Genomics Applied to Livestock Breeding

Introduction and Practical Examples

EADGENE has organized a genomics' course for animal breeding industry. An inquiry among the Club of Interest in the Spring of 2005, showed that ca. 50 % of the Club of Interest members were interested in a one-day course on genomics for people in the breeding industry. The course offered took place on 19 October 2005 prior to the Industry – Academia days 2005 on Genetics and Genomics for Animal Health in Hinxton.

The course was divided into 'The Basics of Genomics in Breeding' (morning) and 'application of genomics in breeding' (afternoon).
In *'The Basics of Genomics in Breeding'* (Dr Cecilia Oram, Genesis Faraday) DNA, genes, SNP's and QTL's were explained in a clear way. This was illustrated by answering the questions: "How do SNP's and QTL relate to animal characteristics?" and "How can I use genetic tests to identify parents?"
The basics were explained with several examples, to be worked out interactively. The discussion around spontaneous questions completed the idea of the basics of genomics.
In the '*Application of Genomics in Breeding'* (Dr. Sandrine Lagarrigue, Dr. Pascale LeRoy and Dr. Madeleine Douaire, INRA) part of the course the usage of genomic tools of markers and QTL was discussed. This was done on the basis of 'linkage disequilibrium', 'use of QTL within and between populations', 'elements for detecting QTL', 'prospects' and 'parameters influencing the costs of a molecular diagnosis'. This part of the course put the basic knowledge about genomics into a breeding perspective and raised questions that lead to interesting discussions about the usefulness of genomics in breeding programmes including the exchange of information and knowledge.

At the end of the course the opinion of the participants was gathered by a survey. In general, the participants felt it to be a useful course for people with a breeding background. A lab or computer practical would add value as long as it was focused on applications.