



September 2008 | Volume 1, Issue 1

Australia/New Zealand

Welcome to Pfizer Animal Genetics

Pfizer Animal Health is deeply rooted in maximising producer profitability and effective decision-making through sound management tools resulting in healthy, productive animals. In March the acquisition of two genetics companies, Bovigen and Catapult Genetics, furthered its commitment to providing customers with the best technology and knowledge to make more informed business decisions with both the animal and profit in mind. Thus Pfizer Animal Genetics, a business unit of Pfizer Animal Health, was born.

Since the establishment of Pfizer Animal Genetics we've often been asked, "Why is Pfizer Animal Health entering the genetics business?" Simply put, Pfizer Animal Genetics will be used as a new component of our integrated approach to animal management. As a company we're dedicated to providing our customers with all of the tools necessary to maximise production and profitability. Pfizer Animal Genetics will provide a new technology—DNA-markers—to help beef producers weave data, genetics and health management together to advance their decision-making capabilities.

Where we are today

While we are new participants in this field of emerging technology, Pfizer Animal Genetics is dedicated

to gaining the trust and respect of our industry partners through diligence and hard work, with the goal of being the global leader in animal genomics. Pfizer Animal Genetics inherited a skilled team of researchers, including Dr Gerard Davis, a co-founder of Catapult Genetics, and is continuing to add key personnel. One example is Dr Ronnie Green, a highly respected and noted animal genetics and genomics researcher and thought leader. The experience and knowledge of our staff will prove to be a valuable asset to livestock producers as we establish our leadership in DNA-marker research, validation and test offerings.

With the purchase of Bovigen, LLC and Catapult Genetics, we've entered the business with a line of DNA-markers for use by seedstock producers and commercial cattle operations to identify genetically superior beef cattle. The DNA tests we currently offer include:

- GeneSTAR® Marbling—identifies genes associated with carcass marbling
- GeneSTAR® Tenderness—a diagnostic tool for determining genetic differences in meat tenderness
- GeneSTAR® Feed Efficiency—indicates an animal's genetic ability to efficiently convert feed to protein

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Producer Profile



Meat tenderness is the key to consumer satisfaction, believes Rob Atkinson of Glen Ruth. To meet consumers' needs

and gain additional ground in the protein market, Mr Atkinson has proactively embraced GeneSTAR® technology to improve his decision-making. Read more about Mr Atkinson's use of DNA-marker technology inside.

From the Expert

DR RONNIE GREEN
PFIZER ANIMAL GENETICS



What is the greatest advantage producers can realize from using genetic marker technology?

DNA-marker technology is a tool to help producers make more precise breeding and management decisions. DNA-marker tests can help identify genetically superior animals, often earlier than progeny testing. We are now entering an era where on-farm precision management, employing genetic information, can influence how we optimise animal productivity. Beginning with DNA-marker testing and phenotypic data, better decisions can be made about herd genetics, feeding programs, optimal animal harvest and, in the future, more traits that involve animal health and beef quality.

The science behind genetics and genomics

As any beef producer knows, it takes a variety of sound management practices, attention to detail and successful genetics to produce high-quality beef. Producers often rely heavily on proven nutrition, good genetics and aggressive management to be profitable. Another emerging management tool, DNA-marker testing, is a powerful option to help producers fine-tune decision-making to produce and manage genetically superior animals.

GeneSTAR® DNA-marker testing for marbling, tenderness and feed efficiency provides beef producers with additional information on individual animals to enhance their growing and finishing operations. Producers who utilise these technologies can produce a higher-value product and receive a premium price for improved tenderness and marbling, leading to enhanced profitability.

Basics of genetic marker technology

The specific science behind genetic markers is as complex as the DNA that it identifies, but with a little background, producers can better understand the powerful technology that helps identify key traits for enhanced beef quality and cattle management.

There are a few key terms that often arise when discussing genetic marker

testing which are critical to understand when focusing on genomics:

- **DNA-marker:** A specific DNA variation associated with a particular characteristic.
- **Alleles:** Variations of a particular DNA-marker that are inherited from parents.
- **DNA-marker testing (genotyping):** Determines which alleles an animal has.
- **Single Nucleotide Polymorphism (SNP – pronounced “snip”):** A single letter change in a DNA sequence, resulting in genotypic or phenotypic variety.
- **Phenotype:** The expressed traits that can be observed and measured.
- **Genotype:** The genetic makeup which is not able to be seen.

By performing DNA-marker testing, producers can identify which traits an animal possesses that may impact carcass quality and the rate of efficient gain. Animals found to possess favourable genes for marbling, tenderness or feed efficiency can be managed to optimise these traits.

Better management with genetic marker information

GeneSTAR genotyping identifies permanent, heritable traits in cattle at a young age. By performing DNA-marker testing on an animal, producers can identify the animal's potential for key traits.

The expression of each trait is influenced by a number of external and internal factors. The heritability of a trait determines how easily it is influenced by external factors. Traits such as female fertility have low heritability and are largely influenced by nutrition and management, while traits such

Animals found to possess favourable genes for tenderness, marbling or feed efficiency can be managed to optimise these traits.

as marbling are easier to influence through genetic selection due to higher heritability.

The ability to identify economically significant traits will continue to improve as researchers rapidly expand the number of markers that can be tested, and gain a better understanding of the potential genetic impact. Management factors will continue to be influential in the expression of traits, as even highly heritable traits are impacted by management of cattle pre- and postmortem. Tenderness markers, for example, identify the presence of two enzymes, Calpain and Calpastatin, which indicate the animal's potential for carcass quality. The amount of tenderness expressed, however, is impacted by the animal's environment (i.e., nutrition, management and environmental conditions) throughout its lifetime and harvest.

Test results on marbling, tenderness and feed efficiency offer additional information beyond traditional decision-making tools for cattle management. Their use makes strides toward maximising the profitability of beef production, and helps to move the industry in the direction of consistent quality products and improved consumer consumption, resulting in higher profits for producers.



Talooby leads by example with GeneSTAR

Talooby Angus stud has always been at the forefront of new technology, so it is no surprise to see stud principal Peter Grieve doing extensive GeneSTAR® testing.

“Virtually all our sale stock and the bulls we use in our herd have been GeneSTAR tested. We will eventually test females, too, as part of our information-gathering and education process,” Peter said.

Talooby Stud has operated since 1953 near Rylstone in central western NSW. Peter has worked on Talooby since completing a Diploma in Agriculture at Hawksberry Agricultural College in 1962.

“There’s no doubt that gene technology will be the next revolution in beef production. There is enormous interest right around the world.”

PETER GRIEVE

The herd today comprises about 350 registered cows, mostly black, with about 30 Red Angus. The major production sale is held annually in September and this year almost 60 young bulls have their GeneStar results in the sale catalogue.

Talooby was one of the original performance-recording herds, starting as a demonstration herd for NSW Agriculture in 1964. Talooby began using EBVs in 1987.

“The annual EBV packages we sell with our bulls are designed to cover all aspects of the breeding system rather than single trait selection,”

Peter said. “As seedstock producers the responsibility is on us to familiarise our clients with the new DNA-marker technology and provide them with all the information we can to help them make the best selection. BREEDPLAN® was complex and took a long time to get accepted. The GeneSTAR tests are easier to understand. The results are there in black and white.”

Northern cattle producers had been quicker to take on GeneSTAR, especially for Bos Indicus cattle.

“Not a lot of Angus breeders are using GeneSTAR yet, but I am happy to be running with the technology because I’m confident it will be successful. There is no question that Angus will also get benefits. People ignore at their peril anything which is going to improve the taste and consumer appeal of our beef,” Peter said.

While Angus were considered one of the more tender breeds, there was still tremendous variation with animals returning from the maximum 8 Star tenderness tests right down to 3 Star.

“Once we are aware of the variation, progress can be made using the GeneSTAR tests as another selection tool,” Peter said.

Less emphasis is placed on marbling at Talooby.

“I am not in favour of highly marbled Angus. Fat is more expensive to produce than red meat. The majority of our markets require very moderate marbling and a Score 2 is quite satisfactory.”

Mr Grieve said Talooby’s philosophy was balanced breeding to produce moderate-size fertile cattle with doing ability.

Mr Grieve said he believed there was a big future for feed efficiency testing



PETER GRIEVE

as more genes were identified and added to the test.

“There are cattle out there that are half as efficient at converting feed into beef as others and we know there is 40 percent heritability. You can make so much better use of available pasture. While it’s early days yet, I think this is the test with the biggest potential for greater dollar returns. There’s no doubt that gene technology will be the next revolution in beef production. There is enormous interest right around the world.”

Mr Grieve said he was heartened that Pfizer had taken over Catapult Genetics as a significant global player in animal genomics. New testing traits would add all sorts of value in the years ahead.

“One of the beauties of GeneSTAR is that it is an accurate guide to genetic potential not altered by outside factors. We just have to get out there and see where it takes us in the future,” Mr Grieve said.



Welcome to Pfizer Animal Genetics

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- SureTRAK®—accurately traces a carcass or cut of meat back to the source animal
- SireTRACE®—identifies parentage and verifies animal identity

We are committed to accelerating research and development relating to new markers and traits, with a special focus on meat quality, feed efficiency and health. As the newest technology becomes available, DNA-markers will help producers make improved and more targeted breeding decisions, set appropriate harvest dates and maximise profits from each animal in the herd. These on-farm decisions will ultimately influence our end-users, consumers, and provide them with the product they demand: consistently high-quality, tender and flavourful beef on the dinner table.

Currently, we are working to enhance the DNA-marker technology to its maximum potential, while maintaining focus on economics and usefulness on the farm. Our ultimate goal is for producers to quickly receive DNA test results in order to make effective management decisions to maximise profitability and animal productivity, and ensure the best quality product.

Our commitment to the industry

Pfizer Animal Genetics aims to fund quality genomics research on a global scale and to develop products using a world-class team of scientists. We also intend to invest in educational and bio-informatics initiatives to ensure the significant benefits of genomics technology are translated into valuable breeding and management solutions for our customers.

Just as our parent company has dedicated itself to extensive research and development, Pfizer Animal Genetics is committed to providing the same to our producer clients. We believe that a tremendous potential lies locked within DNA, and our focus is to unlock this opportunity to develop relevant solutions for use by seedstock and commercial beef producers.

For the latest news and updates on our research and development partnerships in cattle and sheep, please refer to our Web sites www.pfizeranimalgenetics.com and www.catapultgenetics.com in Australia and New Zealand.