Legislative Landmarks of Forensics: California v. Greenwood and Shed DNA

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Everywhere we go, we leave our DNA behind. Forensics profits from this "abandoned" DNA to solve crimes. As technology improves, could we wind up with a database of everyone's DNA – including yours?

> The year is 2025. The population is 325 million, and the FBI has the DNA profiles of all of them. Unlike fingerprints, these profiles reveal vital medical information. The universal database arrived surreptitiously. First, the Department of Defense's repository of DNA samples from all military personnel, established to identify remains of soldiers missing from action, was given to the FBI. Then local police across the country shadowed individuals, collecting shed DNA for the databank. On the way, thousands of innocent people were imprisoned because they had the misfortune to have race-based crime genes in their DNA samples. Sadly, it did not have to be this way. If only we had passed laws against collecting and using shed DNA . . . (Kaye, 2006)

We all shed DNA, leaving traces of our identity practically everywhere we go. Forensic scientists use DNA left behind on cigarette butts, phones, handles, keyboards, cups, and numerous other objects, not to mention the genetic content found in drops of bodily fluid, like blood and semen (Van Oorschot & Jones, 1997). In fact, the garbage you leave for curbside pickup is a potential gold mine of this sort of material. All of this shed or so-called abandoned DNA is free for the taking by local police investigators hoping to crack unsolvable cases. Or, if the future scenario depicted at the beginning of this article is any indication, shed DNA is also free for inclusion in a secret universal DNA databank.

Collection of Shed DNA: A Slippery Slope Toward Government Intrusion?

Of course, no such databank currently exists. However, some legal experts are concerned that the forensic practice of collecting shed DNA could signify movement down a slippery slope toward that end. For example, in an essay published in the *Northwestern University Law Review* in 2006, Elizabeth Joh, professor of law at the University of California, Davis, describes how police routinely collect shed DNA in search of incriminating evidence, usually doing so with little oversight. This act is not necessarily harmful in and of itself; in fact, many people would likely agree that the collection of shed DNA benefits society if and when it provides information useful in solving crimes. The worry, Joh argues, is that routine collection of shed DNA could be a "backdoor to

Figure 1: Following procedure.

population-wide data banking." She writes the following:

> After having retrieved your abandoned DNA, could the government sequence your genes? . . . If such projection sounds like an Orwellian fantasy, historical experience has shown how 'function creep' has altered and expanded the uses of other identification practices. The Social Security number is the most prominent example of an identifier now used for purposes not originally intended. Although originally meant solely to track the contributions of working Americans in order to calculate retirement benefits, the Social Security number today is a de facto substitute for a national identity card.

Joh also describes a recent scenario in which the use of collected DNA information was rapidly expanded beyond its original intent:

> When the U.S. military began collecting mandatory DNA samples from soldiers in 1992, the Department of Defense announced that the use of the samples would be restricted to the identification of dead or injured soldiers. By 1996, proposals had already been made to extend the use of these samples for medical research. Today all DNA samples collected from the military are included in CODIS.

CODIS, an acronym for Combined DNA Index System, is a national DNA database originally intended for the collection of DNA profiles of offenders convicted of particular crimes. Might it be only a matter of time before CODIS is expanded to include DNA profiles of all U.S. residents and foreign visitors? Joh argues that this is a very real possibility.

On the other hand, commentators such as David Kaye, a professor of law at Arizona State University, believe that this type of slippery-slope thinking borders on science fiction. Kaye (2006) points to the complex nature of the relationship between our genes and our behaviors, criminal or otherwise, which raises questions about how such a database would ever be useful (Figure 1).

The Legality of Collecting Shed DNA

Either way, both Joh and Kaye agree that the issue of shed DNA raises serious questions, not just about the science of DNA-trait associations but also about the legality of collecting abandoned DNA. Legal experts question whether it is constitutional to collect shed DNA without a warrant, arguing that doing so may violate the Fourth Amendment right to protection "against unreasonable searches and seizures." The full wording of the Fourth Amendment to the U.S. Constitution is as follows:

> The right of the people to be secure in their persons, houses, papers, and effects, against unreasonable searches and seizures, shall not be violated, and no Warrants shall issue, but upon probable cause, supported by Oath or affirmation, and particularly describing the place to be searched, and the persons or things to be seized.

Much of the scholarly legal discussion on the limits and applicability of the Fourth Amendment revolves around the landmark 1988 case of *California v. Greenwood*, in which the U.S. Supreme Court ultimately held that defendants "knowingly expose" items when they throw these items in the trash. The *Greenwood* case revolved around a defendant suspected of selling illegal drugs out of his home. A local police investigator searched the garbage bags the defendant left on the curb, finding evidence that was used to support the defendant's subsequent conviction. Initially, the California Superior Court dismissed the conviction on the grounds that the defendant's Fourth Amendment right was violated, but the U.S. Supreme Court later reversed the superior court's decision, stating that when suspects "knowingly expose" items to public view, police collection of those items is considered neither search nor seizure. According to this line of reasoning, shed DNA left behind on

a cigarette butt or coffee cup, for example, is considered knowingly exposed. So, once you throw something in the trash and place that trash out on the curb for garbage collection, it is not longer private. Anyone can legally rifle through it, including the police.

If not the Fourth Amendment, then what legal protection shields individuals from having their DNA collected and banked for untold future analyses? The subject is open for debate, and not just in the United States. For instance, at least one Australian state, Victoria, has taken steps to ban what it is calling "covert DNA sampling." Victorian police officials have admitted to the past collection of shed DNA from all sorts of everyday items in suspects' homes, such as coffee cups, cigarettes, and clothing. If a DNA match was found, only then would the police file a formal application to obtain a sample. Furthermore, there were no rules in place to prevent unmatched DNA samples (i.e., samples not matched to any crime) from being entered into Australia's national DNA databank. In 2004, in response to public outcry, Victoria's attorney general promised to examine the legality of this sort of covert DNA sampling and review the lack of safeguards. Proposed reforms are still being discussed. However, beyond Victoria, most other governments not only offer little protection of citizens' DNA, but they have yet to even consider the issue.

As DNA sequencing and profiling technologies improve and become less expensive, more local and national governments will be faced with questions about the extent to which they track their citizens. What are the limits to the rights of individuals? The rights of government? This subject is certain to be a matter of public debate for years to come.

References and Recommended Reading

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