B108 Cat or Dog Hair?—The Root of the Problem

Agnieszka Janusz, BSc, Forensic Science Centre, 21, Divett Place, Adelaide, 5000, Australia; Silvana Tridico, BSc, Centre of Forensic Sciences, 25 Grosvenor Street, Toronto, ON M7A 2G8, Canada*

After attending this presentation, attendees will learn that the differentiation between cat and dog hairs based solely on the appearance of a spade-shaped root, cited in standard texts as being a characteristic of dog hairs, may lead to an erroneous identification.

The presentation will demonstrate that the identification of putative cat or dog hairs based solely on the appearance of a spade shaped root may result in an erroneous identification.

This poster will present results of a study conducted at the Forensic Science Centre, which shows that cat hairs may possess spade shaped roots comparable to the ones typically found on dog hairs. The differentiation between the spade shaped roots of these two animal species may be made on the basis of their lengths.

The present study was initiated as a result of findings during the examination of a large number of animal hairs related to a double homicide case in Adelaide, South Australia. During the microscopic examination of these hairs the author identified the majority of the hairs as being dog in origin. However, during the course of the examination a few animal hairs although bearing spade shaped roots exhibited other features characteristic of cat hairs. The spade shaped roots on the putative cat hairs were significantly shorter than the spade shaped roots on the hairs identified as originating from a dog. This finding prompted the author to conduct a preliminary study to determine whether cat hairs possessed spade shaped roots and if so, to measure the lengths.

Guard hairs from 21 dogs and 20 cats were collected by grooming an animal, either by hand or with a brush, along the entire length of its back. Some smaller breeds of dogs were deliberately chosen in addition to larger ones in order to determine if the spade root characteristic lengths varied with the size of breed.

Guard hairs were chosen because these hairs exhibit characteristics that are the most useful in identifying the animal of possible origin. No attempt was made to differentiate between hairs from different parts of the body, as the forensic scientist is not usually concerned from which part of an animal's body a particular hair originated.

Ten hairs were selected at random from each sample, resulting in a total of 411 hairs (199 hairs from cats and 212 from dogs). The unequal number of hairs for each animal was due to some of the hairs not bearing roots. Each of the ten hairs was individually mounted in XAM mounting medium, on labeled microscope slides. The roots were examined on a compound, transmitted light microscope capable of up to 400x magnification. The shapes of each root and their lengths were noted. The lengths were determined in microns using an eyepiece graticule calibrated according to the manufacturer's instructions.

The examination of the cat hairs revealed that approximately 30% of the hairs examined exhibited a spade root comparable to the ones seen on the dog hairs. The spade-shaped cat hair roots were not limited to any particular breed of cat. The most significant difference between the spade roots of the two genera was length. The average length of the cat spade roots was approximately 200 microns, whilst those of the dog spade roots were approximately 500 microns. An overlap region of 260320 microns occurred between the respective roots of the animals.

The results of this study highlight that whilst the standard works serve as excellent guidelines to the identification of animal hairs it is crucial that the hair examiner be aware that they are not definitive or exhaustive works. The results of the study indicate that if the determination on whether a putative hair is of cat or dog origin is based solely on the appearance of a spade root an erroneous identification may be made.

Spade-Shaped Root, Forensic Animal Hair Analysis, Animal Hair

 ** Presenting Author*