



AN INTRODUCTION TO FAMILIAL DNA SEARCHING FOR STATE, LOCAL, AND TRIBAL JUSTICE AGENCIES

ISSUES FOR CONSIDERATION

Introduction

Familial DNA searching is a critical issue facing jurisdictions across the country, and it is not without controversy. The Global Justice Information Sharing Initiative (Global) developed this paper to provide state, local, and tribal (SLT) justice agencies that are performing or considering performing familial DNA searching with an overview of the science of familial DNA searching and its use in criminal investigations. Particular guidance is provided on implementing familial search protocols while carefully balancing the interests of both law enforcement and public safety with the privacy rights, interests, and concerns of affected persons.

With the likely expansion of familial DNA searching beyond the few states that currently employ it, this paper was developed to help SLT justice agencies make better-informed decisions regarding the privacy issues involved with DNA-based law enforcement identification information.

All 50 states, as well as the federal government, maintain offender DNA database programs as authorized by their respective statutory authorities. These databases, which employ CODIS¹ (Combined DNA Index System) software, are designed to provide law enforcement with investigative leads by comparing crime scene perpetrator DNA profiles against those collected from arrestees or convicted offenders or both, depending on the state. DNA profiles can also be used to identify someone in the database who may be a close relative of an alleged perpetrator of a crime. This use of a DNA database is referred to as “**familial DNA searching**” and can potentially provide an investigative lead (as opposed to exact identification)



that may ultimately help identify the perpetrator of a serious crime. However, CODIS itself was not designed to facilitate familial searching. Thus states that create familial search protocols will do so using independently validated methods and programming.

The United Kingdom (U.K.) has the most experience in conducting familial DNA searching. The U.K.'s National DNA Database has developed a protocol for familial searching that limits its use to serious crime. The U.K.'s program of familial DNA searching also includes detailed written guidance for law enforcement officers who investigate information obtained from such searches.

How Familial Searching Works²

When a routine search of a DNA database reveals that no qualifying person's profile matches that of the unknown perpetrator, it is possible to conduct an independent search to identify potential relatives of the alleged perpetrator. This search is based on the number of shared genetic characteristics (i.e., alleles) and the rarity of those shared alleles in human populations. Unlike a search for a direct match, a familial search will allow for matching subsets of alleles at any given genetic marker as a basis for comparison. Because alleles in humans are inherited in a one-for-one relationship from the father or mother, close relatives of a targeted perpetrator can be expected to share more alleles, especially rare alleles, than would unrelated individuals. A familial search relies on mathematical modeling specific to the DNA database being utilized. This modeling determines whether an observed similarity between two DNA profiles is more likely the result of kinship or mere chance.⁴

Considerations in Implementing a Familial Search Protocol

A first consideration is whether familial searching is permissible under applicable law. SLT entities who are considering using a familial search protocol for their DNA databases should first determine whether such use of the database is addressed by existing statutory, regulatory, judicial, or other controlling authority. Some jurisdictions formally permit such use of their DNA database, while others are silent on the issue of familial searching. Determination of whether familial searching is authorized in a particular jurisdiction may depend on the interpretation of nonspecific statutory language. Jurisdictions should seek guidance from their legal counsel on appropriate statutory interpretations.

A second consideration is the need to carefully balance the interests of law enforcement and public safety against any privacy rights, interests, and concerns possessed by affected persons. This group includes those qualifying persons who are identified as potential relatives of the alleged perpetrator, the individuals who are ultimately disclosed as potential relatives, that person's family members, and any suspect identified as the result of the familial search. Various protocols by the searching agency should be implemented to narrow the search results to rule out unrelated candidates and enhance the likelihood of true familial relationships. In general, the more stringent a familial search program is in excluding individuals who are unlikely to be relatives of the alleged perpetrator, the greater the probability that law enforcement, public safety, and privacy interests will be served.

In addition, if and when a qualifying person in a database is identified as a potential relative of the alleged perpetrator, the privacy interests of all concerned can be protected to a greater degree by follow-up investigations that use additional genetic testing and noninvasive methods for collecting further information that reflects sensitivity to privacy rights, interests, and concerns. For example, the entity may narrow the results to one or more individuals through the use of secondary testing, such as Y-STR⁵ comparison for males or mitochondrial analysis⁶ for females. A familial search program must also be carefully designed to avoid and eliminate false leads to the fullest extent possible before proceeding with the use of familial DNA search results. Thus, the degree of confidence a laboratory has in the value of a familial lead, based on both genetic and nongenetic information analyzed, must be carefully considered before the name of the nonperpetrator individual (and potentially the names of family members) is released to an investigating agency or other designated entity.



The following discussion of key issues implicated by familial DNA searching is not an exhaustive list. As use of this technology develops, other issues may inevitably arise.

1 When have jurisdictions felt that a familial DNA search is appropriate?

Because a familial DNA investigative lead is less direct proof of an alleged perpetrator's identity than an exact match of the perpetrator's profile in a DNA database, familial searching is best viewed as a supplemental investigative tool in that it is generally pursued when database searches for a direct match to the alleged perpetrator have been unsuccessful.

2 What crimes may be appropriate for familial DNA searching?

States that decide to implement familial DNA should establish a formal policy in answer to this question. States should have established criteria for familial DNA searching that include the kinds of cases that may be eligible. For example, the United Kingdom allows such searching only for serious crimes.

3 What are the possible restrictions regarding collection and use of DNA, and does familial DNA searching violate these restrictions?

Some jurisdictions have determined familial DNA searching to be another potential tool for criminal investigative purposes. As such, it may be subject to legal limitations. DNA databases governed by statutory authority are generally subject to strict use and disclosure restrictions. Local databases may be governed only by controlling constitutional authority. State and federal laws are exceptionally strict on the use of DNA information only for acknowledged law enforcement purposes, such as criminal

Key Issues for

identification and the identification of missing persons. Familial DNA searching, for example, is consistent with the purposes articulated in the Federal DNA Identification Act, at 42 U.S.C. § 14132.

4 What classification(s) of offenders are searched in a familial search?

Policymakers constructing a familial DNA searching program will need to consider which DNA databases can be searched and under what circumstances.⁷ Database profiles may include several classifications of offenders: arrestees, convicted offenders, and/or other persons from whom samples have been lawfully obtained. This process should incorporate both applicable law and policy considerations.

5 To what extent, if any, is race implicated in familial DNA searching?

DNA profiles in law enforcement databases are identified only by a specimen identification number that indicates nothing about a qualifying person's race or any other personally identifiable information. When an initial familial search of a database occurs, the laboratory conducting the search will not know anything about the persons whose DNA profiles are searched for kinship association, including their names. Moreover, there is no ability to specify a particular "race" as a search criteria. Accordingly, any initial identification of possible kinship between an individual and a target perpetrator's DNA profile is based solely upon the presence of shared genetic markers that do not code for any known biological trait other than gender. When a particular qualifying person is identified because of sufficient genetic similarity to the alleged perpetrator, SLT agencies may choose to review other demographic information, including race, age, etc., to further test the hypothesis that the identified person is, indeed, related to the alleged perpetrator.

Some individuals have expressed concern that because there is a disproportionate representation of minorities within the criminal justice system, that representation⁸ may carry over to the known offender and arrestee DNA databases and thus lead to the disproportionate identification of minority groups in familial searching.⁹ While familial searching may reflect any disproportionate impact that already exists, that is a function of other factors and not the science of familial DNA searching. This type of search is only for similar genetic markers; association with a

particular race is unknown. In fact, the searching based on genetic markers reduces the risk of racial profiling, as the search cannot detect race, only possible family members.

6 To whom is the familial lead information released by the laboratory?

Information concerning the results of familial searching can raise additional sensitivities to criminal investigations because it concerns persons who are likely to be innocent of the crime under investigation. Security measures should be vigilant, and data should be safeguarded. Limiting who receives names of possible relatives (or "familial leads") of the perpetrator is another way to reduce the risk of improper disclosure and intrusions into the lives of those who have nothing to do with the crime. Typically, the laboratory that has performed a familial search will provide the qualifying person's name as a kinship-based lead to the law enforcement agency investigating the crime as well as to the local district attorney's office that will prosecute the case.¹⁰

7 Do investigators need specialized training in familial DNA search processes?

It is crucial that investigators pursuing a familial lead fully understand the parameters and limitations of the forensic lead being provided, as well as constitutional and other potential privacy issues implicated by use of this investigative tool. For example, the database qualifying person (for example, the person in an offender database who is determined to be related to the suspect) who is the subject of the familial lead is, by definition, not the perpetrator. Law enforcement officials should be provided with training and consultation (guidance) before a familial DNA search result is released. This includes instruction on the meaning and significance of the familial lead and how the familial DNA lead is to be used, as well as training on sensitivity to the potentially affected family members.

8 How should confirmation samples be collected following disclosure of a familial lead?

Investigators and prosecutors should confirm that the DNA of a suspect who is identified through the familial searching process possesses a DNA profile that exactly matches the DNA left by the alleged perpetrator. To

Consideration

do this, a reference sample must be collected from the suspect after the familial search has been completed. Law enforcement must determine whether and how to collect a DNA sample from a familial search suspect. DNA samples, like other physical evidence, can be collected through methods including (1) consent of the subject, (2) a search warrant supported by probable cause, and (3) an abandoned sample. As with any seizure of biological evidence, law enforcement must comply with applicable constitutional and other legal authority to accomplish this, at the risk of subsequent suppression of evidence at trial.

9

What factors contribute to the probable cause underlying an arrest following a familial search?

The sufficiency of probable cause to arrest a suspect will largely depend on the extent of genetic and nongenetic investigative information that links a particular close relative of the database qualifying person to the alleged perpetrator of the crime. A familial DNA search is not intended to replace traditional investigative efforts but rather to complement those efforts.

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Are familial DNA search results generally used as evidence in court?

Agencies using familial DNA searching recognize it as merely a supplemental investigative tool to be used when other investigative leads have been exhausted. Familial DNA searches simply identify “potential” relatives of an alleged perpetrator. A familial DNA search result is only a lead that is then followed up and investigated until a DNA sample of the suspect is obtained and tested. It is those results—those of the suspect—that are generally used in court, not the familial DNA match. However, since familial DNA analysis requires appropriate protocols that include sensitivity to privacy and civil liberty concerns, laboratories need to be consistent with existing evidentiary practices required by forensic labs.

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What role does sample retention play in familial DNA searching?

DNA samples must be retained in order for familial searching to occur. Retention applies to both the untested portions of crime scene samples (unknown individuals) as well as to the retention of offender and/or

arrestee samples (of known individuals). Except when expungement provisions require otherwise, most states routinely retain untested portions of a qualifying person’s samples for purposes such as quality assurance to confirm CODIS candidate matches, quality assurance of the database, possible analysis by the defense, and reanalysis of the samples in response to implementation of new typing technologies.

Law enforcement agencies that conduct familial DNA searching may choose to perform additional genetic testing (for example, Y chromosome testing) on qualifying person samples identified through familial searching as an additional screening tool to narrow the list of potential family members.¹¹ As such, retention of DNA samples is essential for this process to occur.

Conclusion

In the criminal justice community, results of familial DNA searches have the potential to provide investigative leads as well as exonerate those wrongfully incarcerated.¹² “Two things are clear about familial [DNA] searches: They have the potential to greatly assist law enforcement in the investigation of criminal activity, and they simultaneously have the potential to pose difficult legal questions and policy debates.”¹³ As a result of this dichotomy, some jurisdictions have opted to implement “familial DNA searching through legislation or legal decision, while others have banned it.”¹⁴ Although familial DNA searching remains a sensitive issue, this paper is intended to provide SLT justice agencies with an overview of the science of familial DNA searching and the key issues implicated by its use, as well as guidance on carefully balancing the interests of law enforcement and public safety with the privacy rights, interests, and concerns of affected persons. The authors of this paper recommend that agencies interested in learning more about familial DNA searching review the issues presented in this paper, consult state law and legal counsel, establish procedures that address the sensitivity of familial DNA search results, and institute policies that ensure privacy, civil rights, and civil liberties protections for subject individuals and their families.

For more information on this subject, refer to the resources listed on the following page.



Where to Turn for More Information

The following is a list of useful resources and articles relevant to familial DNA searching and related biometric topics.

Internet sites with familial searching information

- www.dna.gov
- www.denverda.org and www.denverda.org/DNA/Familial_DNA_Database_Searches.htm
- www.fbi.gov/about-us/lab/codis, Quality Assurance Standards for Databasing and Forensic DNA Testing Laboratories
- <http://projects.nfstc.org/fse/index.html>, Forensic DNA Education for Law Enforcement Decision Makers

Articles with familial searching information

- Greely, H. T., D. P. Riordan, N. A. Garrison, and J. L. Mountain, "Family Ties: The Use of DNA Offender Databases to Catch Offenders' Kin," *The Journal of Law, Medicine & Ethics*, 34:248–262. doi: 10.1111/j.1748-720X.2006.00031.x, Summer 2006, available through LexisNexis at <https://litigation-essentials.lexisnexis.com/webcd/app?action=DocumentDisplay&crawlid=1&doctype=cite&docid=34+J.L.+Med.+%26+Ethics+248&srctype=smi&srcid=3B15&key=1d579fe845dc6cb7d45944f5579bce59>.
- Haimes, E., "Social and Ethical Issues in the Use of Familial Searching in Forensic Investigations: Insights From Family and Kinship Studies," *The Journal of Law, Medicine & Ethics*, 34:263–276. doi: 10.1111/j.1748-720X.2006.00032.x, 2006, available through LexisNexis at <https://litigation-essentials.lexisnexis.com/webcd/app?action=DocumentDisplay&crawlid=1&doctype=cite&docid=34+J.L.+Med.+%26+Ethics+263&srctype=smi&srcid=3B15&key=f5fcdf2ae0ba996d5dd9d58528ef249>.
- Kaye, D. H., "Familial Searching: Ten Questions and Answers," *Double Helix Law*, July 17, 2010, available at www.personal.psu.edu/dhk3/blogs/DoubleHelixLaw/2010/07/familial-searching-ten-questions-and-answers.html.

- Murphy, E., "Relative Doubt: Familial Searches by DNA Databases," *Michigan Law Review*, Vol. 109, 2010, p. 291, available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1498807.
- Myers, S. P., M. D. Timken, M. L. Piucci, G. A. Sims, M. A. Greenwald, J. J. Weigand, K. C. Konzak, and M. R. Buoncristiani, "Searching for First-Degree Familial Relationships in California's Offender DNA Database: Validation of a Likelihood Ratio-Based Approach," *Forensic Science International: Genetics*, November 2010, available at www.ncbi.nlm.nih.gov/pubmed/21056023.
- Seringhaus, M., "The Evolution of DNA Databases: Expansion, Familial Search, and the Need for Reform," available at www.genome.duke.edu/education/seminars/journal-club/documents/Seringhaus_Oct09.pdf.
- Steinberger, E., and G. Sims, "Finding Criminals Through the DNA of Their Relatives—Familial Searching of the California Offender DNA Database," *Prosecutor's Brief*, Vol. 31, Nos. 1 and 2, available at www.denverda.org/DNA_Documents/Familial_DNA/CDAA%20familial%20search%20article.pdf.
- Suter, S., "All in the Family: Privacy and DNA Familial Searching," *Harvard Journal of Law and Technology*, Vol. 23, No. 2, Spring 2010, available at <http://jolt.law.harvard.edu/articles/pdf/v23.2/23HarvJLTech309.pdf>.
- Weiss, L., "All in the Family: A Fourth Amendment Analysis of Familial Searching," University of Chicago (unpublished), 2008, available at http://works.bepress.com/cgi/viewcontent.cgi?article=1001&context=lindsey_weiss.
- Williams, R., and P. Johnson, "Inclusiveness, Effectiveness, and Intrusiveness: Issues in the Developing Uses of DNA Profiling in Support of Criminal Investigations," *The Journal of Law, Medicine & Ethics*, 34:234–247, Summer 2006, available at www.ncbi.nlm.nih.gov/pmc/articles/PMC1370918/.

For information on biometrics and privacy

- www.it.ojp.gov/biometricsprivacy



Additional Resources

www.it.ojp.gov/biometricsprivacy

The Global Justice Information Sharing Initiative (Global) member organizations are committed to helping agencies reduce the privacy risks associated with justice agency use of familial DNA searching. The Global Privacy and Information Quality Working Group (GPIQWG) is committed to improving the collection, analysis, storage, use, and dissemination of biometric data. Biometric-related privacy resources that may be useful to your agency can be located at www.it.ojp.gov/biometricsprivacy.

About Global

www.it.ojp.gov/global

Global serves as a Federal Advisory Committee to the U.S. Attorney General on critical justice information sharing initiatives. Global promotes standards-based electronic information exchange to provide justice and public safety communities with timely, accurate, complete, and accessible information in a secure and trusted environment.

Global aids member organizations and the people they serve through a series of important collaborative efforts. These include the facilitation of Global working groups.

About GPIQWG

www.it.ojp.gov/gpiqwg

GPIQWG is one of five Global working groups. GPIQWG is a cross-functional, multidisciplinary working group of Global and is composed of privacy and local, state, tribal, and federal justice entity representatives covering critical topics such as intelligence, biometrics, information quality, privacy, civil rights, and civil liberties. GPIQWG assists government entities, institutions, and other justice agencies in ensuring that personally identifiable information is appropriately collected, maintained, used, and disseminated within evolving integrated justice information systems.

GPIQWG, on behalf of Global, developed this overview to support justice agencies in their efforts to balance the interests of law enforcement and public safety with the privacy rights and concerns of affected persons. For more information on GPIQWG, refer to: www.it.ojp.gov/gpiqwg.

Footnotes

- 1 Background information on DNA databases and CODIS can be obtained from the Federal Bureau of Investigation's Web site at <http://www.fbi.gov/about-us/lab/codis>.
- 2 For a thorough overview of the familial search process in California, see E. Steinberger and G. Sims, "Finding Criminals Through the DNA of Their Relatives—Familial Searching of the California Offender DNA Database," *Prosecutor's Brief*, Vol. 31, Nos. 1 and 2, CDAA 2008, available at www.denverda.org/DNA_Documents/Familial_DNA/CDAA%20familial%20search%20article.pdf.
- 3 Individuals represented in state and federal DNA data banks are a function of the authorizing statute in any given jurisdiction that designates those who qualify for inclusion.
- 4 See F. Bieber et al., "Finding Criminals Through DNA of Their Relatives," *Science*, Vol. 312, 2006, p. 1315.
- 5 Y-STR analysis is the process by which a laboratory determines the Y-STR profile (e.g., short tandem repeats located on the Y chromosome) of a biological sample.
- 6 Mitochondrial DNA analysis is the act of DNA sequencing used to determine if the mitochondrial DNA of two sources is the same, indicating a possible maternal relationship.
- 7 Every state, as well as the District of Columbia, has enacted legislation to authorize collection of DNA samples from persons convicted of felony-level offenses. Currently, about half of the states, the federal government, and the U.S. Department of Defense are authorized to collect DNA samples from certain categories of arrestees.
- 8 Addressing disproportionate minority contact (DMC) with the juvenile justice system is a core requirement of the Juvenile Justice and Delinquency Prevention (JJDP) Act. More important, it is a fundamental matter of justice and fair play. The Office of Juvenile Justice and Delinquency Prevention (OJJDP), U.S. Department of Justice (DOJ), works proactively with states to ensure that they comply with the JJDP Act's requirements, including DMC. This goal is pursued through a variety of means, including on-site visits, technical assistance, and national and regional training conferences. OJJDP has trained a large number of juvenile justice professionals in the core requirements. This training provides them with information to address DMC and other significant challenges facing the juvenile justice system. The key focus of OJJDP's efforts to combat DMC is prevention. Preventing disproportionate minority contact with the juvenile justice system will also lower the rate of disproportionate minority confinement. Available at www.ncjrs.gov/pdffiles1/ojjdp/218861.pdf
- 9 See H. T. Greely et al., "Family Ties: The Use of DNA Offender Databases to Catch Offenders' Kin," *The Journal of Law, Medicine & Ethics*, Volume 34, 2006.
- 10 States are subject to disclosure limitations on DNA information as set forth by state and federal laws.
- 11 See generally, D. Lazer, "Searching the Family Tree for Suspects: Ethical and Implementation Issues in the Familial Searching of DNA Databases," 2008, available at www.hks.harvard.edu/var/ezp_site/storage/fckeditor/file/pdfs/centers-programs/centers/taubman/policybriefs/lazer_final.pdf.
- 12 See R. Harmon, "Familial DNA Searching Can Provide Investigative Leads in Unsolved Cases and Also Exonerate Deserving Inmates," Guest Column, *Los Angeles Daily Journal*, Vol. 123, No. 185, September 24, 2010, www.denverda.org/DNA_Documents/Familial_DNA/Harmon%20Guest%20Column%20re%20Familial%20DNA%209-24-10.pdf.
- 13 S. Owen and T. Burke, "DNA Databases and Familial Searching," *Criminal Law Bulletin*, 43, 617–629, www.denverda.org/DNA_Documents/Familial_DNA/Owen,%20Burke%20Familial_DNA.pdf.
- 14 "Familial Searching," Forensic DNA Education for Law Enforcement Decision Makers, National Institute of Justice, Office of Justice Programs, U.S. Department of Justice, <http://projects.nfstc.org/fse/13/13-21.html>.

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