DNA Sweep Must Be Accompanied by Informed Consent

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January 20, 2005
Reprinted from the Provincetown Banner

"an older man who hobbles painstakingly, seemed amused that anyone would think he could be a match [to the DNA found on the body of Christa Worthington]. "I can barely make it to the car," [he] said. NYT, Jan 10, 2005

Sampling DNA from an elderly hobbling man would hardly seem an effective way to solve the murder of Christa Worthington. But the trail is cold and this is just what happened last week in Truro, MA when the DNA dragnet began - with police asking all local males to "volunteer" a DNA sample for comparison to crime scene evidence.

While traditional DNA sweeps have had little success in directly identifying perpetrators, an important new twist on traditional methods, known as familial searching, could cast the net much wider by "shaking the family tree" to include the hobbled man’s relatives as well. Informed consent must be embedded in such practices. Public scrutiny is urgently needed.

Familial searching involves the comparison of crime scene DNA profiles to those of known suspects for close, but not perfect, matches. Familial searching has been successful in solving serious crimes even when no direct DNA match was found - by shaking the family tree for indirect identification of the perpetrator through a close relative whose DNA profile was already stored in a database of convicted offenders. Thus those Truro volunteers who are excluded themselves by DNA testing might be providing important genetic clues implicating their close family members.

Traditional DNA dragnets have had little success, as true perpetrators usually don’t rush forward to volunteer a blood or cheek swab sample for comparison to crime scene evidence. Thus, sampling from elderly hobbling men in Truro would, at first blush, seem to be a distinctly inefficient way to look for new leads – as traditional forensic DNA profiling compares genetic markers on the non-sex chromosomes and seeks to find a perfect match between evidence and known DNA samples.

In contrast to traditional methods, familial searching methods extend beyond the individual DNA profiles to identify individuals whose relatives could have left key crime scene evidence. There are several methods available, some focusing on male relatives. For example Y chromosome profiles are shared amongst all male relatives related to one another through the father’s bloodline. Therefore a volunteer’s DNA might not match the crime scene evidence, but it could be close enough to implicate a relative - like a son, a brother or nephew.

Familial searching magnifies the power of law enforcement. A DNA dragnet of a few hundred Cape Cod males could effectively include, indirectly, several hundred more of their biological relatives. So even if no direct DNA matches are found to the volunteers, all is not lost. In fact, searching for close matches between crime scene evidence and common Y chromosome markers would be far more effective than
hoping for a complete direct DNA match using traditional forensic profiling methods. Thus, paradoxically, with familial searching methods, certain indirect DNA matches could provide useful clues about possible relatives who would potentially be much more viable as suspects than the volunteers themselves.

With such investigative power comes great responsibility. Without individualized suspicion, and a bench warrant, contribution of DNA should be non-coercive, completely voluntary and well informed. What are the male volunteers in the Truro DNA dragnet being told about the use(s) of their DNA? What is planned for the disposition of the sample after DNA profiling is completed?

What happens to these samples and the DNA profiles remains a real concern. For example, blood spot cards have been obtained, since the early 1990s, from all military personnel upon entry into the service or prior to deployment. They were obtained initially as the modern day “dog tags”, to be used only for humanitarian DNA-based human remains identification. But legislative changes quickly moved us down the slippery slope - the Culberson (R-TX) amendment to the 2002 Defense Appropriation Act now permits these military blood spot cards to be used for DNA testing, under court order, for criminal investigations.

Such morphing of the methods and the original intent of DNA collections has led many to recommend universal DNA collection as the only fair way to avoid outright discrimination. Accordingly, we're curious - has any of the Truro investigative staff stepped up with the hobbled man to volunteer a sample?

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