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## Scholar pursues dairy breeding excellence

*Victorian Nuffield Scholar Paul Mumford believes genomics has a crucial role to play in advancing Australia's dairy performance.*

By Catherine Norwood

Victorian Nuffield Scholar Paul Mumford believes advances in genomics have the potential to provide quantum leaps forward in dairy herd performance.

The commercialisation of dairy gene markers in Australia in 2009 was the impetus for much of his research during his three-month Nuffield Scholarship, sponsored by the Geoffrey Gardiner Dairy Foundation.

"Breeding is a personal passion of mine and the scholarship gave me the chance to see how genomics has been used to improve herds overseas and what the potential might be for Australia," Mr Mumford says.

He and wife Lisa operate a dairy farm at Wron Wron, near Yarram in South Gippsland, with a herd of up to 450 Jersey cows. During his Nuffield scholarship Mr Mumford visited all the major grass-fed dairy regions of the world, including the US, Canada, England, Ireland, Scotland and New Zealand, comparing them with his own production systems. However, it was the chance to investigate dairy genomics that has really inspired him to further refine his own breeding program.

"I'm interested in breeding the most functional animals possible, not necessarily the ones that score the most highly in the breeding values – but the animals that have the traits I most need."

He says genomics is helping to identify which bulls will produce those traits in cows, through DNA testing which identifies genomic markers for specific traits such as milk production capacity, protein and fat content, and milking speed as well as physical conformation.

The Australian Dairy Herd Improvement Service has been calculating Australian Breeding Values (ABVs) since 1994. Mr Mumford says the commercialisation of genomic information will allow sought-after traits to be more accurately identified, more quickly and will provide greater access to the information for farmers.

It should also speed up the introduction of improved genetics into commercial herds, he says. It traditionally takes seven years for a bull to be able to prove its breeding worth, by the time it is born, matures and produces its own daughters, which then calve and begin milking.

"By looking at the bull's DNA, we will be able to identify new sires and begin introducing those genetics into commercial herds two or three years earlier." He says in Canada, there are three bulls, all full brothers, who were DNA tested to assess their value as sires. Despite their shared heritage, one was assessed as far superior, with genetic traits that could generate an additional average of \$300 from each animal he sired, which is above his expected parental average.

While travelling on his Nuffield scholarship he visited the Fleming family's Potterswells Jersey stud in Ireland, where among the herd was a cow that scored 96/100 on the international Jersey type scale for physical traits.

“There are only about four cows in the world that rank this highly. I also visited a Holstein herd in Canada, which, although small – only 124 cows – included 70 cows that had achieved scores of 90 points or more. It’s amazing to see animals of this quality in commercial herds.” The herd was housed and milked in barns, and while their breeding was impressive, Mr Mumford recognises that many of the traits that allowed them to score so highly may not prove functional in Australian conditions.

From a personal perspective, he says, every cow has to be able to pay her own way. “My cows must be able to walk long distances, they need high udders that won’t drag on the ground, they need a good body length and capacity, allowing them to eat more grass, and make more milk. It’s a total package.

“Every farmer has to choose cows that will meet their own needs. But there could be 400 to 500 litres difference during a cow’s lactations between the highest and lowest performing ABVs.” Mr Mumford says because the commercial use of genomics is relatively new in Australia the reliability of the information is not as good as it is overseas, but it will improve over time, and will improve the performance of the Australian dairy herd.

As a dairy farmer, Mr Mumford says leaving the farm for three months to undertake his Nuffield scholarship was one of the hardest things he had ever done.

“It’s been a remarkable experience and opened my eyes to the kind of external pressures on Australian agriculture, including the influences on the dairy pricing. No matter where we went, nobody appeared to be doing significantly better than Australian dairy farmers and each country had its own challenges, that they addressed in different ways,” Mr Mumford says.

“Some countries, for instance, have restrictions on herd size and land use that effectively prevents any expansion. We’re fortunate here that we have a lot more freedom to develop our businesses and access to the land to do it.”

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For more information contact Paul Mumford on 0438 890 222, email [mumfordpl@bigpond.com](mailto:mumfordpl@bigpond.com)

A high-resolution photograph of Mr Mumford can be downloaded from [www.coretext.com.au/communications\\_images.php](http://www.coretext.com.au/communications_images.php).

Please contact Catherine Norwood at Coretext Communications (03) 9670 1168, [cnorwood@coretext.com.au](mailto:cnorwood@coretext.com.au) if you have any problems accessing images.

Caption: Nuffield scholar Paul Mumford finds that breeding holds the key to improved dairy performance.