SHORT TERM FELLOWSHIPS OF THE INTERNATION SOCIETY OF FORENSIC GENETICS

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Hosting Laboratory: Institute of Legal Medicine (GMI), Innsbruck, Austria

Length: 12-16 November 2018

The participation to the Short-Term Fellowships Programme of the International Society of Forensic Science (ISFG) allowed me to spend a week at the GMI laboratory in Innsbruck as part of my PhD research development.

My visit at the GMI institute had several goals. The first one was to discuss mitochondrial DNA approaches for canine samples. The head of the unit, Prof. Parsons, and I discussed the basis of the online database EMPOP used for human mitochondrial haplotype designation and how a similar tool could be helpful in the identification of canine's breeds for forensic purposes. On this note, we also discussed about the method needed for the analysis of poor quality and/or degraded animal specimens.

Prior the visit, I expanded my categorisation of breeds from the 7 larger breeding groups, according to the UK Kennel club, to a more detailed classification of 87 breeds based on the dog breed naming. Out of the 188 samples available in the KCL database I selected 175 to carry with me in Innsbruck for further analysis.

A second goal was to start working on the identification of canine STRs markers. At the GMI institute the panel in use for canine DNA is the CaDNAP panel optimised in 2014 [1]. Combined with the statistical analysis software 'STRUCTURE', this panel was recently used for the assignment of canine breeding groups with successful results [2]. With the invaluable help of the PhD student at GMI Josephine Heinrich, I analysed all 175 samples for the 13 STRs markers included in the CaDNAP panel and obtained full profiles for 170 samples.

During my visit I was also trained by Dr. Cordula Berger in the use of STRUCTURE and I was able to successfully differentiate between the three largest breeding groups in my dataset, Boxer, Golden Retriever and Labrador Retriever. The use of this type of analysis can be further implemented both in my PhD research and future career.

A third aspect discussed was the sample collection method and the type of information that can be relevant for the development of a forensic canine database. Furthermore, the need to obtain more samples to improve the representation of breeds in the KCL database was discussed.

A final point that was discussed was my participation to the ISFG-CaDNAP working group. With the inclusion of non-german speaking members, such as myself, this group aims to encourage research on non-human DNA across the forensic community. Furthermore, I was invited to present my work at the ISFG-CaDNAP working group session during the next ISFG meeting that will take place in Prague in September 2019.

Overall, my visit at the Innsbruck laboratory at GMI was a very productive experience and an excellent opportunity for networking. Prof. Walther Parson and his team were very helpful

and welcoming throughout the week, and a number of informative meetings were held to facilitate the discussion and promote the future collaboration between our groups.

1.   Berger, B., et al., *Validation of two canine STR multiplex-assays following the ISFG recommendations for non-human DNA analysis.* Forensic Sci Int Genet, 2014. **8**(1): p. 90-100.
2.   Burkhard Berger, C.B., Josephin Heinrich, Harald Niederstätter, Werner Hecht, Andreas Hellmann, Udo Rohleder, Uwe Schleenbecker, Nadja Morf, Ana Freire-Aradas, Dennis McNevin, Christopher Phillips, Walther Parson, *Dog breed affiliation with a forensically validated canine STR set.* 2018.