

Applied Genetics in Companion Animals

Organized by a Standing Committee: YES

Meeting information

Date: 5 July 2023
Time: 8:30
Number of participants: ~90

Chair

Name: Peter Dovč
Affiliation: University of Ljubljana, Slovenia
Contact email: Peter.Dovc@bf.uni-lj.si

Co-Chair (optional)

Name: Jiansheng Qiu
Affiliation: Neogen Genomics
Contact email: jqiu@neogen.com

Agenda

8:30 AM – 9:00 AM	89949 Invited Workshop Presentation: Using dog genomic resources in Museomics: an assessment of dog introgression into the Iberian wolf genome. Raquel Godinho*, <i>CIBIO-InBIO, Universidade do Porto, Campus de Vairao, Vairao, Portugal.</i>
9:00 AM – 9:15 AM	89441 Obligatory testing in dogs: input from breeders and organizations. Evy Beckers*, Nadine Buys, and Steven Janssens, <i>Center for Animal Breeding and Genetics, KU Leuven, Leuven, Belgium.</i>
9:15 AM – 9:30 AM	89811 AgriseqPI 1.0: Reporting utility for SNP based parentage determination with Targeted Genotyping by Sequencing panels. Srinivas Chadaram* ¹ , Angela Burrell ¹ , Krishna Reddy Gujjula ¹ , Claudio Carrasco ¹ , Stephane Daly ³ , Srinivas Udumudi ² , Nikhil Anjuri ² , Venkata Harini Kema ² , and Anuradha Udumudi ² , ¹ <i>Thermo Fisher Scientific, Austin, Texas, USA</i> , ² <i>ATS GeneTech Pvt, Ltd, Hyderabad, Telangana, India</i> , ³ <i>Thermo Fisher Scientific, Lissieu, Lyon, France.</i>
9:30 AM – 9:55 AM	Cat Comparison Test.

9:55 AM – 10:20 AM	Dog Comparison Test.
10:20 AM – 10:30 AM	Workshop Business Meeting and Elections.

Summary of the meeting

1. A short Introduction to 2023 cat and dog Comparison Test was given by Peter Dovc, University of Ljubljana, Slovenia. In the 2023 Comparison test 23 laboratories submitted STR and 19 SNP results for cat. In the cat CT only two STR markers (FCA453 and FCA649) were reported with accuracy lower than 95%. Four laboratories reported extra SNP markers. For dog reported 74 laboratories STR results and 26 laboratories SNP results. In dogs were STR markers with accuracy lower than 95% INRA21 and REN105LO3. Results for both dog SNP panels (Panel 1 with 114 and Panel 2 with 118 markers) were reported by 26 laboratories. The committee decided that, given the issues with a few samples, the Dog SNP participants will be issued a certificate of participation without ranking.

Absolute genotyping Accuracy Cat				Absolute genotyping Accuracy Dog			
STR		SNP		STR		SNP	
100 – 98%	17	100 – 98%	20	100 – 98%	60	100 – 98%	8
98 – 95%	5	98 – 95%	2	98 – 95%	4	98 – 95%	8
95 – 90%	1	95 – 90%	0	95 – 90%	3	95 – 90%	4
90 – 80%	0	90 – 80%	0	90 – 80%	4	90 – 80%	3
Below 80%	0	Below 80%	1	Below 80%	3	Below 80%	3

Table: Rating of the Cat and Dog 2023 CT results

Feline ISAG Comparison test 2023 was presented by **Robert Grahn** from the Duty lab 2023, Veterinary Genetic Laboratory, UC Davis.

For the feline Comparison test 38 sample sets were shipped, 15 for STR, 14 for SNP and 9 for both types of analysis. For the STR analysis 23 out of 24 laboratories submitted results and for the SNP analysis 19 out of 23 laboratories returned results. Laboratories from 22 countries participated (Australia, Belgium, China, Croatia, Czech Republic, Denmark, Germany, Spain, France, India, Italy, Japan, New Zealand, Poland, Portugal, Republic of Korea, Scotland, South Africa, The Netherlands, United Arab Emirates, United



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States of America), which is 64% more than in the last Feline Comparison test. Some differences in sample documentation required were noticed among laboratories and countries, therefore there was the proposal that each participating lab should fill their own import forms in order to meet exactly the requirements of different countries.

The Comparison test sample set was composed of 22 tissue samples (testes/ovaries/blood) from five cat breeds (Bengal, Persian, Maine Coon, Bengal x Persian/Bengal, Himalayan) and six random bred animals. The samples were shipped as 50ul aliquots with concentration of DNA between 22 and 34 ng/ul. Two individuals in the set had parent offspring relationship and two were siblings.

Four out of 23 participating labs in STR Comparison test submitted 100% correct results (17.4%) and four (17.4%) had one discordant marker. Three markers were reported with 100% accuracy, 95 calls did not match consensus and 41 were not shared errors.

Canine ISAG Comparison test 2023 was presented by **George Sofronidis** from the Duty lab 2023, Orivet, St Kilda, Australia

For the Dog Comparison Test 2023 there were 95 requests for samples, splitted in three categories:

- 14 requests for SNP only (14.7%)
- 26 requests for SNP and STR (27.4%)
- 55 requests for STR only (57.9%).

From the Duty lab 22 samples were prepared for 95 requests for Canine CT, the same samples were also sent to 23 laboratories, which requested samples for Forensic Comparison test. So Duty lab shipped 2,596 individual DNA samples as dried DNA on 118 microtiter plates to participating laboratories in 13 countries. The most requests for Canine CT samples were sent from Italy (12), Germany and Spain (9 requests each), and United States and France (9 requests each).

The overall result return rate was 85% (121 sets of samples were shipped and results from 103 laboratories were received). The return rate was higher for the STR test, 77 out from 81 laboratories returned the results (95%), for the SNP only 26 out of 40 laboratories returned SNP results (65%).

In addition to the genotype data, the answers to six text questions were formulated, five of them were focused on parentage testing and one on the ability to identify the duplicated sample in the set. The success rate for four questions was 100% of submitted answers, one parentage question and the question about the identification of duplicated sample were a bit lower (96 and 92 %, respectively).

The general conclusion could be that STR genotyping did not present a problem for the majority of participating labs. The success rate in SNP part of the text was a bit lower, sometimes related to the amount and quality of the shipped DNA, according to the comments of participating labs. There were identified some problems with the shipping service and maybe it should be considered to look for the alternative. Also a question was posted whether the duty lab duties could be shared among laboratories.

Business Meeting

The committee has proposed LABOKLIN lab from Germany and Veterinary Genetics Laboratory, UC Davis as duty labs for the 2024-2025 Dog/Cat CTs, respectively and the approval from ISAG Executive Committee is pending.

New Committee chair

Chair: Peter Dovc
Term of service: 2 nd , 2021-2025
Affiliation: University of Ljubljana, Biotechnical Faculty, Ljubljana, Slovenia
E-mail address: peter.dovc@bf.uni-lj.si
Co-Chair: Jiansheng Qiu
Term of service: 2 nd , 2021-2025
Affiliation: Neogen Genomics
E-mail address: JQiu@neogen.com

New Committee members

Other committee members	First term of service	Second term of service	Email address
Hubert Bauer	2019-2023	2023-2027	bauer@laboklin.com
Nuket Bilgen	2017-2021	2021-2025	nbilgen@ankara.edu.tr
Robert Grahn	2019-2023	2023-2027	ragrahn@ucdavis.edu
George Sofronidis	2019-2023	2023-2027	george@orivet.com
Leanne Van De Goor	2017-2021	2021-2025	leanne.vandegoor@vhlgenetics.com
Leslie Lyons		Ex Officio	lyonsla@missouri.edu

SIGNATURES

Chair

Duty laboratory