

Familial DNA Searching: What Every Prosecutor Should Know About This Powerful Forensic Tool

BY MITCH MORRISSEY, DISTRICT ATTORNEY

FAMILIAL DNA SEARCH SOFTWARE is a powerful tool for enhancing public safety. It is my hope that prosecutors will not only recognize the crime-fighting potential of this technology, but will also seize the opportunity to once again display our leadership in augmenting public safety in our respective communities. Law enforcement officials in California, Virginia and Florida have joined in the movement to institute familial search software in their communities, and I am confident the rest of the country will soon follow suit.

Familial DNA searches are an innovative approach to investigating challenging cases, particularly cold cases where the victims are women or children and traditional investigative tactics fail to yield a solid suspect. Furthermore, the implementation of this investigative technique in your jurisdiction sends a strong message to victims and their families, as well as the general public, that you remain steadfast in seeking justice for every victim, no matter how challenging the case. Similarly, constituents in your jurisdiction will be comforted by the fact that their law enforcement officials are doing everything in their power to get criminals off the street, particularly the dangerous and elusive ones that are most suitable for familial searches. Lastly, and

while certainly not the purpose and intention of the technology, there are substantial political benefits in further establishing yourself as a forward-thinking leader in your community. By orchestrating the interagency cooperation necessary to institute this technology in your community you will cement your reputation as a community leader skilled in navigating political channels.

For crime victims and their families, like the parents of Morgan Harrington, the 20-year-old Virginia Tech student who was abducted and murdered after leaving a concert in 2009, familial DNA search software provides hope that the individual responsible for their daughter's murder will be held accountable in a court of law. However, a highly-publicized unsolved case need not be the impetus for implementation. The Denver District Attorney's Office is offering our familial DNA search software, as well as technical training and assistance, at no cost to any jurisdiction in the country interested in using this technology to fight crime. This article will clarify what a familial DNA search is and



MITCH
MORRISSEY

Mitch Morrissey is the district attorney in the 2nd Judicial District, Denver, Colorado. Also contributing were Alex Vinton and Hailey Wilmer.

how it works, provide examples of successful familial DNA searches, explore the controversies surrounding the practice, and explain how to implement the technology in your jurisdiction.

WHAT IS A FAMILIAL DNA SEARCH?

Credit for the early development of familial DNA search technology belongs to the British, who used the technique in 2004 to convict Craig Harman of manslaughter, after blood from the crime scene was a close match to a relative of Harman in the database. Denver Police Department Crime Lab Director Gregg LaBerge and I brought the technology to Colorado in 2008 when we developed and tested our own familial DNA search software. Instead of looking for an exact match between a forensic profile generated from crime scene evidence and an offender profile in the database, as CODIS does, our software ranks offender profiles based on the statistical probability that they are either the parents/children or siblings of the forensic profile. The majority of profiles at the top of this candidate list are expected to have true familial relationships with the forensic profile.

Familial DNA search technology is similar to ballistic and fingerprinting technology in that all three forensic techniques generate candidate lists and require secondary or tertiary levels of screening before a lead is confirmed. In the case of familial DNA searches, Y-STR analysis is conducted on those male profiles at the top of the candidate list in order to confirm the familial relation. While half of a male's DNA is inherited from his mother, and half from his father, he inherits his Y-Chromosome from his father alone, and shares this Y-Chromosome with his paternal grandfather, uncles and brothers. Y-STR analysis links male relatives through their Y-Chromosomes, and authenticates the familial relationship between the forensic profile and an offender in the DNA database, ensuring absolute accuracy.

After the familial relationship has been verified, investigators specially trained in familial DNA searches employ traditional investigative techniques to flesh out the offender's family tree and gather information that will indicate if, in fact, a family member may have committed the crime. If a male relative who is not in the DNA database is identified as a likely suspect, law enforcement will collect his abandoned DNA or obtain a DNA sample with a warrant, and determine if there is a link to the original crime scene forensic profile. Using a standard DNA test, investigators will then definitively match the forensic profile to the new DNA sample, proving the suspect's presence at the scene of the crime.

EXAMPLES OF SUCCESSFUL FAMILIAL DNA SEARCHES AND RESULTING CONVICTIONS

Interestingly enough, during the investigation of the first familial DNA case prosecuted by my office, a property crime case, the suspect voluntarily gave his DNA at a police station and walked out of the door moments later without being interrogated. After the Denver Police Department Crime Lab conducted a Y-STR test to confirm that his DNA was an exact match to the forensic sample from the crime scene, he was arrested and ultimately pled guilty. Although this Denver car break-in was the first conviction in the nation that was obtained using a familial DNA search, California was actually the first state to adopt a formal policy concerning the use of the technique. Soon thereafter, a familial DNA search identified Lonnie David Franklin, Jr. as the suspect known as the "Grim Sleeper" serial killer. This case was particularly challenging for investigators due to the lapse in time between murders, the transient nature of many of the victims, and the fact that the forensic profile from the various crime scenes did not match any offender profile within CODIS. Interestingly enough, these factors are also what made the case appropriate for a familial DNA search. The resolution of this case could not illustrate the investigative potential of familial DNA search software any better, as Mr. Franklin has since been charged with the murders of ten women. This same technique was also employed recently to arrest a suspect in Santa Cruz, California, on charges of sexual assault and false imprisonment. Moreover, Virginia tested and implemented our familial DNA search software this year. Virginia authorities are hoping to locate a relative of Morgan Harrington's killer within their database and generate investigative leads in other difficult cases.

CONCERNS AND CONTROVERSIES REGARDING FAMILIAL DNA SEARCHES

Proponents of familial DNA technology face many of the same obstacles that prosecutors tackled in gaining the acceptance of DNA technology in courtrooms in the late 1980s, including a lack of understanding of the science, fears of privacy invasion, and the need for greater local leadership from law enforcement officials. Often when I describe familial DNA database search software to a member of the public, his or her response is, "That sounds invasive," or worse yet, "That sounds discriminatory." At a recent public forum, a Maryland Public Defender proclaimed that familial DNA database searching "will be the downfall of our democracy." Allegations of a familial DNA database

search's privacy violations and "de-facto expansion of the DNA database" have filled the pages of the *Michigan Law Review*, the *Harvard Journal of Law and Technology*, and popular online news sources like *Slate* magazine. Opponents argue that the searches will disrupt families, lead to function creep, violate constitutional rights and exacerbate the already problematic disproportionate minority representation in the criminal justice system.

The first objection to the use of familial DNA database searches involves the concern that the searches will disrupt a societal interest in intact families. Families, the argument goes, are social institutions, not biological ones, and law

Like tools of identification that have been used by law enforcement for decades, familial searching does nothing more than generate a lead in an investigation.

enforcement investigators who contact family members could be disrupting delicate family ties or revealing previously unknown biological relationships.¹ But it is counter-intuitive for investigators to go knocking on people's doors and tip off a serial rapist or a murderer to leave town. The last thing law enforcement wants to do is alert a suspect's family that the police are looking for him. With proper policy implementation and investigator training, familial DNA searches can largely be conducted without investigators ever contacting family members. Before the Denver DA's office distributes our search software to any new jurisdiction in Colorado, we require their investigators to attend a specialized familial search training that addresses these issues.

Many critics of familial search techniques fear a "function creep" of the technology, the idea that law enforcement agencies might use genetic information gathered from stored DNA samples to decide who is biologically predisposed to criminal activity or engage in other analysis that would suggest eugenic themes. Familial searching does

not enable law enforcement to predetermine which families are biologically prone to criminal activity, which profiles are biologically more likely to have a specific genetic condition, or identify ethnic characteristics. What the searches do allow us to determine is the probability that a source of a DNA profile is related to a known offender. Like tools of identification that have been used by law enforcement for decades, familial searching does nothing more than generate a lead in an investigation.

Claims that familial DNA database searches violate constitutional rights are unfounded. In *United States v. Pool*, the 9th Circuit Court of Appeals wrote of familial DNA searches:

This seems somewhat analogous to a witness looking at a photograph of one person and stating that the perpetrator has a similar appearance which leads the police to show the witness photos of similar looking individuals, one of whom the witness identifies as the perpetrator. It is questionable whether the person whose photograph helped focus the inquiry, or whose familial comparison helped focus the inquiry, has suffered any invasion of his or her constitutional right to privacy.²

An offender who leaves DNA evidence at the original crime scene has no standing to challenge a familial DNA search on Fourth Amendment grounds. DNA collected at the crime scene is abandoned, and the individual has forfeited any expectation of privacy in it that he might have had.³ Additionally, constitutional rights are personal and may only be asserted by the individual whose rights are infringed.⁴ The searches are conducted only on the DNA of individuals who are already in the DNA database. These individuals, convicted felons and arrestees (depending on your state's statutes), have a diminished expectation of privacy to the information contained in that DNA that can lead to their identification or the identification of others. The individuals in the database are never charged with the crime at hand, as their DNA is not an exact match to the forensic DNA profile from the crime scene.

The last and most disconcerting argument I hear by opponents of the technology is that familial searches will amplify racial and ethnic disparities in criminal investigations. While a disproportionate number of minorities have profiles in law enforcement DNA databases, a similar disparity exists in all aspects of the criminal justice system. I like to remind critics of familial searches that minorities are overrepresented in terms of victimization as well. African Americans accounted for 15 percent of the U.S. population

(Continued on page 18)

in 2005, but were victims in 49 percent of all homicides that year.⁵ Research on victimization trends indicates that non-Latina black women have been subject to more violent victimization than Latina and non-Latina white women since the National Crime Victimization Survey (NCVS) started collecting data in 1973.⁶ Likewise, non-Latino black men have been subject to greater violent victimization than other racial and ethnic groups since the mid-1990s.⁷ The overrepresentation of minorities permeates the entire criminal justice system and is actually a reflection of myriad socio-cultural and socio-economic forces. As Jules Epstein points out, it is the database search, and not the personnel's efforts to target a specific individual, that identifies a possible relative to an offender.⁸ Familial searches do not intentionally target individuals of any particular racial or ethnic group. These broader issues of racial and ethnic inequality must be addressed by community leaders, but are not cause to delay the implementation of innovative crime-fighting technology like familial DNA database searches.

On the other hand, familial DNA technology can also be used to exonerate those who have been accused or wrongly convicted, and may prove to be the most powerful tool available for this purpose. Take for instance the case of Darryl Hunt, a young man who was convicted of a brutal rape/murder in Winston-Salem, North Carolina in 1984. Although DNA testing conducted in 1994 proved that he was not responsible for the rape, he remained behind bars for another ten years. Although familial search software was not yet available, investigators used a similar forensic method known as partial match technology to point to an alternate suspect. This suspect eventually confessed and Darryl Hunt was finally exonerated in 2004. As such, it is vital to remember that familial search software is not only valuable in conventional investigations, but may also be retroactively applied in exoneration efforts.

HOW TO IMPLEMENT FAMILIAL DNA SEARCH SOFTWARE IN YOUR JURISDICTION

Familial search software, such as the version used in the U.K., would normally cost hundreds of thousands of dollars to get up and running. Fortunately, my office is offering the software and training for free. Only one laptop is required to run the familial DNA search software. Although resources are necessary for the Y-STR analysis that confirms the familial relationship, this cost is offset by savings in time, wages and effort that would otherwise be spent by investigators on these particularly challenging cases. The difficulty in obtaining familial DNA search capability in your jurisdiction lies in conquering the political hurdles to get all of

the relevant agencies on board. As Pete Marone, director of the Virginia Department of Forensic Science, aptly proclaimed, "This is not a science issue. Scientifically we can do this. This is a policy issue." Despite any political impediments that may arise, the advantages of familial DNA search software will surely overcome any bureaucratic barriers when people are well informed.

In Denver, collaboration between agencies is critical to implementing and conducting our familial DNA database searches. We rely on a forward thinking crime lab, prosecutors and investigators trained in the privacy and technical aspects of familial searches, and strong support from local law enforcement. If you are considering implementing familial searches in your jurisdiction, I would be honored to consult with you about the science and policy issues. These include communicating with your state's attorney general to determine whether a formal policy or statute is required, working to build interagency collaboration, and rallying victim and public support for the technology. It is also imperative that media and community leaders receive accurate information about the significant value of the technology to public safety.

Simply put, this is a cutting-edge tool with no real downside. It is constitutionally viable, cost-permissible, economically efficient and immensely valuable for criminal investigators. The only hurdle is in the political arena, as is often the case. But with hard work and clear explanations, policy will undoubtedly fall in line with science. As my friend and colleague Rock Harmon recently commented, "But for prosecutors' involvement in this issue, no states in the United States would be conducting familial searching." Thus, the responsibility for getting this technology into the hands of investigators lies with us. Although this task may seem daunting, it is also a noble one, as the benefits of familial DNA database search for law enforcement, prosecutors, victims of crime and the general public are incontrovertible.

¹ Erin Murphy, Relative Doubt: Familial Searches of DNA Databases, *Michigan L. Rev.* 109: 291 (2010), 294

² *United States v. Pool*, 621 F.3d 1213 (9th Cir. 2010).

³ *United States v. Jones*, 707 F.2d 1169, 1171 (10th Cir. 1983).

⁴ *Rakas v. Illinois*, 439 US 128, 133-134; 99 S Ct 421; 58 L Ed 2d 387 (1078).

⁵ Erika Harrell, Bureau of Justice Statistics Special Report: Black Victims of Violent Crime, (Washington, D.C.: Bureau of Justice Statistics, Office of Justice Programs, U.S. Department of Justice), (August 2007), 3.

⁶ Janet Lauristen and Karen Heimer, Gender and Violent Victimization, 1973-2005, (Final Technical Report for grant: NIJ 2007-IJ-CX-0026, Document No. 229133), (December 2009), Retrieved from: <http://www.ncjrs.gov/pdffiles1/nij/grants/229133.pdf>

⁷ *Supra* footnote 5.

⁸ Jules Epstein, 'Genetic Surveillance'—The Bogyman Response to Familial DNA Investigations, Widener Law School Legal Studies Research Paper Series no. 08-47, (2008), 163.