



## Touch DNA Evidence

As forensic DNA technology has become a common tool in criminal investigations, scientists have attempted to obtain DNA evidence from what were once considered unlikely sources. “Touch DNA” refers to the DNA that is left behind from skin cells when a person touches or comes into contact with an item.

Humans shed tens of thousands of skin cells each day, and these cells are transferred to every surface our skin contacts. When a crime is committed, if the perpetrator deposits a sufficient number of skin cells on an item at the scene, and that item is collected as possible evidence, touch DNA analysis may be able to link the perpetrator to the crime scene. Touch DNA has been successfully sampled from countless items including gun grips, steering wheels, eating utensils, and luggage handles, just to name a few.

However, since Touch DNA is usually deposited in smaller amounts than the DNA found in bloodstains or other body fluids, it is more difficult to obtain DNA profiles from touch DNA samples. The key to obtaining successful Touch DNA results depends on recognizing items which may be suitable for Touch DNA analysis and using the sampling technique that will recover the highest number of skin cells.

Many labs test for Touch DNA using either the swabbing or cutting method. In the “swabbing method”, the surface of the item is rubbed with a cotton swab to collect possible cells. This method is preferred for hard items such as glass or plastic. The “cutting method” may be used for soft items, such as clothing, in which fabric from areas of interest is cut to collect possible cells. These two approaches can be successful on many items of evidence and both are used by Bode Technology; however they both have the limitation of placing unnecessary substrate (the cotton swab itself or the fabric cuttings) into the small DNA processing tube. There is a limited amount of substrate that can be placed in a tube, and the substrate itself may “trap” some cells during processing, which would decrease the likelihood of obtaining results.

In addition to the commonly used swabbing and cutting methods, Bode has recently started using the “scraping method”, in which the surface of soft items (such as clothing) is scraped with a blade to collect possible cells. Due to the lack of unnecessary substrate generated by this method (scraping produces a small “pile” of fiber, cells, and debris that can easily be placed in the DNA processing tube), a larger surface area can be sampled. An increase in surface area increases the number of possible cells recovered; therefore, increasing the chances of obtaining a DNA profile.

The scraping method is ideal in situations where the scientist can locate areas on the item which are most likely to contain the perpetrator’s skin cells. If clothing were left at the crime scene by the perpetrator, pressure points on the clothing such as the interior neck of a shirt or the band inside a hat, are excellent candidates for the scraping method. In addition, in a sexual assault case in which the victim’s clothing had been removed by the perpetrator, areas such as the waistband may contain sufficient cells belonging to the perpetrator to produce a profile.

Through improvements in sampling methods corresponding to increasingly sensitive DNA testing methods, and through continual education of the criminal justice community regarding the testing possibilities, Touch DNA is enabling forensic scientists to provide information in cases which were once unsolvable.

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