Better DNA hair analysis for catching criminals

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A simple, lower-cost new method for DNA profiling of human hairs developed by the University of Adelaide should improve opportunities to link criminals to serious crimes.

The researchers have modified existing laboratory methods and been able to produce accurate DNA profiles from trace amounts at a much higher success rate.

"Technological advancements over the last 10 years have allowed police and forensic scientists to profile crime-scene DNA from ever smaller and more challenging samples collected from fingerprints, skin cells, saliva and hairs," says Associate Professor Jeremy Austin, Deputy Director with the University's Australian Centre for Ancient DNA.

"DNA profiling of human hairs is critical to solving many serious crimes but most hairs found at crime scenes contain very little DNA because it has been severely dehydrated as part of the hair growth process. This makes DNA testing of hairs a real challenge."

Through an Australian Research Council (ARC) Linkage Project , the researchers, in collaboration with colleagues at the University of Canberra, set out to develop a new method that could produce better results, published in the journal *Forensic Science, Medicine and Pathology*.

University of Adelaide post-graduate student Janette Edson carried out

the detailed genetic analysis of hundreds of shed human hairs collected from volunteer donors.

"Existing methods to obtain and interpret DNA profiles from shed human hairs are expensive and often unsuccessful," says Associate Professor Austin, who leads the advanced human forensic identification program at the University of Adelaide.

"Our research shows that we can retrieve DNA profiles from shed human hairs that contain trace amounts of DNA without compromising the accuracy of our results. Previous methods required specialist and expensive laboratories."

Lead-author Assistant Professor Dennis McNevin, from the University of Canberra, says: "Our simple modifications will allow this trace DNA to be analysed in a standard forensic laboratory with improved success rates of DNA profiling and without increased error rates.

"This is very important in forensic science as false positive results can lead to incorrect identifications and poor outcomes in the judicial system."

Provided by University of Adelaide

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