

Weak links? How partial DNA matches can muddle criminal investigations

The Los Angeles serial killer known as the Grim Sleeper targeted vulnerable black women, focusing on drug addicts and prostitutes. He often lured them into his vehicle with the promise of giving them a safe ride then left their bodies in heaps of trash and in the alleys of South L.A. after he was done with them. Police believe [Lonnie Franklin](#) killed as many as 25 women from the late 80s to the mid 2000s before he was caught with the help of DNA evidence.

But it wasn't his own DNA. Using a sample taken from one of his victims, law enforcement found a partial match in the national database. That man was [Franklin's son](#). With that knowledge they followed Franklin to a pizzeria and took a DNA sample from a partially eaten slice he'd thrown away. That provided the exact DNA match that led to his arrest.

Franklin, convicted and sentenced to death in 2016, is the most significant criminal captured through the use of familial DNA search. There have been others. But there are significant drawbacks to the procedure — including an alarming rate of false positives and accuracy concerns, high costs, lack of oversight, racial biases and potential infringement on the rights of family members. The process is so controversial that the FBI doesn't even use it.

[grim sleeper](#) type unknown
Lonnie David Franklin Jr.

Several states use familial DNA search with a variable degree of oversight. Two jurisdictions explicitly prohibit it. Others do not have any regulations or guidelines on the books. From [WIRED](#):

California, Colorado, Virginia, and Texas have detailed policies regarding how and when familial DNA searches can take place; Maryland and the District of Columbia explicitly forbid the technique. Elsewhere in the nation, cops are largely free to search as they see fit.

One of the biggest drawbacks to the procedure is that it only works for men. The [LA Times](#) reports:

Lab officials look for a relative by scanning genetic profiles in the offender database and looking for DNA samples that match with a suspect's along several, but not all, markers. From there, California's testing method focuses on part of the Y-chromosome passed down along the male line, identifying father-son or full brother relationships.

While men do commit the [vast majority](#) of violent crimes, any law enforcement procedure that is only operational for part of the population should raise the alarm bells of justice. And potential injustices don't stop there. Convicted and suspected offender DNA databases skew largely toward African American and Hispanic populations. So any search results will be skewed. Interestingly, medical and research databases are skewed to represent caucasians of European descent.

Also of concern is the high rate of false positives that can be generated by this technique. From [Pacific Standard](#)

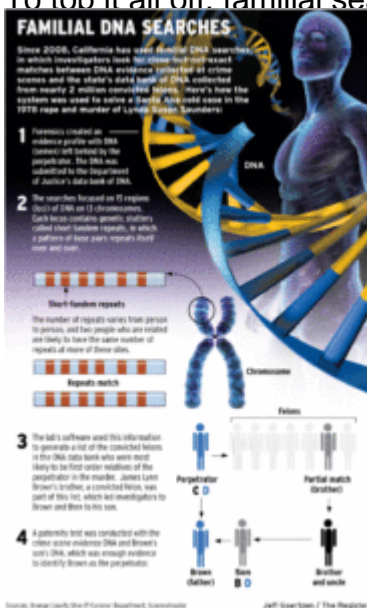
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A study published in the journal PLOS ONE in 2013 raised doubts about the method's accuracy and efficacy. According to researchers at the University of California-Berkeley and New York University, led by Rori Rohlf, familial DNA searching will often indicate that two people are close relatives when they are in fact distant relatives. For instances, in an experiment that tested the process of familial DNA matching in the California DNA database (using simulated genetic profiles based on publicly available data), the researchers found that cousins could be misidentified as siblings.

And these searches are far more complicated and expensive than traditional DNA matches. NYU law professor forensics scholar Erin Murphy wrote in the journal Criminal Justice part of this problem is that the databases and software used in these kinds of searches aren't very compatible. That also drives up costs:

Neither the standard software used to conduct searches of the DNA database nor the standard genetic information stored in those databases readily lends themselves to familial searches. As it turns out, even an individual's close relatives, such as parents or full siblings, can display a remarkable amount of genetic difference, and strangers can share remarkable similarities.

To top it all off, familial search doesn't seem to be as effective as advertised. [WIRED](#) reported that a 2012 study in California found only 10 percent of the searches returned a match that was worth further investigation.



When a familial search is successful, what happens next? The family member

becomes a kind of mini-suspect until leads are disproven or the suspect can be identified. And that is at the heart of arguments that familial search violates the Fourth Amendment, protecting citizens against unreasonable search and seizure. Familial search seems to fall into a gray area for many people. The

searches only target people who've already been charged or convicted of a crime. In fact, the very fact that we collect and store DNA from those individuals is based on the idea that by doing something illegal they relinquished some of their right to privacy. But Murphy suggests comparing that to compulsory DNA registries like one proposed in Kuwait and plain old fingerprinting:

But if universal, compelled collection strikes you as wrong or unjust for some reason, then familial searches should strike you as equally indefensible. In this respect, it is important to remember how we came to have DNA databases in the first place. Even though most law-abiding people feel that they have nothing to hide from law enforcement, that does not mean that the government is allowed to collect whatever information it wants, whenever it wants... All that is necessary is to understand that no one has suggested that law enforcement could compel fingerprints—or DNA samples—for ordinary law enforcement purposes from persons who have not even so much as been arrested. And note that this is not because taking fingerprints is very intrusive (it's not) or because it would not help to solve crimes (it would), but because in our free society, we require suspicion before law enforcement can force a person to divulge even seemingly innocuous, unimportant information—no matter how helpful it might ultimately be to closing cases.

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