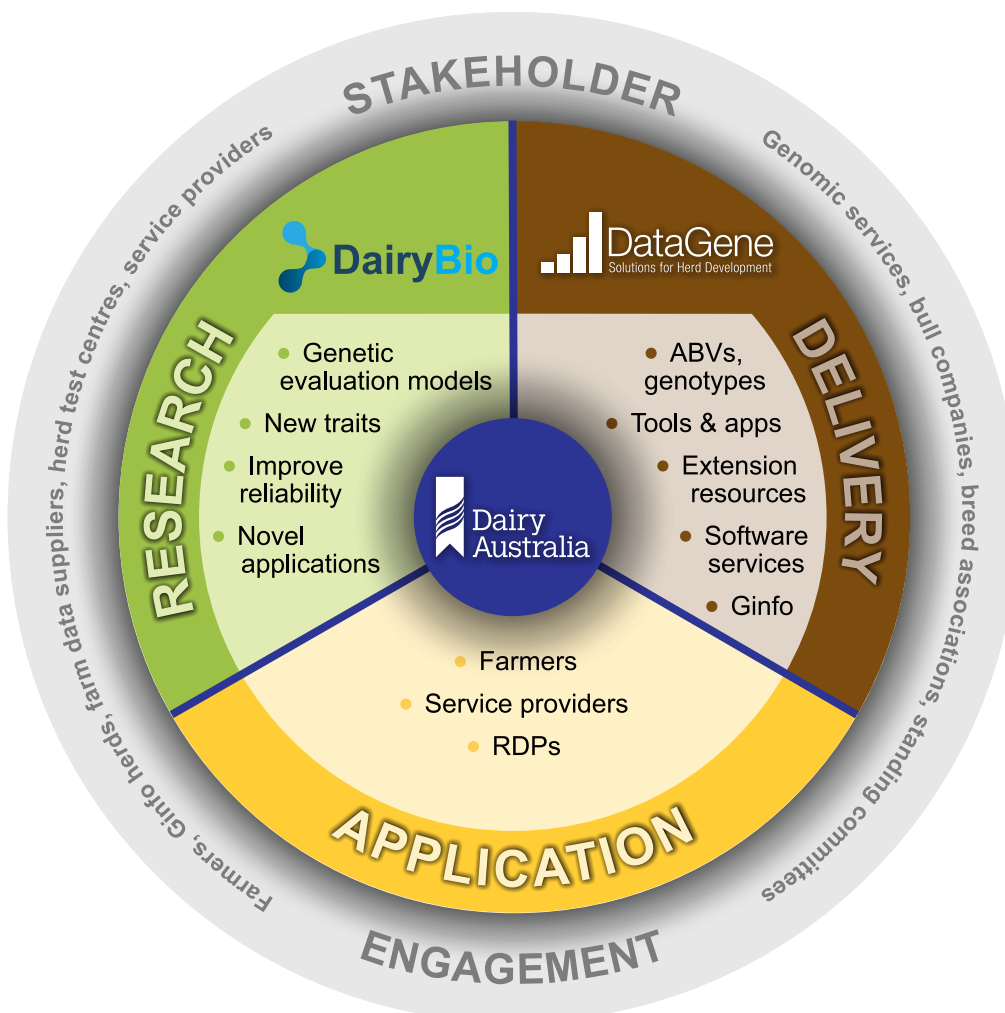
## Collaboration

DataGene plays a role in the pathway between research outcomes and on-farm application. With many others also having a role in this process collaboration is vital.

DataGene has a long standing collaborative relationship with DairyBio which provides the research pipeline for genetic evaluation, new traits, improved reliability and novel applications (see page 21).

Recent collaborative approaches to extension and adoption have delivered promising outcomes. Some examples include the heifer genomics project which aims to fast track the rate of female genomic testing in Australia. This project involves close collaboration between DataGene, Dairy Australia, regional programs and the herd improvement industry

Development of HerdPlatform was made possible by collaboration between DataGene, ABRI and herd test centres.



# Highlights 2020/21

## Strategic Pillar 4: Service provision

### 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.

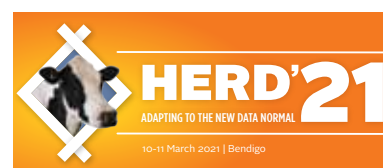
### Herd '21

About 150 delegates attended Herd '21, the seventh in the series of conferences for Australia's herd improvement industry. Held in March at Bendigo (with an online option), it provided a welcome opportunity for a face-to-face gathering after almost a year of COVID restrictions. The program included Australian and overseas speakers, some presenting remotely.

Herd conferences are a joint initiative between DataGene, Dairy Australia, Holstein Australia and the National Herd Improvement Association (NHIA).

### Key deliverables

- ✓ Herd 21
- ✓ Consultation
- ✓ FVI
- ✓ Contracted projects



*Herd '21 included a session on inbreeding that generated significant interest, both during Herd '21 and in the following months (Pictured from left: Dr Thuy Nguyen, Beth Scott, Christian Hickey, Trevor Saunders and Bruce Ronalds.*



# Highlights 2020/21

## 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 22-26).

The Genetic Evaluation Standing Committee and Herd Test Centre Committee meet regularly and make a valued contribution to DataGene policies and activities. However, some other committees have not met regularly. An external review will be undertaken in 2021/22 to determine if a different consultation format would be more effective for some topics.

## Forage Value Index

DataGene's expertise in data analysis and number crunching created the opportunity to evaluate Dairy Australia's Forage Value Index. Developed by DairyBio, the Forage Value Index (FVI) is a tool that helps Australian dairy farmers and their advisers to make more informed decisions when selecting ryegrass cultivars. It provides an accurate, reliable and independent assessment of the potential economic value of ryegrass cultivars in different dairy regions of southeast Australia and Western Australia.

Number-crunching is at the heart of the DataGene business, as it provides the information to underpin the Australian Breeding Values and the development of new breeding traits, enabling Australian dairy farmers to make more informed herd improvement decisions.

The FVI was built on similar rigorous analysis of trial and economic data and it provides farmers with an independent tool to help them choose the best ryegrass for their business.

This is an example of DataGene's capacity to diversify and expand its business by drawing on the existing skills and knowledge of its staff.



## Contracted projects

When DataGene was formed in 2016, it received most of its funding from Dairy Australia, with some income from fees-for-services through genomic testing, export heifer certification and NASIS bull registration. In recent years, DataGene has diversified its income through new services both within the Australian dairy industry and further afield where its expertise can add value, particularly in IT. For more information refer to page 27.

# 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.

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 clear alignment between farmer priority, research opportunity and application of outcomes.

Highlights from recent DairyBio research which will be implemented by DataGene in the near future include:

- Red Breed genomics (August 2021)
- Improved cross bred genomics
- MIR prediction for fertility
- Updated Semen Fertility
- Updated Daughter Fertility ABV
- An index for breeding animals with lower environmental impact
- Better prediction of survival using type
- More accurate identification of recessive lethals and haplotypes
- Genomic inbreeding trends and call for industry action on solutions

DairyBio's research program for 2021-26 includes:

- Advanced Heat Tolerance ABV
- Updated survival ABVs
- Predicting cow performance in real-time
- Transition cow ABVs
- Using sensor data in ABVs
- Methods to control inbreeding and accurately identify haplotypes and other lethals.



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.

More information: [www.dairybio.com.au](http://www.dairybio.com.au)

# 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, FGIA

Chair and Dairy Australia-nominated Director

Ross has a broad range of commercial experience 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.



## 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.



# DataGene Board

## 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.



## 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.



# DataGene Board

## Sam Simpson

MMarketing (Agribusiness), BAppSci(Agric), GradDipAgribusiness, DipFrontlineManagement

Sam Simpson and her husband operate at 450-cow dairy farm, Craiglands Holsteins, at Larpent in South Western Victoria. They have been members of Holstein Australia for 15 years and genotyping their animals since 2015. Sam runs the herd's breeding program as well as the business finances, HR and information systems. She is actively involved a number of industry groups including promoting dairy to the local community and school groups.

Craiglands Holsteins was a focus farm for the ImProving Herds project and Sam was a member of the MIR for Profit project steering committee.

Before taking on a full-time role with the farm, Sam spent 10 years as a sheep officer and Farm\$mart Project Manager with the Victorian Department of Primary Industries. Subscribing to the adage "you can't manage what you don't measure", Sam is a passionate advocate for on-farm data collection so that herd and business decisions can be based on relevant information.



## 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 consultative committees

DataGene has a variety of formal and informal mechanisms that give stakeholders influence over DataGene's priorities. Formal governance structures include the Board, Standing Committees and User Groups.

The Genetic Evaluation Standing Committee and Herd Test Centre Committee meet regularly and make a valued contribution to DataGene policies and activities. However, some other committees have not met regularly. An external review will be undertaken in 2021/22 to determine if a different consultation format would be more effective for some topics.

## 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.

A formal standing committee gives members direct influence over DataGene's priorities and program activities. This is not simply an advisory body, but exercises authority as delegated by the Board in areas of industry policy and guidelines. It comprises 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. It is chaired by a member of the DataGene Board and includes at least one member of the DataGene management team.

Members of the Genetic Evaluation Standing Committee in 2021 included:

- Simone Jolliffe (DataGene Board and Committee Chair)
- Rohan Butler (Holstein Australia)
- Janet Auchterlonie (Farmer representative)
- Trevor Parrish (Farmer representative)
- To be appointed (Australian Dairy Farmers representative)
- Christian Hickey (National Herd Development – NHD)
- Tim Humphris (Farmer representative)
- Vaughn Johnston (Semex)
- Bruce Ronalds (ABS Australia)
- Glen Barrett (Jersey Australia)
- Trevor Saunders (Farmer representative)
- Peter Thurn (Genetics Australia) to January 2021
- Dairy Australia representative
- DataGene staff
- Agriculture Victoria staff

# DataGene consultative committees

The Genetic Evaluation Standing Committee met three times during 2020/21. 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.

The committee advises DataGene on delivery priorities; which this year included the implementation of updated BPI and HWI in December, red breed genomics development (implemented in August 2021) and the heifer genomics project.

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

## **Herd Test Centre Committee**

The Herd Test Centre Committee is made up of management representatives from National Herd Development (NHD), Hico, Yarram Herd Services, Dairy Express, TasHerd and FarmWest, with support from DataGene and secretariat support from Chris Murphy.

The Committee focuses on pre-competitive discussions, including software and service development, and provides advice and recommendations to DataGene on specialist matters regarding herd testing and related software and technologies.

Formed early in 2019, the committee met eight times during 2020/21.

A key focus this year was HerdPlatform, a tool on DataVat that gives farmers interactive access to their herd test results and new herd recording and herd improvement tools, reports, and services. The Committee also worked with DataGene on development of the MIR Fertility Predictor and Select Dry Cow tools which will be integrated with HerdPlatform in 2021/22.

## **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 2020/21 and its role will be included in an external review during 2021/22 to determine if a different consultation format would be more effective.

## **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.

# Software development and IT strategic consulting

DataGene has expanded into software and strategy services over the past few years and has built a portfolio of services to deliver solutions for Australian and international customers. To do so, DataGene leverages its experience and skills by working with organisations to create digital strategies focussing on technology, people, culture, and change. This suite of services enables DataGene to diversify its income stream and to create opportunities for collaboration and learnings that benefit our stakeholders.

DataGene has a specialist team of IT and change professionals that has built up a skillset around genetic evaluation and large data management through developing and maintaining DataGene's genetic evaluation and milk recording software and providing services to customers.

Current projects include strategic analysis of data and technology requirements, assessment of change readiness and people capability, project scoping, design and management, data collaboration solutions and implementation of new tools and systems. Working with an offshore development partner, DataGene uses established, proven and repeatable methods and processes to deliver projects from concept through to implementation.

Here are some examples of recent projects across several agricultural and food industries seeking data-driven digital solutions:

- Animal Genetics and Breeding Unit (AGBU): with a key focus on IT delivery, we have analysed and reviewed technology, people and change readiness to prepare a new digital strategy.
- Agricultural Business Research Institute (ABRI): collaboration to develop HerdPlatform, a tool to deliver herd test results and reports in an interactive format via DataVat.
- Cotton Research and Development Corporation (CRDC): Conduct an industry review of the Cotton Supply chain from farm to gin. Identify data, its uses, and opportunities to develop new collaborative models for data sharing.
- Council on Dairy Cattle Breeding (CDCB): development of an interactive web portal for delivering genetic evaluation and other reports to the US dairy industry.
- Food Agility: collaboration to develop a cow-side app, underpinned by artificial intelligence, to support farmers to make better clinical mastitis treatment decisions and reduce the use of antibiotics.





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