

McMEEKAN MEMORIAL AWARD 2003

John C. McEwan

John McEwan has been awarded the 2003 McMeekan Memorial Award in recognition of three major contributions that he has made to animal production in New Zealand over the past five years. These are: John's involvement in the establishment of Sheep Improvement Ltd (SIL), establishment of a world-class bioinformatics group within AgResearch, and his involvement in the establishment and continued development of the WormFEC service.



SIL is the national performance recording database for the sheep industry. It represents the coming together of a number of fragmented groups and aims to give the New Zealand sheep industry a solid footing for genetic improvement for years to come. The core of the performance evaluation software is SIL's "genetic engine". John not only designed the genetic engine in a framework ensuring that the various software functions were created in stand-alone easily-upgraded modules, but he also wrote a great deal of the computer code in the genetic engine itself. It is a real testament to his skills both as a software designer and programmer that the genetic engine has never let the SIL service down. The robustness has been thoroughly tested by a number of the Society's quantitative geneticists contracted to push the system to its limits, and so far it has never failed. It should also be noted that John has little formal tertiary education in mathematics, statistics or computing. John's background is in biochemistry and physiology, and his computing knowledge and programming skills are entirely self-taught.

No sooner was the SIL genetic engine up and running when AgResearch became deluged with a large number of gene sequences. Through alliances with the Victorian Institute of Agricultural Sciences and Genesis Research Ltd, hundreds of thousands of gene sequences were arriving at AgResearch from these two sources. Once again John showed his breadth of knowledge and skills by taking on the unenviable task of setting up a bioinformatics group at Invermay to process, annotate and analyse this mountain of sequence data to ensure that it became useful, easily accessible information for geneticists and molecular biologists. We are now in a situation where New Zealand has the largest expressed sequence tags (EST) databases for cattle, sheep and deer, with all EST's being annotated in a very comprehensive manner. As an example of how expert the group that John established has become, NZ is the only place outside the USA where ruminant EST's have been aligned to form contigs. In this way, John has identified over 10,000 gene variants in cattle, a number of which are likely to effect the production of beef and dairy

cattle, thus providing a very rich supply for future genomics studies in NZ cattle. The gene variant discovery systems set up by John and the bioinformatics group will be equally applicable to sheep, goats and deer. John continues to mentor the AgResearch bioinformatics group by attending its weekly meetings, although he is not now responsible for their management.

Aligned with the EST databases in the last year John has lead the charge to make sure that New Zealand plays its part in the ultimate genomics project, the sequencing of the bovine genome. Initially he pushed for the next best thing, a physical BAC map of the bovine genome, and we were all very pleasantly surprised that this initiative, which is virtually complete, pushed cattle to the front of the sequencing queue. At the recent meeting of the International Bovine BAC Mapping Consortium in January 2003, John was elected secretary. John, as its hard working secretary, deserves a lot of the credit for keeping the momentum going on this project, which should deliver us a bovine physical map of immense immediate value for NZ's livestock industries and allows the bovine genome to be sequenced cost effectively. John has also been appointed to the bovine genome sequencing advisory committee and has just returned from another meeting of this group and brings news that the completion date for the bovine genome has now been pushed forward by another year and we should expect a completed bovine genome sequence by October 2005.

John pioneered the breeding service WormFEC and during the past five years, and up until its recent integration into SIL, he has been heavily involved in calculating breeding values for parasite resistance. This has involved hundreds of hours each year (mainly in the small hours of the morning) meticulously checking data, debugging endless recording errors and data problems and producing user friendly reports. He has put a large effort into deriving economic values for host resistance to internal parasites. The desired gains index which he established and subsequently refined has become a key feature of genetic improvement in sheep. At least 10% of rams sold in New Zealand now come from flocks using the WormFEC selection service. In these days of increasing drench resistance it is clear that John showed great foresight in establishing this service

John maintains excellent links with the sheep breeding industry. During the past five years he has been appointed genetic consultant to the Texel Sire Referencing project where he has been responsible for the linking of approximately 30 Texel flocks. He is also contracted as genetic consultant to the Southern Central Perendale Group and has played a key role in the

continuing developments of the Apex Coopworth Sire Referencing Scheme and the Southern Romney Development group. His association with these groups has provided him with a platform to ensure that his research findings are taken up by key breeders for the benefit of the NZ sheep industry.

It is typical of John that his service to NZSAP in the late 1990s was also in the extension field through his role as newsletter editor and website manager. John's

sage advice to the steady stream of PhD students through Invermay over the years has been to aim to publish work that will still be referenced in 20 years time. John is as good as his word, and few would disagree that the impact of his current contribution to animal production will still be felt in another 20 years. For all these achievements John is surely a worthy recipient of the McMeekan Memorial Award

Allan Crawford and Neville Jopson