

New tool to fast-track genetic gain in sheep

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Experimental sheep at CSIRO's FD McMaster Laboratory, Armidale NSW.
Photo by: CSIRO

(PhysOrg.com) -- Scientists from CSIRO are part of an international team that today launched a new genomic tool which is set to transform the future selection and breeding of sheep around the world.

Called the Ovine SNP50 BeadChip, this cutting-edge tool will enable researchers to characterise the genetic variation at more than 50,000 Single Nucleotide Polymorphisms (SNP) in the sheep genome. This will help pinpoint the small genetic differences that produce a variety of commercially important traits in sheep such as improved growth rate, fertility, parasite resistance, and healthier meat products.

The research has been undertaken by the International Sheep Genomics Consortium (ISGC). This partnership of scientists and funding agencies is developing a range of publicly available genomic resources to help scientists find the genes and develop DNA markers associated with traits

critical to the sheep meat and wool industries in their countries.

Working in partnership with Illumina, Inc., a global company headquartered in San Diego California, the Ovine SNP50 BeadChip has today been made available to research groups.

According to ISGC Secretary and CSIRO Livestock Industries molecular geneticist Dr James Kijas, there has been extremely strong demand from scientists for the SNP chip.

“In Australia, the priority is to use the new tool to speed up the development of genetic markers which will fast-track genetic gain, providing major benefits for producers,” he said.

“In addition, scientists will use the chip to help unravel the process of sheep domestication and impact of selection. A major aim of the ISGC is to use the chip to collect data from over 60 breeds of sheep and their wild relatives. This will tell us a lot about the history of the species and reveal which parts of the genome have been under selection for economically important traits,” Dr Kijas said.

The initial sheep genome sequencing was performed in parallel at the Otago University, Dunedin, New Zealand and the Human Genome Sequencing Centre at the Baylor College of Medicine, Houston, Texas, with additional sequencing subsequently undertaken by Illumina. The genome assembly, SNP detection and selection of SNP was undertaken jointly by groups at AgResearch and CSIRO and used by Illumina to create the Ovine SNP50 BeadChip.

Provided by CSIRO

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