



ISAG Conference 2008, Amsterdam, The Netherlands
**Equine Genetics and Parentage Testing Standardization
Workshop**

Chair: **Alan Guthrie**, South Africa

1. Welcome

The Chair welcomed participants and fixed the agenda for the afternoon.

2. Information from the Executive Committee

Cecilia Penedo provided information from the Executive Committee requesting that the Standing Committee consider proposing a "Rating System" for the Horse Comparison Test and considers the implications of using SNP's for horse parentage testing and the possibility of introducing a Comparison Test for SNP's for horses. Cecilia indicated that ISAG would issue certificates to all laboratories that participated in the 2007/2008 Horse Comparison Test. Furthermore, Cecilia indicated that, if accepted, these certificates would include an indication of the laboratories performance in the Comparison Test in future.

3. 2007/2008 Horse Comparison Test

a. Duty Laboratory Report - Romy Morrin-O'Donnell (Weatherby's Laboratory, Ireland).

A total of 75 Laboratories participated in the 2007/2008 Horse Comparison test. The horse comparison test again attracted more participants than any other comparison test with approximately 60% of ISAG's 127 Institutional Members partaking in the Horse Comparison Test. It was noted that a number of laboratories did not use their new 8 digit numerical laboratory code when communicating with the Duty Laboratory or when reporting their results. Laboratories were asked to ensure that the correct codes were used in all future correspondence.

Besides the usual communication and administrative problems Romy reported that the Comparison Test was relatively easily managed. A number of laboratories claimed that they did not receive official notification of the Comparison Test. All laboratories are reminded that it is their duty to ensure that they register to participate in the comparison test and that it is the Duty Laboratories responsibility to supply the materials for them to do so.

b. Data Analysis Laboratory Report - Lee Millon's (Veterinary Genetics Laboratory, Davis, USA) report was presented by Cecilia Penedo.



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The Data Laboratory was thanked for the preparation of a comprehensive report which was circulated to all participants prior to the comparison test. The overall performance of the majority of laboratories remained excellent. A number of laboratories, particularly those using proprietary kits continue to have problems with the HTG10 and HMS3 markers. A summary of the performance of laboratories using the proposed scoring system for the Horse Comparison Tests is provided below.

c. Proposed Scoring System for ISAG Horse Comparison Tests

The following was proposed as a scoring system for the Horse Comparison Test:

- i. Genotype Error at locus for Sample (Ge) = One or both alleles incorrectly reported or not reported
- ii. Number of Genotypes (Ng) = Number of Samples x Number of Markers
- iii. Genotyping Accuracy for ISAG Markers = $(Ng - Ge) / Ng$ (As Percentage)

The following Motion was proposed and adopted:

ISAG Equine Genetics and Parentage Testing Workshop proposes the use of Genotyping Accuracy” as the rating system for horse genotyping

Overall performance of Laboratories in 2007/2008 Horse Comparison test.

A total of 19 of the 75 participating laboratories (25.3%) had a genotyping accuracy of 100% in the Comparison Test. A further 15 laboratories had a genotyping accuracy of above 98%. A total of 41 laboratories (54.7%) had genotyping accuracies of less than 98%. In most cases these genotyping errors occurred in the markers HTG10 and HMS3.

4. 2009/2010 Horse Comparison Test

a. Duty Laboratory

The Australian Equine Genetics Research Centre Laboratory at the University of Queensland, Australia, will serve as the Duty Laboratory for the 2009/2010 Horse Comparison Test. Dr Anne Tresize will be the responsible person.

b. Data Analysis Laboratory



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The Veterinary Genetics Laboratory at the University of California, Davis, USA, will serve as the Data Analysis Laboratory for the 2009/2010 Horse Comparison Test. Lee Millon will be the responsible person.

5. Increase in the number of ISAG Markers in the Standard Horse Genotyping Test

The current ISAG Horse Panel incorporates a set of 9 markers and whilst this is probably sufficient for individual identification it is possibly not sufficient for parentage testing. International translocation of pregnant mares and shipment of semen are common and one often has to rely on an “Imported Profile” of sire for parentage verification. It was proposed that 3 additional markers be considered from ASB17, ASB23, (LEX3), HTG6, HTG7, HMS2, HMS1 and CA425. The final choice of which 3 should be further investigated will be based on criteria including PIC, PE, ease of use and calling and the mutation rate and will be communicated to all Laboratories by 1 Jan 2009. All laboratories will be required to provide data on these markers in the 2009/2010 Comparison Test.

The following Motion was proposed and adopted:

The number of core markers in the ISAG Horse Panel is increased from 9 to 12 with the choice of 3 markers from ASB17, ASB23, (LEX3), HTG6, HTG7, HMS2, HMS1 and CA425.

6. DNA Testing of Thoroughbred Horses for Registries Affiliated with the International Stud Book Committee

It was noted that according to the International Agreement of the International Federation of Horse Racing Authorities the following is required for Laboratories that perform genotyping on behalf of recognised Studbooks:

- a. Laboratories must be designated by Stud Book in the Country
- b. Laboratories must be Institutional Members of ISAG
- c. Laboratories must perform to the satisfaction of ISBC in Comparison Tests

The term “perform to the satisfaction of ISBC” is not currently defined and as the Workshop was representative of Horse Genotyping Laboratories it was asked to provide guidance on what is satisfactory performance in a Comparison Test.

The following Motion was proposed and adopted:



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A Genotyping Accuracy of in excess of 98% is considered to be “Satisfactory Performance for Laboratories performing testing on behalf of the ISBC” in the horse comparison test.

This proposal will obviously need to be ratified by ISBC.

7. International DNA Certificates

It was noted that Certificates of genotypes of horses were being issued that did not include data for all the markers in the ISAG Recommended Horse Panel. Furthermore, in some cases, the laboratory that performed the genotyping was not identified.

The following Motion was proposed and adopted:

ISAG International DNA Certificates issued by laboratories must include the ISAG laboratory code of the laboratory that performed the genotyping and must include full profiles for all markers in the ISAG Recommended Horse Panel.

8. Blood Typing of Horses

The following Motion was proposed and adopted:

Blood typing of horses is no longer considered an ISAG standard for individual identification or parentage verification of horses

9. STR's vs SNP's in Horse Parentage Testing

Dr Teruaki Tozaki presented data on a study that has been completed by the Laboratory for Racing Chemistry in Japan comparing the use of STR's and SNP's for parentage verification of Thoroughbred horses. From the data presented and the general discussion that followed it was concluded that at present there was no reason to consider replacement of STR's with SNP's for parentage verification of horses.

At the previous meeting of the Workshop in Brazil was decided that a committee should be formed to investigate various aspects of SNP typing. The committee comprised Gus Cothran, Wim van Haeringen, Cecilia Penedo, Ernie Bailey and Mikko Koskinen . This committee will be asked to prepare a report for presentation at the 2010 Workshop.

10. Horse Coat Colour Testing and Nomenclature

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Laboratories are encouraged to apply coat colour (and other) tests to Comparison Test samples and to report the results. These results should be reported using standard nomenclature. It was noted that the Duty Laboratory was not obliged to include specific examples in the Comparison Test. Furthermore, laboratories performing these tests should obtain reference samples should be obtained from traceable source.

11. Election of Standing Committee

As all members of the Standing Committee had only served two years of their four year terms of office there was no election held.

The Standing Committee is:

Alan Guthrie (*Chair*)

Lee Millon

Anne Trezise

Sofia Mikko

Romy Morran-O'Donnell

Hitoshi Gawahara

12. Any other matters

There being no other business to discuss the meeting was closed at 17h25.