INTERNATIONAL SOCIETY FOR ANIMAL GENETICS

ISAG Conference 2006, Porto Seguro, Brazil

Cattle Molecular Markers and Parentage Testing Workshop

The Cattle Molecular Markers and Parentage Testing (CMMPT) workshop was held on August 21st 2006, and focused on discussion of DNA typing results for the 2005-2006 comparison tests, future of identification with SNP and need for accreditation. Dr. Marie-Yvonne Boscher chaired this workshop which was attended by 86 participants.

Comparison test

The DNA Typing Comparison Test was organized by Dr Dianne Vankan (Australia). Blood samples were collected from 20 animals of Holstein, Angus, Wagyu, Jersey and Droughtmaster breeds and provided representatives of all genotypes for the following genetic tests: Citrullinaemia, BLAD, CVM, MSUD, Factor IX deficiency, Kappa Casein and red gene. DNA was obtained and 200µl aliquots at 40ng/µl per animal were sent to 66 participants. A large part of the workload involved in sending out the comparison test was the amount of time required for communicating with participants to get information that should have been on the consignment form but was either unreadable or incorrectly filled out. A detailed list of difficulties and suggestions for future improvement, including a re-design of the consignment form, was supplied to the ISAG secretary for the benefit of the next duty laboratory.
The computer work (data and comments compiling) was performed by (VHL-The Netherlands).
Results were sent to participants by email. Dr. Leanne van de Goor summarized and presented results at the workshop. 64 Reports were received from an unknown number of countries, because several participants have just registered as ISAG institutional member without a country code. At least 10 new labs participated to this test (10 to 25 due to the lack of lab code and numerical codes correlation).
76 markers were reported:
66 microsatellites (ranging from 1 to 64 labs per marker), Nine ISAG recommended microsatellite markers: BM1824, INRA23, BM2113, SPS115, ETH10, TGLA122, ETH225, TGLA126 and TGLA227 (from 62 to 64 labs), ETH3 and TGLA53 (from 40 labs), 29 markers reported by 2 to 16 labs and 26 markers reported by only one lab. Results, for markers widely used are quite consistent among laboratories. This good agreement is important considering the number of new participating labs.
For some markers a shift for the upper range alleles is noted, especially for ETH 225. It was recommended to sequence this allele and share the result through ISAG web site. Alan Guthrie proposed to include an ATCC sample for the next comparison test. He has the cells and he will extract the DNA and send the material to the labs.
Results of 10 genes (ranging from 1 to 9 labs per marker) Citrullinaemia, BLAD, CVM, MSUD, Factor IX deficiency, Kappa Casein and red gene were reported.
To facilitate future comparisons, it was recommended that laboratories report results of diagnostic tests in a genotype format, using preferably + for wild type (ex: +/cv for CVM carrier).
For the 2005-2006 comparison test, Dr. Maria Marcela Cerruti volunteered to serve as Duty Laboratory, as she does not do genotyping for genes, Labogena (France) and VHL (The Netherlands) will help her to choose the best range of alleles for the different possible genes. Dr. Luis Cancela volunteered to serve as the new Computer Lab.
Concerning ISAG membership number; in 2004 it was decided to create a membership number. Due to legal issues ISAG can not publish it in the website (even in the private area). Nevertheless, Andre Eggen can send, upon request, a list of ISAG members with theirs institutional number.

Advance in the use of SNPs for cattle identification

Marie-Yvonne Boscher introduces the discussion saying that cattle genome is sequenced and technologies are improving: SNPlex, illumina, Affimetrix... There is a need to think to the future and the perspective of a switch to

the use of SNP for cattle identification and parentage testing. Questions are, how many SNPs for a consistent and reliable test? What technologies to be used? At what price? When? How to manage the data bases?
As an example, a copy of an Italian paper was given to the audience: A new SNPs panel for cattle traceability. Dr. Eduardo Casas (USA) is using 25 SNPs using Mass technology, with good results. It was said that platforms for SNPs will be present soon on the market; the advantages will be the cost. Merial is using a hundred SNPs in a commercial use.
Nobody wanted to give a prevision on when changing the panel to SNPs will take place. Marcela works for a service lab in Argentina that has just changed to DNA. She's worried because she has just convinced her clients to move to DNA and in 5 years we'll probably move to SNPs. She will need to retype all the samples again with cost problems.
In conclusion, the community should think on this change and work for the best solutions in terms of number of SNPs, technology, data base… This should be done taking in account the different situations worldwide and the ISAG sprit. Laboratories already involved with SNPs are invited to share their experience on the ISAG web site.

Need for accreditation

A lot of clients and governments demand accreditation. This is done to increase the trust in the work done by laboratories involved in identification, parentage testing and gene testing. The comparison test is part of this process of confidence.
Marie-Yvonne Boscher presented, on behalf of Andrea Rosati, the ICAR position concerning accreditation. ICAR is the international committee for animal recording, www.icar.org. This organisation represents most of our clients. They have decided that the labs working for theirs members should have an accreditation. This process will begin by the end of this year. ICAR listed several requirements: Education and experience of supervisor and operators, procedures for data, storing, retrieving, procedure for sample handling, equipment and revisions, minimum of markers and their efficiency on breeds, participation and performance in national/international ring (comparison) tests, international certification (ISO 17025) and number of samples processed per year. A committee of experts appointed by ICAR will approve, require further information or reject submission (resubmission possible one year later).
For the attendant some of the requirements seem to set quite high standards. It will be suggested to ICAR to create a pre accreditation for the new labs not able to reach the minimum at the beginning.
Andre Eggen (secretary of ISAG) informed during the workshop that 1) After the ISAG conference each lab will receive a letter certifying that the lab participated to the test, 2) ISAG will help the members in order to get the accreditation. Cecilia Penedo thinks it would be interesting if ISAG create a kind of accreditation.
The link between the accreditation and ISAG could be the possibility for each laboratory to use its comparison test results for accreditation.
It was suggested to organise small tests frequently, but even if this seems more efficient, this kind of test is quite hard to organise and nobody would volunteer.

Election of standing committee

The workshop was concluded with the election of the new members of the Standing Committee. Two members of the Standing Committee stepped down: Kimura Hirohisa and Marie-Yvonne Boscher And two new members were elected: Cecilia Penedo and Lean van de Goor.
The new committee is composed of: Elena Genzini, Luis Cancela, John Flynn, Dianne Vankan, Cecilia Penedo; Maria Marcela Cerruti will be part of the committee as duty lab. Leanne van de Goor (info@vhlgenetics.com) was elected as the new Chairperson.