

Cat-ching criminals with DNA from pet hairs

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Mr Win, whose hair DNA identified his missing mother. Credit: Jane Elliot

Cat hair could be the purr-fect way to catch criminals, according to researchers from the University of Leicester. They have shown that a single cat hair contains DNA which could link a suspect and a crime-scene, or a victim.

Around 26 percent of UK householders own a cat and with the average feline shedding thousands of hairs annually, it's inevitable that once you leave, you'll bear evidence of the furry resident. This is potentially useful in the forensic investigation of criminal activity.

While a human perpetrator may take pains not to leave their own DNA behind, transferred cat hair contains its own DNA that could provide a link between a suspect and a crime-scene, or a victim.

In a paper published in the journal *Forensic Science International: Genetics* earlier this month, researchers at the University of Leicester describe a sensitive method that can extract maximum DNA information from just one cat hair.

Emily Patterson, the lead author of the study and a Leicester Ph.D. student, said, "Hair shed by your cat lacks the hair root, so it contains very little useable DNA. In practice we can only analyze mitochondrial DNA, which is passed from mothers to their offspring, and is shared among maternally related cats."

This means that hair DNA cannot individually identify a cat, making it essential to maximize information in a forensic test.

However, a new method identified by the researchers enabled them to determine the sequence of the entire mitochondrial DNA, ensuring it is around ten times more discriminating than a previously used technique which looked at only a short fragment.

Dr. Jon Wetton, from the University's Department of Genetics & Genome Biology, co-led the study.

He said, "In a previous murder case we applied the earlier technique but were fortunate that the suspect's cat had an uncommon mitochondrial variant, as most cat lineages couldn't be distinguished from each other. But with our new approach virtually every cat has a rare DNA type and so the test will almost certainly be informative if hairs are found."

The team tested the method in a lost cat case, where DNA from skeletal remains of a missing female cat could be matched with DNA from hair from her surviving [male offspring](#).

Study co-lead, Professor of Genetics, Mark Jobling, added, "In criminal cases where there is no human DNA available to test, pet [hair](#) is a valuable source of linking evidence, and our method makes it much more powerful. The same approach could also be applied to other species—in particular, dogs."

More information: Emily C. Patterson et al, Defining cat mitogenome variation and accounting for numts via multiplex amplification and Nanopore sequencing, *Forensic Science International: Genetics* (2023). [DOI: 10.1016/j.fsigen.2023.102944](https://doi.org/10.1016/j.fsigen.2023.102944)

Provided by University of Leicester

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