



ISAG Conference 2008, Amsterdam, The Netherlands
Applied Genetics of Companion Animals Workshop

Chairs: **Cats** - **Leslie Lyons**, Dept of Population Health & Reproduction, School of Veterinary Medicine, University of California, Davis, USA.
Dogs - **Cindy Harper**, University of Pretoria, South Africa.

As introduction to the WS, Cecilia Penedo (UC Davis VGL) presented on behalf of the ISAG Executive Committee :

ISAG wishes to develop a rating method for the comparison tests and standardize formats for DNA distribution and data reporting. The workshop was asked to discuss what the minimal markers would be for “certification” of performance in comparison tests and the rating method. Discussion can continue via e-mail to the committee chairs. Dr. Penedo commented that ratings and certifications are becoming desired by registries thus ISAG is attempting to respond to these requests. Each workshop should share their DNA distribution and reporting formats to help develop a standard format for all animal comparison tests.

Applied Genetics of Cats

Comparison Test 2007-2008

- Duty Laboratory Report – Leslie Lyons
- Data Laboratory Report – Leslie Lyons

- General Discussion

Current panel of markers, ease of scoring, effectiveness and problems in various breeds and continued use in the current form

Overall, the markers performed very well. Difficulties were experienced using buccal swabs and performing gender markers should be encouraged. Gender markers may need to be redesigned to balance allele amplification.

Additional markers should be explored, expanding the core of 9 microsatellites. The UC Davis VGL uses the original 10 published as well as additional markers that were provided in earlier comparison tests. The VHL uses the original 10 published cat microsatellites. The workshop chair will interact with the VGL to select the most informative markers for the suggested addition to the core and for addition for the next comparison test.



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Use of SNP analysis in cat parentage, current status and future prospects for service laboratories

The Lyons laboratory at UC Davis is exploring ~ 300 SNPs for parentage testing. Additional SNPs have been published by Menotti-Raymond *et al*, Genomics 2008. A collaboration between Hill's and the NHGRI should be announcing the results of a large SNP study in one individual of six different breeds.

Summary of genetic tests available for the cat

Most labs perform PKD, HCM and blood type testing for the cat. Several color tests, such as agouti and dilution, are indels that can be genotyped as size variants along with microsatellites. These disease and color tests will be included in the next cat comparison test.

Comparison Test 2009-2010

Cat Duty Lab – Tirri Niini – Finland

Cat Analysis Lab – UC Davis VGL

Applied Genetics of Dogs

Comparison Test 2007-2008

- Duty Laboratory Report – Giovanna Perrotta (*Laboratories must supply courier details and account numbers with the request for CT sample sets*).

- Data Laboratory Report – Cindy Harper

All Laboratories used the instructions for reporting and Excel formats as requested and this made the analysis much simpler

Number of Laboratories that submitted results: **40**

Number of Markers reported by laboratories; Lowest number reported: 3, Highest number reported: 28, Average number reported: 19

Average Concordance over all standard markers (21) = 87% that suggests that the current standard marker set is easy to use and gives consistent results in a variety of laboratory conditions.

- Tetra Forensic Panel UC Davis: use in individual and parentage testing of dogs – Beth Wictum



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- General Discussion:

Current panel of markers, ease, effectiveness and problems in various breeds and continued use in the current form

A suggestion was made to drop INRA21 from the general testing panel since a chromosomal duplication has been found in specific breeds such as the Labrador Retrievers, German Shorthaired Pointers, Flat coated Retrievers and English Setters. Laboratories that want to continue using this marker must be aware of this and adapt their analysis or avoid reporting this marker in certificates of the affected breeds.

Reference:

Onogi, et al. (2008) A chromosomal duplication that includes the canine microsatellite INRA21 in Labrador Retrievers. *Anim Genet* (39;3)

Additional markers required for parentage testing as a result of the high level of inbreeding in certain dog breeds. Several laboratories use more than the 21 recommended + amelogenin for parentage testing.

Several laboratories use the Finnzymes kit for testing of dogs and this contains 18 markers. Recommendation that this is increased to the 21 markers + amelogenin.

A minimum standard set must be defined for international certification for dogs and dog semen that are exported. Additional markers for testing of single or non-exclusion cases should be determined. The tetra-forensic panels produced by UC Davis would be useful for such additional testing, but the availability as kits or publication of the data is not known yet.

Use of SNP analysis in dog parentage, current status and future prospects for service laboratories must be investigated and reported.

Comparison Test 2009-2010

Dog Duty Lab – Giovanna Perrota – Italy

Dog Analysis Lab – South Africa (Cindy Harper)

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Other business

Laboratory must be institutional members of ISAG to participate in the comparison tests. This is a standing rule and needs to be enforced. Laboratories must be careful to submit the institution membership ID for the comparison tests and not their personal membership ID.

Volunteers were accepted to be the duty and data analysis laboratories.

Cat Duty Lab – Tirri Niini – Finland

Cat Analysis Lab – UC Davis VGL

Dog Duty Lab – Giovanna Perrota – Italy

Dog Analysis Lab – South Africa (Cindy Harper)

Election of Committee

All committee members were appointed in 2004 thus can stand for another 2 years. Allison Ruhe was not present to confirm her continued service. Susan Dileanis from the UC Davis, Veterinary Genetics Laboratory was voted to the committee.