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23andEveryone: Privacy Concerns with Law Enforcement's Use of Genealogy Databases to Implicate Relatives in Criminal Investigations

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23andEveryone

PRIVACY CONCERNS WITH LAW ENFORCEMENT'S USE OF GENEALOGY DATABASES TO IMPLICATE RELATIVES IN CRIMINAL INVESTIGATIONS

"DNA testing[] [has an] 'unparalleled ability both to exonerate the wrongly convicted and to identify the guilty. It has the potential to significantly improve both the criminal justice system and police investigative practices.'"[1]

INTRODUCTION

On November 18, 1987, twenty-year-old Jay Cook and eighteen-year-old Tanya Van Cuylenborg, a young couple from British Columbia, drove to Washington State for an overnight ferry trip to Seattle.[2] Six days later, Van Cuylenborg's body was found in a ditch. She had been shot in the back of the head, bound with zip ties, and sexually assaulted.[3] Two days after the discovery of Van Cuylenborg's body, and fifty miles away, Cook's strangled and beaten body was found wrapped in a blanket.[4] Zip ties were also found near Cook's body.[5] While police received over three hundred tips of potential suspects in the aftermath of the crime, they never made an arrest.[6] Investigators uploaded the DNA profile developed

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[1] Maryland v. King, 569 U.S. 435, 442 (2013) (quoting Dist. Atty's Office for Third Judicial Dist. v. Osborne, 557 U.S. 52, 55 (2009)).

[2] Heather Murphy, *Technique Used to Find Golden State Killer Leads to a Suspect in 1987 Murders*, N.Y. TIMES (May 18, 2018), https://www.nytimes.com/2018/05/18/science/ancestry-site-arrest-washington.html [https://perma.cc/QKN6-NNPJ] [hereinafter Murphy, *Technique Used*].

[3] Caleb Hutton & Rikki King, *Suspect Arrested in 1987 Deaths of Young Couple from BC*, HERALDNET (May 18, 2018), https://www.heraldnet.com/news/suspect-arrested-in-1987-deaths-of-young-couple-from-bc/ [https://perma.cc/E8X4-SXJD]; *see* Eric Stevick, *Local Cold Case Helps '60 Minutes' Explain Genetic Genealogy*, HERALDNET (Oct. 22, 2018), https://www.heraldnet.com/news/local-cold-case-helps-60-minutes-explain-genetic-genealogy/ [https://perma.cc/LDK7-AXC6].

[4] Peter Aldhous, *A Double Murder from 1987 Was Just Solved Thanks to the Genealogy Website Used for the Golden State Killer*, BUZZFEED NEWS (May 18, 2018), https://www.buzzfeednews.com/article/peteraldhous/cook-van-cuylenborg-murder-DNA-genealogy [https://perma.cc/HM5W-ZQRT].

[5] Hutton & King, *supra* note 3.

[6] Meagan Flynn, *A Genealogy Website Helps Crack Another Cold Case, Police Say, This One a 1987 Double Homicide*, WASH. POST (May 21, 2018), https://www.washingtonpost.com/news/morning-mix/wp/2018/05/21/a-genealogy-website-used-to-

from a semen sample collected from Van Cuylenborg's body to CODIS, the Federal Bureau of Investigations DNA databank system.[7] No match was discovered.[8]

The big break in the case came three decades later, when Snohomish County and Skagit County sheriff's offices in Washington State teamed with Parabon NanoLabs, a Virginia-based DNA technology company.[9] Genetic information derived from the semen sample was uploaded into GEDmatch, a public genealogy site that permits people to upload their genetic information in order to find biological relatives.[10] GEDmatch returned relatives who matched the semen sample at the "second-cousin level."[11] CeCe Moore, a genealogist working with investigators, created a family tree "going all the way back to great-grandparents."[12] Based on the cousins' genetic profiles, Moore determined their families converged through marriage and deduced that there was only one male relative whose DNA matched the semen found on Van Cuylenborg: William Earl Talbott II, a fifty-five-year-old truck driver who lived north of Sea-Tac airport.[13] Investigators confirmed Talbott's identity by surveilling him and developing a DNA profile from a cup he discarded.[14] Thirty years after the crime, Talbott was arrested, convicted, and sentenced to two consecutive life terms in prison.[15]

The discovery of DNA typing in the 1980s transformed law enforcement's ability to exonerate innocent suspects, while implicating those who are guilty, with "the power of a silent biological witness at the crime scene."[16] This transformation, coupled with the new trend of law enforcement's use of genealogy databases, has created legal issues that police officers,

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crack-another-cold-case-police-say-this-one-a-1987-double-homicide/?utm_term=.bb78d57bbb38 [https://perma.cc/56SG-YUSK].

[7] *See* Drake Bennett & Kristen V. Brown, *Your DNA Is Out There. Do You Want Law Enforcement Using It?*, BLOOMBERG BUSINESSWEEK (Oct. 27, 2018), https://www.bloomberg.com/news/features/2018-10-27/your-dna-is-out-there-do-you-want-law-enforcement-using-it [https://perma.cc/UAY8-BZRD]; Heather Murphy, *Genealogy Sites Have Helped Identify Suspects. Now They've Helped Convict One.*, N.Y. TIMES (July 1, 2019), https://www.nytimes.com/2019/07/01/us/dna-genetic-genealogy-trial.html?smid=nytcore-ios-share [https://perma.cc/N5AA-TDM2].

[8] Bennett & Brown, *supra* note 7.

[9] *See* Flynn, *supra* note 6; Stevick, *supra* note 3.

[10] Murphy, *Technique Used*, *supra* note 2.

[11] Flynn, *supra* note 6.

[12] *Id.*

[13] Hutton & King, *supra* note 3.

[14] Murphy, *Technique Used*, *supra* note 2.

[15] Caleb Hutton, *Life in Prison for 1987 Killer of Young Canadian Couple*, HERALDNET (July 25, 2019), https://www.heraldnet.com/news/life-in-prison-for-1987-killer-of-young-canadian-couple/ [https://perma.cc/54K7-8CDM].

[16] JOHN M. BUTLER, FORENSIC DNA TYPING: BIOLOGY, TECHNOLOGY, AND GENETICS OF STR MARKERS 2 (2d ed. 2005) [hereinafter BUTLER, FORENSIC DNA TYPING].

prosecutors, genealogy companies, and policy makers are all currently trying to navigate.[17] The technological advancement comes with serious ethical and privacy concerns, including fear of the establishment of a "genetic panopticon."[18] A general concern exists that if a "genetic panopticon" comes to fruition, the government can subject any arrestee and future generations of his or her family to permanent control through genetic surveillance.[19] Those who voluntarily upload their DNA to open-access genealogy websites, as well as their relatives, currently suffer encroachments to their reasonable expectations of privacy under the Fourth Amendment when investigative genealogy searches are conducted.[20] Consequently, a statutory framework is necessary to regulate law enforcement's use of genealogy websites to conduct investigative searches. This framework must strike the proper balance between law enforcement's use of this new technique to solve serious crimes and people's constitutionally-safeguarded privacy rights. This note therefore proposes that Congress regulate such searches by defining conditions that must be met and procedures that must be followed—similar to those enumerated in New York and Colorado's regulations for CODIS-based familial searches—before an investigative genealogy search may be run by law enforcement.

Part I of this note provides background on DNA analysis and forensic DNA testing, specifically focusing on the use of DNA in criminal investigations. Part II describes how familial searching is increasingly being used, and thus regulated, in both the United Kingdom and the United States. In Part III, the note examines the new trend of law enforcement's use of genealogy databases, such as GEDmatch, 23andme and Ancestry.com, to

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[17] *See* Sarah Zhang, *The Messy Consequences of the Golden State Killer Case*, ATLANTIC (Oct. 1, 2019), https-//www.theatlantic.com/science/archive/2019/10/genetic-genealogy-dna-database-criminal-investigations/599005/ [perma.cc/VC6H-FREC].

[18] Maryland v. King, 569 U.S. 435, 482 (2013) (Scalia, J., dissenting). A panopticon was an idea for a low-cost prison that would control inmates by allowing watchmen to see all inmates at all times, but the inmates were unable to see the watchmen. Thus, even though, practically, it would be impossible to constantly watch the inmates, the idea was that panopticon inmates would always behave well because they would never know if they were being watched or not. Kevin Underhill, *Justice Scalia and the Genetic Panopticon*, FORBES (June 6, 2013), https://www.forbes.com/sites/kevinunderhill/2013/06/06/justice-scalia-and-the-genetic-panopticon/#4c9c2cd04084 [https://perma.cc/4YU3-NMPT].

[19] *See* Jeffrey Rosen, *Genetic Surveillance for All?*, SLATE (Mar. 17, 2009), https://slate.com/news-and-politics/2009/03/genetic-surveillance-for-all.html [https://perma.cc/R9G7-V52H].

[20] *See* Katz v. United States, 389 U.S. 347, 361 (1967) (Harlan, J., concurring). Justice Harlan's concurrence articulates a two-part reasonable expectation of privacy test: first, the person must have "exhibited an actual (subjective) expectation of privacy" and, second, objectively viewed, this expectation must "be one that society is prepared to recognize as 'reasonable.'" *Id.*

implicate familial relatives in criminal investigations.[21] Fourth Amendment privacy concerns, as well as general ethical concerns of CODIS-based familial searching and investigative genealogy searches are discussed in Part IV. Finally, Part V proposes a statutory framework to balance the government's interest in public safety with individuals' privacy rights.

I. THE A, T, C, & G'S OF DNA

Forensic DNA testing has improved dramatically over the past three decades; new techniques have advanced the speed of sample processing, reduced the sample quantity necessary to develop a DNA profile, and vastly enhanced the ability to differentiate between individuals.[22] A basic understanding of how forensic DNA typing works and its use in criminal investigations is helpful to grasp the privacy and policy implications of CODIS-based familial searches and investigative genealogy searches.[23]

A. DNA Analysis and Forensic DNA Typing

Modern forensic DNA testing is based on the fact that while ninety-nine percent of humans share the same DNA, there are specific locations on the human genome where significant differences occur.[24] In 1985, Dr. Alec Jeffreys first described "DNA fingerprinting," or what today is commonly known as DNA profiling or DNA typing, by explaining that certain areas of deoxyribonucleic acid, or DNA, contain sequences that continually repeat next to each other.[25] When conducting DNA profiling, scientists look at these locations, which vary widely among individuals, and count the number of times specific letters of the

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[21] *See* Kristen V. Brown, *DNA Detectives Are Searching for Killers in Your Family Tree*, BLOOMBERG (June 14, 2018), https://www.bloomberg.com/news/features/2018-06-14/DNA-detectives-are-searching-for-killers-in-your-family-tree [https://perma.cc/V978-FN9M].

[22] BUTLER, FORENSIC DNA TYPING, *supra* note 16, at 3–4.

[23] For more information on privacy implications of familial searching see generally, Christi J. Guerrini et al., *Should Police Have Access to Genetic Genealogy Databases? Capturing the Golden State Killer and Other Criminals Using a Controversial New Forensic Technique*, PLOS BIOLOGY (Oct. 2, 2018), https://journals.plos.org/plosbiology/article?id=10.1371/journal.pbio.2006906 [https://perma.cc/Y9DS-26QU]; Erin E. Murphy, *Familial DNA Searches: The Opposing Viewpoint*, CRIM. JUST., Spring 2012, at 19; Brown, *supra* note 21.

[24] K. K. Kidd et al., *Understanding Human DNA Sequence Variation*, 95 J. HEREDITY 406, 407–08 (2004); Sonia M. Suter, *All in the Family: Privacy and DNA Familial Searching*, 23 HARV. J.L. & TECH. 309, 314 (2010).

[25] BUTLER, FORENSIC DNA TYPING, *supra* note 16, at 2.

DNA "alphabet"—A, T, G, and C—repeat at these positions.[26] These letter combinations are called "short tandem repeats" or "STRs."[27] The number of STRs donated from each parent at a particular locus is a gene variant called an allele.[28] Every person receives half of their DNA from each biological parent, so they have two numbers at each of these locations—one from their mother and one from their father.[29] The FBI has chosen twenty of these particular locations or loci (singular is locus) as the "Core Loci" that are tested to enable national database comparisons.[30]

Familial searching, a type of search conducted in the database, builds on the most basic fundamentals of genetics: that "DNA is shared among family members."[31] Because each individual gains half of their alleles from each biological parent, there is a high probability that biologically related individuals will share a significant amount of STR alleles.[32] Parents and children will match at a minimum of 13 alleles, while estimates suggest that siblings will have, on average, 16.7 alleles in common.[33] This higher rate of allele sharing among relatives is what makes familial DNA searching a valuable investigative tool.[34] With biological relatives sharing more alleles than unrelated people, law enforcement is able to glean information about the individual who has DNA on file, or the databased person, and also learn about the relatives of that individual.[35] Local, state, and national DNA databanks

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[26] Henry T. Greely et al., *Family Ties: The Use of DNA Offender Databases to Catch Offenders' Kin*, 34 J.L. MED. & ETHICS 248, 250 (2006); BUTLER, FORENSIC DNA TYPING, *supra* note 16, at 18–19.

[27] Greely et al., *supra* note 26, at 249–50.

[28] *Id.*; *see* Amanda Pattock, Note, *It's All Relative: Familial DNA Testing and the Fourth Amendment*, 12 MINN. J.L. SCI. & TECH. 851, 855 (2011).

[29] Pattock, *supra* note 28, at 854.

[30] *Combined DNA Index System (CODIS)*, FED. BUREAU INVESTIGATION, https://www.fbi.gov/services/laboratory/biometric-analysis/codis [https://perma.cc/GJ7V-K2YY] [hereinafter *CODIS*]. Effective January 1, 2017, an additional seven loci were added to the original thirteen CODIS core loci, making the current total of CODIS core loci twenty. The FBI decided to add an additional seven loci in order to provide increased potential to differentiate between DNA profiles, enhance missing person investigations, and encourage "international data sharing efforts by having more loci in common with other countries." *Id.* However, individual labs are permitted to test more locations. For example, the NYC Office of Chief Medical Examiner tests twenty-two loci on the genome. *See* FED. BUREAU INVESTIGATION, NATIONAL DNA INDEX SYSTEM (NDIS) OPERATIONAL PROCEDURES MANUAL 83 (2019), https://www.fbi.gov/file-repository/ndis-operational-procedures-manual.pdf/view [https://perma.cc/VW2U-H6FT]; N.Y.C. OFFICE OF CHIEF MED. EXAM'R, FORENSIC BIOLOGY CODIS MANUAL 4 (2019) [hereinafter CODIS MANUAL].

[31] Suter, *supra* note 24, at 311.

[32] Erin Murphy, *Relative Doubt: Familial Searches of DNA Databases*, 109 MICH. L. REV. 291, 295 (2010) [hereinafter Murphy, *Relative Doubt*].

[33] *Id.*

[34] *See* Emily Niedzwiecki et al., *Understanding Familial DNA Searching: Coming to a Consensus on Terminology*, NAT'L CRIM. JUST. REFERENCE SERV. 1 (2016).

[35] Anya E.R. Prince, *Comprehensive Protection of Genetic Information: One Size Privacy or Property Models May Not Fit All*, 79 BROOK. L. REV. 175, 204 (2013).

administered by the government contain millions of DNA profiles, thus increasing the possibility of implicating a relative through a CODIS-based familial search.[36]

B. The Rise of DNA Databanks

In 1994, Congress passed the DNA Identification Act, which authorized the FBI to establish and maintain the Combined DNA Index System, a national DNA database known as CODIS.[37] CODIS refers to both the national DNA database maintained by the FBI as well as the software used to manage the database.[38] The FBI has the power to establish several different indices in which genetic profiles are stored, such as profiles of offenders, crime scene samples, unidentified human remains, and relatives of missing persons.[39] The two most relevant indices for the purposes of familial searching contain offender profiles and forensic, or crime scene, profiles.[40] The "Offender Index" consists of DNA profiles collected from offenders arrested for, or convicted of, qualifying crimes as laid out by state law.[41] The "Forensic Index" contains DNA profiles derived from crime scene evidence.[42]

1. CODIS and Forensic DNA Databanks

CODIS incorporates local, state, and national databases, in which all states can upload their DNA profiles and run searches against profiles submitted by other states and the federal government.[43] The Local DNA Index System (LDIS), used

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[36] *See* NATHAN JAMES, CONG. RESEARCH SERV., R41800, DNA TESTING IN CRIMINAL JUSTICE: BACKGROUND, CURRENT LAW, GRANTS, AND ISSUES 5 (2012). Forensic advances have increased the utility of DNA testing to allow detection of ever smaller amounts of DNA and DNA mixtures. These advances, along with probabilistic genotyping software, enable scientists to assign statistics to give weight to associations between individuals and minute amounts of DNA on evidence. Laura Russell et al., *A Guide to Results and Diagnostics Within a STRmix™ Report*, WIREs FORENSIC SCI. 1–2 (2019).

[37] *See* DNA Identification Act of 1994, 34 U.S.C. § 12592 (Supp. 2017).

[38] Murphy, *Relative Doubt*, *supra* note 32, at 296.

[39] DNA Identification Act of 1994, 34 U.S.C. § 12592 (Supp. 2017).

[40] Murphy, *Relative Doubt*, *supra* note 32, at 296.

[41] FED. BUREAU INVESTIGATION, NATIONAL DNA INDEX SYSTEM (NDIS) OPERATIONAL PROCEDURES MANUAL 98 (2019), https://www.fbi.gov/file-repository/ndis-operational-procedures-manual.pdf/view [https://perma.cc/VW2U-H6FT]. Depending on whether state law authorizes the collection of DNA from arrestees or just from convicted offenders, states may have just a "Convicted Offender or Arrestee Index." *Frequently Asked Questions on CODIS and NDIS*, FED. BUREAU INVESTIGATION, https://www.fbi.gov/services/laboratory/biometric-analysis/codis/codis-and-ndis-fact-sheet [https://perma.cc/83KY-MTWZ] [hereinafter *CODIS FAQs*].

[42] *CODIS FAQs*, *supra* note 41.

[43] *CODIS: Combined DNA Index System Brochure*, FED. BUREAU INVESTIGATION, http://www.fbi.gov/about-us/lab/biometric-analysis/codis/codis_brochure [https://perma.cc/3JUB-CZ5B] [hereinafter *CODIS Brochure*].

by individual laboratories, enables searches against DNA profiles obtained from local cases and suspects who contribute genetic material by consent, court order, or surreptitious collection.[44] Additionally, each state has one laboratory that manages a State DNA Index System (SDIS).[45] SDIS allows laboratories within the same state to run DNA profiles against one another.[46] For states to participate in the National DNA Index System (NDIS)—which houses DNA from the contributing local, state, and federal forensic laboratories—state legislatures must enact laws outlining which class of offenders are required to provide DNA samples to be uploaded to the databank.[47] State laws regulating the collection and analysis of DNA samples must be consistent with the requirements laid out in the DNA Identification Act.[48] That way, if all participating labs test the same minimum twenty core loci, each DNA profile can be accurately compared against all other profiles stored in CODIS.[49]

2. CODIS Hits and Matches

DNA profiles recovered from crime scenes are collected and stored in the Forensic Index of CODIS and may be compared to both offender profiles and other forensic profiles.[50] The main measure of success for CODIS is how many "hits" the system generates.[51] A hit is a "confirmed match between two or more DNA profiles discovered by the database search."[52] There are two main types of DNA hits: offender hits and forensic hits.[53] An offender hit occurs when a crime scene sample and an offender

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[44] *See* CODIS MANUAL, *supra* note 30, at 13; AM. BAR ASS'N, STANDARDS FOR CRIMINAL JUSTICE: DNA EVIDENCE §§ 16-2.2–2.4, 16-1.2 cmt., at 31 (3d ed. 2007). Law enforcement will often employ a tactic of surreptitiously surveilling a suspect in order to collect a discarded item and develop a DNA sample. Jessica D. Gabel, *Probable Cause from Probable Bonds: A Genetic Tattle Tale Based on Familial DNA*, 21 HASTINGS WOMEN'S L.J. 3, 42 (2010).

[45] Amy A. Liberty, Note, *Defending the Black Sheep of the Forensic DNA Family: The Case for Implementing Familial DNA Searching in Minnesota*, 38 HAMLINE L. REV. 467, 473 (2015).

[46] *Id.*

[47] *See* CONG. RESEARCH SERV., R41800, DNA TESTING IN CRIMINAL JUSTICE: BACKGROUND, CURRENT LAW, AND GRANTS 1 (2018); *CODIS FAQs*, *supra* note 41.

[48] *See CODIS FAQs*, *supra* note 41. Some requirements include that DNA analysis satisfy the FBI's quality assurance standards, that testing laboratories be accredited and audited, and that the data be disclosed only in certain circumstances to protect privacy interests. *See* DNA Identification Act of 1994, 34 U.S.C. § 12592(b) (Supp. 2017).

[49] *See* BUTLER, FORENSIC DNA TYPING, *supra* note 16, at 94 (noting that standardized markers must be used to conduct effective DNA testing); *CODIS FAQs*, *supra* note 41.

[50] Greely et al., *supra* note 26, at 251.

[51] BUTLER, FORENSIC DNA TYPING, *supra* note 16, at 445–46.

[52] *Id.* at 446.

[53] *Id.*

sample are linked, indicating that a known offender has left his or her DNA at a crime scene. A forensic hit occurs when forensic samples collected from multiple crime scenes link, indicating that the same perpetrator was present at each scene,[54] but their identity is not necessarily known. As of April 2019, the FBI indicated that CODIS has "added value" to 461,434 criminal investigations by producing over 472,078 hits.[55]

3. CODIS Stringency Levels

CODIS allows the analyst who is conducting each search to adjust specific criteria, including the stringency at which the search is conducted.[56] There are three stringency levels of CODIS searches: high, moderate, and low.[57] High stringency requires all alleles to match, indicating the offender profile and crime scene profile are identical, whereas moderate and low stringency searches do not result in a perfect match between the offender profile and crime scene sample.[58] Moderate and low stringency searches were implemented to generate matches when handling degraded samples or samples that contain DNA from more than one contributor.[59] Because low stringency searches have very limited utility, they are rarely conducted.[60]

II. REGULATING CODIS-BASED FAMILIAL SEARCHES

When biological material, such as bodily fluids, is collected from a crime scene and run through CODIS, a match to an offender profile indicates that the databased offender is the source

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[54] *See* Natalie Ram, *Fortuity and Forensic Familial Identification*, 63 STAN. L. REV. 751, 762–63 (2011) [hereinafter Ram, *Fortuity*].

[55] *CODIS-NDIS Statistics*, FED. BUREAU INVESTIGATION, https://www.fbi.gov/services/laboratory/biometric-analysis/codis/ndis-statistics [https://perma.cc/6QVG-QAZY].

[56] Gabel, *supra* note 44, at 17.

[57] Liberty, *supra* note 45, at 474.

[58] *Id.* High stringency requires all alleles to match at each of the twenty loci searched. As of January 1, 2017, the FBI increased the number of CODIS Core Loci from thirteen to twenty. *CODIS FAQs*, *supra* note 41. A match at a high stringency search indicates that the offender is almost certainly the source of DNA from the crime scene. Moderate stringency requires that all alleles match, but the two profiles may have a different number of alleles. *Id.* In moderate stringency matches there cannot be any mismatches, but one of the profiles may contain additional alleles, often indicating that the DNA sample is a mixture between two or more people. Murphy, *Relative Doubt*, *supra* note 32, at 297. Finally, a low stringency match permits a one allele mismatch at some loci, with the remainder loci matching at high or moderate stringency. CODIS MANUAL, *supra* note 30, at 14.

[59] Liberty, *supra* note 45, at 475.

[60] *See id.* at 475 n.62, 481.

of the DNA collected from the crime scene.[61] When no match is revealed, this suggests that there is no offender in the database who matches the source of DNA from the crime scene. State and federal DNA databanks, therefore, work particularly well for matching crime scene samples to offenders already in the database.[62] However, if there is a DNA hit that matches at a significant number of loci, but not all twenty loci, this may indicate that a close biological relative of the databased person is the source of DNA from the crime scene.[63] Relying on what was known about genetics, law enforcement and scientists wanted to leverage the power of the CODIS database through the use of familial searches.[64] Knowing the true perpetrator is not in the database, law enforcement agencies may request that analysts deliberately search for an offender whose profile is such a close match to the crime scene that the databased person is likely a biological relative of the true unknown perpetrator.[65]

Jurisdictions vary widely in their approach to regulating familial searches. Though familial searching of CODIS is relatively new in the United States, the United Kingdom has employed this technique for nearly two decades.[66] Knowing the technological and scientific capabilities, law enforcement agencies, prosecutors, and victims' families were eager to employ CODIS-based familial searching in the United States.[67] Many states, however, appear reluctant to formally regulate familial searching.[68] This has created

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[61] *See* NATHAN JAMES, CONG. RESEARCH SERV., R41800, DNA TESTING IN CRIMINAL JUSTICE: BACKGROUND, CURRENT LAW, GRANTS, AND ISSUES 1, 3 (2015); *CODIS FAQs*, *supra* note 41.

[62] *See* Natalie Ram, *DNA by the Entirety*, 115 COLUM. L. REV. 873, 881 (2015) [hereinafter Ram, *DNA by the Entirety*].

[63] Ram, *Fortuity*, *supra* note 54, at 763–64.

[64] While the FBI does not permit familial searching of the NDIS database, they do permit disclosure of partial matches, as those are considered distinctive from familial searching. A partial match "is the spontaneous product of a routine database search," while familial searching "is an intentional or deliberate search of the database . . . for the purpose of potentially identifying close biological relatives." *CODIS FAQs*, *supra* note 41. Familial searches conducted deliberately use a "specialized software (separate from CODIS) to detect and statistically rank a list of potential candidates in the DNA database who may be close biological relatives . . . to the unknown individual contributing the evidence DNA profile." Michael B. Field et al., *Study of Familial DNA Searching Policies and Practices* 1 (Nat'l Inst. of Justice, Award No. 2013-R2-CX-0013, 2017).

[65] *See Familial Search Process Overview*, N.Y. DIVISION CRIM. JUST. SERVICES (May 21, 2018), http://www.criminaljustice.ny.gov/forensic/forms/Familial-Search-Process-Overview-05-21-2018.pdf [https://perma.cc/TX28-9CCW]; *CODIS FAQs*, *supra* note 41, at 10.

[66] Rafaela Granja & Helena Machado, *Ethical Controversies of Familial Searching: The Views of Stakeholders in the United Kingdom and in Poland*, 44 SCI. TECH. & HUM. VALUES 1068, 1073–74 (2019).

[67] *See* Seth Augenstein, *Familial Searching Approved by DNA Forensics Committee in NY*, FORENSIC MAG. (Mar. 28, 2017), https://www.forensicmag.com/news/2017/03/familial-searching-approved-dna-forensics-committee-ny?cmpid=horizontal content [https://perma.cc/WMX7-2RJK].

[68] Liberty, *supra* note 45, at 476; *see* Ram, *Fortuity*, *supra* note 54, at 765.

a "myriad of confusing, incomplete, and varying policies" surrounding the use of CODIS-based familial searches.[69] Clear regulations and formal policies of CODIS-based familial searching, such as those implemented in Colorado and New York, would promote transparency and thus, more public oversight, benefitting both opponents and supporters of familial searching.[70]

A. The United Kingdom: Pioneers of Familial Searching

England has long been at the forefront of utilizing DNA in criminal investigations.[71] In 1986, law enforcement in the United Kingdom used Dr. Alec Jeffreys' discovery of "DNA fingerprinting" to solve two homicides, exonerating a wrongly accused individual and arresting the true perpetrator.[72] In that case, two fifteen-year-old girls had been raped and murdered a few hundred yards apart from one another.[73] Both young girls had been killed in a similar fashion, leading law enforcement to believe the same perpetrator had committed both crimes.[74] Richard Buckland, a seventeen-year-old boy was arrested, but after Jeffreys compared Buckland's DNA sample against semen recovered from both victims' bodies, he discovered that Buckland's DNA did not match the evidence from either crime scene sample.[75] Later, based on a tip, the police interviewed Colin Pitchfork, who confessed to the murders. A blood sample was collected from Pitchfork, confirming that "his DNA profile matched semen from both murder scenes."[76] The first use of forensic DNA typing proved successful—not only because a serial murdered was justly convicted, but also because "Jeffreys' work almost certainly saved Buckland from suffering a serious miscarriage of justice."[77]

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[69] Liberty, *supra* note 45, at 476.

[70] *See* Natalie Ram, *DNA Confidential: State Law Enforcement Policies for Genetic Databases Lack Transparency*, SCI. PROGRESS 2–4 (Oct. 2009), https://www.scienceprogress.org/wp-content/uploads/2009/10/DNA_matching.pdf [https://perma.cc/A47R-JZ67] [hereinafter Ram, *DNA Confidential*]; *infra* Sections II.B, C.

[71] *See* NAT'L INST. OF JUSTICE, NCJ 183697, THE FUTURE OF FORENSIC DNA TESTING: PREDICTIONS OF THE RESEARCH AND DEVELOPMENT WORKING GROUP 14–15 (Nov. 2000), https://www.ncjrs.gov/pdffiles1/nij/183697.pdf [https://perma.cc/S8T3-VBVE] [hereinafter THE FUTURE OF FORENSIC DNA TESTING]; BUTLER, FORENSIC DNA TYPING, *supra* note 16, at 2–3.

[72] BUTLER, FORENSIC DNA TYPING, *supra* note 16, at 2–3; *see* THE FUTURE OF FORENSIC DNA TESTING, *supra* note 71, at 14–15.

[73] Ian Cobain, *Killer Breakthrough – The Day DNA Evidence First Nailed a Murderer*, GUARDIAN (June 7, 2016), https://www.theguardian.com/uk-news/2016/jun/07/killer-dna-evidence-genetic-profiling-criminal-investigation [https://perma.cc/XF6J-Q8DA]; *see* BUTLER, FORENSIC DNA TYPING, *supra* note 16, at 3.

[74] BUTLER, FORENSIC DNA TYPING, *supra* note 16, at 3; Cobain, *supra* note 73.

[75] Cobain, *supra* note 73.

[76] BUTLER, FORENSIC DNA TYPING, *supra* note 16, at 3.

[77] Cobain, *supra* note 73.

In 2002, the United Kingdom became the first country to formally implement the use of familial searching in criminal investigations through its National Criminal Intelligence DNA Database.[78] The technique was used in a well-known case from the 1980s, where a serial rapist plagued South Yorkshire, England and violently attacked and raped at least six women.[79] Investigations into the gruesome attacks led nowhere. Even with a DNA profile sourced from semen collected from the victims' clothes, there was no match in the national DNA database.[80] In 2006, investigators decided to use familial searching to try and identify an individual whose genetic profile was similar enough to the crime scene evidence to indicate a familial relation.[81] That search returned forty-three hits.[82] June Lloyd, whose DNA was stored in the national databank due to an unrelated incident, was the third person investigators approached, and Ms. Lloyd informed detectives that she had a brother, James.[83] James Lloyd, a family man with no criminal history, was arrested and confessed to raping and attempting to rape multiple women, for which he was eventually sentenced to an indeterminate term of fifteen years.[84] James Lloyd's "conviction was hailed . . . as the biggest victory yet" in a case using familial DNA searching.[85]

B. Colorado's Familial Searching Policy

As the United States attempted to catch up with Europe, an increasing number of states "expressed a growing interest in familial DNA searching."[86] One of the biggest proponents of familial DNA searching in the United States was Mitch Morrissey, the former District Attorney of Denver, Colorado.[87] In

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[78] Granja & Machado, *supra* note 66, at 1073.

[79] *DNA Traps Rapist with Shoe Fetish*, BBC NEWS (July 17, 2006), http://news.bbc.co.uk/2/hi/uk_news/england/south_yorkshire/5187634.stm [https://perma.cc/FF39-A7RT]. The attacker was labeled the "Dearne Valley Shoe Rapist" because of his routine practice of stealing his victims' high-heeled stiletto shoes, almost as a trophy, after tying them up with their stockings. *Id.*; Suter, *supra* note 24, at 310.

[80] Suter, *supra* note 24, at 310.

[81] *Id.*; *DNA Traps Rapist with Shoe Fetish*, *supra* note 79.

[82] Daniel Schorn, *A Not So Perfect Match*, CBS NEWS (Mar. 23, 2007), https://www.cbsnews.com/news/a-not-so-perfect-match/2/ [https://perma.cc/L264-DWF8].

[83] *Id.*

[84] *Shoe Rapist Victim Waives Anonymity to Reveal Ordeal*, EVENING STANDARD (Sept. 5, 2006), https://www.standard.co.uk/news/shoe-rapist-victim-waives-anonymity-to-reveal-ordeal-7173588.html [https://perma.cc/L8HU-R7V6]. Underneath a trapdoor in Lloyd's printing firm officers found lingerie, jewelry, stockings, and over one hundred pairs of women's shoes. *Id.*

[85] *DNA Traps Rapist with Shoe Fetish*, *supra* note 79.

[86] Field et al., *supra* note 64, at 1.

[87] *States Using Familial Searching*, DNA FORENSICS (Aug. 25, 2012), http://www.dnaforensics.com/statesandfamilialsearches.aspx [https://perma.cc/HH6Q-WGSX].

2008, Morrissey became the first District Attorney in the United States to develop and implement familial DNA searching in cold case investigations.[88] Familial searching was first used in Denver to identify a suspect accused of breaking into two cars and stealing $1.40 in change.[89] Morrissey used familial searching to locate a near-match to DNA evidence left at the crime scene, which led investigators to the suspect's brother.[90] Investigators then used traditional methods, such as interviewing witnesses and reviewing public records, to identify the defendant, whose DNA was collected, tested, and compared against the crime scene sample.[91] This comparison confirmed that the defendant's DNA was a perfect match to the DNA collected from the crime scene.[92]

Success, however, did not come without backlash. Opponents of familial searching disapproved of the privacy implications for the defendant as well as the notion that such invasive technology was being used to solve minor crimes.[93] So, in October 2009, the Colorado Bureau of Investigations (CBI) released a policy outlining the procedures for familial searching.[94] The CBI policy lays out three scenarios in which familial searching may be conducted: 1) when a possible match is identified via a traditional CODIS search and the case is under investigation; 2) when the chief law enforcement officer of the investigating agency or the district attorney makes a special request for a search on an ongoing investigation with significant public safety concerns; and 3) when "[a] routine familial search [is] performed by the CBI."[95] Although the CBI's familial

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[88] COLO. BUREAU OF INVESTIGATION, DNA FAMILIAL SEARCH POLICY 1 (2009), http://www.dnaresource.com/documents/ColoradoPolicy.pdf [https://perma.cc/R3MQ-AWZD] [hereinafter CBI FAMILIAL SEARCH POLICY]; Howard Pankratz, *Denver Uses "Familial DNA Evidence" to Solve Car Break-Ins*, DENVER POST (Nov. 16, 2009), https://www.denverpost.com/2009/11/16/denver-uses-familial-dna-evidence-to-solve-car-break-ins/ [https://perma.cc/2YZZ-4RKE]; Dist. Att'y Mitch Morrissey, Address at the City Club of Denver (Jan. 19, 2016), https://cityclubofdenver.org/event-2128807 [https://perma.cc/U57H-VBEM].

[89] Ed Andrieski, *If You're Kin to a Convict, His DNA Could Finger You*, TUSCON.COM (Feb. 10, 2010), https://tucson.com/news/science/if-you-re-kin-to-a-convict-his-dna-could/article_0ff886a3-7b1a-5f62-bf5f-de3470c0735a.html [https://perma.cc/PER7-XWEU]; *see* Pankratz, *supra* note 88.

[90] Pankratz, *supra* note 88.

[91] *Id.*

[92] *Id.*

[93] Joyce Kim et al., *Policy Implications for Familial Searching*, INVESTIGATIVE GENETICS, Nov. 2011, at 3–5; Jaclyn Allen, *'A Killer in the Family': Former Denver DA Co-Founds Familial DNA Search Company*, DENVER CHANNEL (Sept. 28, 2018), https://www.thedenverchannel.com/news/crime/-a-killer-in-the-family-former-denver-da-co-founds-familial-dna-search-company [https://perma.cc/BL2Z-WQDD]; Ryan Warner, *Denver's Use of Familial DNA Raises Privacy Concerns*, COLO. PUB. RADIO (Apr. 5, 2010), https://www.cpr.org/show-segment/denvers-use-of-familial-dna-raises-privacy-concerns/ [https://perma.cc/UDV3-XAJU].

[94] *See* CBI FAMILIAL SEARCH POLICY, *supra* note 88.

[95] *Id.* at 1.

searching policy is not regulated through legislation, it still serves as a model for many other jurisdictions looking to implement familial searching as a new tool for law enforcement.[96]

The CBI requires numerous procedural conditions to be satisfied prior to the performance of any familial search.[97] The CBI prefers joint requests for familial searches from the district attorney and chief law enforcement agency.[98] The policy requires the request to be in writing and to certify "[t]hat the evidentiary DNA profile is from a case having significant public safety concerns and the familial search result is critical to advancing the investigation."[99] Further, the joint request must confirm "[t]hat standard investigative leads have been exhausted, or a specific exception [must be] articulated."[100] Though these requirements appear to provide a safeguard against the use of CODIS-based familial searching in petty cases, the policy fails to provide a specific definition of either "significant public safety concerns" or the adjective "critical" in describing the advancement of the investigation. Such failures may lead to potential manipulation by law enforcement agencies, including prosecutors' offices, in an effort to sidestep the policy's requirements.[101] Although one may rest assured that traditional investigative measures will be exhausted prior to the performance of any familial searches, the policy fails to specifically define "standard investigative leads" and what it means to have exhausted such leads.[102]

The CBI also demands that the crime scene profile itself meet specific criteria.[103] The DNA sample must be "either a single-source profile or a clearly defined major component of a mixture."[104] For male candidates, Y-STR testing must be conducted, and written results of that test provided to the CBI.[105] Once testing is completed, the CBI must release a case report to the chief law enforcement officer and district attorney with the following: "Identifying information of any individual having sufficient DNA markers in common with the DNA offender profile," and a statement indicating that the information contained in the report "is for law enforcement investigatory purposes only."[106]

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96 *See id.*

97 *See* Field et al., *supra* note 64, at 7.

98 CBI FAMILIAL SEARCH POLICY, *supra* note 88, at 1.

99 *Id.* at 2.

100 *Id.*

101 *Id.*

102 *Id.*

103 Field et al., *supra* note 64, at 7.

104 CBI FAMILIAL SEARCH POLICY, *supra* note 88, at 2.

105 *Id.*; *see also* Field et al., *supra* note 64, at 7.

106 CBI FAMILIAL SEARCH POLICY, *supra* note 88, at 2 (emphasis omitted). By indicating that the results of the familial search are merely investigative leads, Colorado

Lastly, the agency receiving the results of a familial search must agree to follow certain policies, procedures, and requirements.[107] The CBI must initially review the results of the familial search to determine if anyone is "of immediate interest to the investigation."[108] Further, the investigating law enforcement agency must examine whether the individual(s) identified by the familial search are related to the databased person.[109] This may include creating a "family tree" using the information gleaned from the Y-STR testing to determine male relatives.[110] The CBI also indicates a number of records that should be scoured to determine the strength of the familial search results. Some examples include criminal history checks, jail records, such as inmate visitor logs and inmate profiles from the Department of Correction, and public records.[111] After the records inquiry, the investigator is tasked with reviewing the independent evidence in the case to determine if any of the individuals identified by the familial search are potential suspects.[112] Such investigation consists of reviewing any video, work history, Department of Motor Vehicle records, and re-interviewing necessary witnesses.[113] Finally, law enforcement must obtain a Court Order for Nontestimonial Identification in order to collect a confirmatory DNA sample from the suspect.[114] This sample is then compared to the forensic profile, and the results provided to the investigating agency and the district attorney's office.[115]

The CBI policy considers a broad range of privacy concerns by including both process requirements as well as notice requirements.[116] Additionally, in the very beginning of the policy, the CBI clearly denotes that "[t]he process specified in the policy was developed keeping privacy concerns in mind."[117] Thus, it is evident that Colorado had a keen sense of the privacy implications and aimed to ameliorate such concerns through the safeguards built into their familial searching policy. But their efforts fall short of

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attempts to provide additional protections against any privacy invasions. Though the CBI attempts to mitigate opponents' concerns by assuring the public that the results of a familial search will be used in the same manner as any traditional investigative lead, in reality, it is hard to determine investigators' degree of reliance on the results of familial searches.

107 *Id.* at 3.
108 *Id.*
109 *Id.*
110 *Id.*
111 *Id.*
112 *Id.*
113 *Id.*
114 *Id.* at 4; *see* COLO. R. CRIM. P. 41.1.
115 CBI FAMILIAL SEARCH POLICY, *supra* note 88, at 4.
116 *Id.*
117 *Id.* at 1.

establishing the kind of unambiguous, detailed protections sufficient to effectively balance the utility of familial searching with individual's constitutionally-protected privacy rights.

C. New York State Regulations on Familial Searches

While familial searching is not performed at the national level, numerous states, including New York and Colorado perform such searches at the state level, with varying regulations in place. Though federal legislation explicitly permitting the use of familial DNA searching has been introduced in Congress, it has never been successful, and therefore federal agencies may not conduct familial searches through NDIS.[118] With formal regulations in place governing the performance and reporting of CODIS-based familial searching,[119] New York is one of the few states to make such regulations publicly accessible.[120]

In 1996, New York State created a computerized DNA databank governed by the Commission on Forensic Science, which allows DNA information to be shared among participating local, state, and national databases as part of CODIS.[121] New York, like every other state, can independently decide, through the state legislature, under what criteria to collect and store DNA in the state databank.[122] In its infancy, the New York State Databank included only DNA profiles collected from people convicted of homicide and specific sex-related crimes.[123] In 2012, however, New York became the "first 'all crimes DNA' state in the nation, by requiring DNA samples be collected from anyone

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[118] Liberty, *supra* note 45, at 495. The Scientific Working Group on DNA Analysis Methods (SWGDAM), however, did form the Familial Searching Ad Hoc Working Group to study the viability of familial searching on a federal level. For the group's recommendations see generally SCI. WORKING GRP. ON DNA ANALYSIS METHODS, RECOMMENDATIONS ON FAMILIAL SEARCHING, http://media.wix.com/ugd/4344b0_46b5263cab994f16aeedb01419f964f6.pdf [https://perma.cc/A6YB-5PU2] [hereinafter SWGDAM RECOMMENDATIONS].

[119] *See* N.Y. COMP. CODES R. & REGS. tit. 9, § 6192.3 (laying out the standards for the establishment and operation of a DNA Identification Index, or a DNA Databank, in New York State).

[120] Ram, *DNA Confidential*, *supra* note 70, at 4.

[121] *See NYS DNA Databank and CODIS*, N.Y. ST. DIVISION CRIM. JUST. SERVICES, https://www.criminaljustice.ny.gov/forensic/dnabrochure.htm [https://perma.cc/T34E-74X5]; N.Y. EXEC. LAW § 995-b (9). The Commission on Forensic Science, created in 1994, regulates public forensic DNA testing, develops processes of accrediting state forensic laboratories, requires qualifications for lab personnel, and approves laboratories to perform certain forensic methodologies. *See* N.Y. EXEC. LAW §§ 995-a, -b.

[122] Lena M. Carlucci, Note, *DNA Collection at Birth: A Uniform System of Identification*, 26 J. C.R. & ECON. DEV. 303, 309 (2012).

[123] *NYS DNA Databank Qualifying Offenses*, N.Y. ST. DIVISION CRIM. JUST. SERVICES, https://www.criminaljustice.ny.gov/forensic/dnaoffenses.htm [https://perma.cc/6HC7-EXCM].

convicted of a felony or Penal Law misdemeanor."[124] This increased the possibility of implicating relatives of databased persons when lower stringency searches were run.[125]

In 2017, the New York Commission on Forensic Science approved CODIS-based familial searching as a result of fierce lobbying by advocates, including the parents of Karina Vetrano, a thirty-year-old who was killed while jogging in her Queens neighborhood in August 2016.[126] DNA was recovered from under Vetrano's fingernails and near her throat, as well as from the surface of her cell phone, which was found near her body.[127] Frustrated that no matches were uncovered when DNA from the crime scene was run through CODIS,[128] law enforcement, aided by Vetrano's parents, lobbied to run a CODIS-based familial search in order to look for possible relatives of the perpetrator.[129] Although Vetrano's murder was eventually solved through traditional investigative methods, it sparked a debate for the use of familial searching in New York.[130]

In the interest of public accessibility, all parties had an opportunity to testify at a meeting held by the Commission prior to the official codification of familial searching.[131] Erin Murphy, a professor at NYU Law who specializes in forensic science and has been an outspoken critic of familial searching, stated "[i]n contrast to criminal offenders . . . the ordinary law-abiding people targeted by familial searches—people who have committed no act to qualify them for inclusion in the state's

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[124] Press Release, Governor Cuomo, Governor Cuomo Signs Law to Expand New York's DNA Databank (Mar. 19, 2012), https://www.governor.ny.gov/news/governor-cuomo-signs-law-expand-new-yorks-DNA-databank [https://perma.cc/THE7-VM76].

[125] *See* Suter, *supra* note 24, at 321.

[126] *See* N.Y. COMP. CODES R. & REGS. tit. 9 § 6192.3(h); Anthony M. DeStefano, *State Panel of DNA Experts Approve of 'Familial Searching' in NY*, NEWSDAY (Mar. 27, 2017), https://www.newsday.com/news/region-state/state-panel-of-dna-experts-approve-of-familal-searching-in-n-y-1.13321976 [https://perma.cc/3LVC-UDQB]; Augenstein, *supra* note 67.

[127] Jan Ransom, *Mystery of Karina Vetrano's Death Ends with Murder Conviction*, N.Y. TIMES (Apr. 1, 2019), https://www.nytimes.com/2019/04/01/nyregion/karina-vetrano-trial-verdict.html [https://perma.cc/B6BM-MKUY].

[128] Joseph Goldstein & Al Baker, *New York Police Struggle to Generate Leads in Murder of Queens Jogger*, N.Y. TIMES (Aug. 22, 2016), https://www.nytimes.com/2016/08/23/nyregion/new-york-police-struggle-to-generate-leads-in-murder-of-queens-jogger.html?module=inline [https://perma.cc/B5BJ-QGBW].

[129] Eli Rosenberg, *Family DNA Searches Seen as Crime-Solving Tool, and Intrusion on Rights*, N.Y. TIMES (Jan. 27. 2017), https://www.nytimes.com/2017/01/27/nyregion/familial-dna-searching-karina-vetrano.html [https://perma.cc/U4BN-SJLW].

[130] Augenstein, *supra* note 67.

[131] Press Release, Div. of Criminal Justice Servs., New York State Commission on Forensic Science Sets Special Meeting to Discuss Familial DNA Searching (Dec. 20, 2016), http://www.criminaljustice.ny.gov/pio/press_releases/2016-12-20_pressrelease.html [https://perma.cc/3MA2-9F7R].

database—retain their right to genetic privacy."[132] However, the New York City Police Department strongly supported familial searching, stating:

> Serial killers, child murderers and rapists were brought to justice through the power of Familial Searching. . . . There is no scientific or legal reason to believe that Familial Searching cannot provide the same truth-finding evidence that the criminal justice system has relied upon in using conventional DNA comparisons for decades.[133]

Ultimately, the Commission issued a compromise policy laying out certain conditions, procedures, and requirements that must be met when conducting a familial search in New York. First, a familial search may only be jointly requested by the investigating law enforcement agency and district attorney who retains jurisdiction over the case if there is no exact *or* partial match to a sample in the DNA databank.[134] The regulations specify that a partial match occurs "during" the course of routine database search,[135] while a familial search, which is distinct from a partial match, is a "targeted" and deliberate search for relatives.[136] Case requirements include that the forensic profile must be associated with qualifying crimes, as laid out by the regulations.[137] Aside from the crimes specified, the regulations also includes a catch-all, permitting familial searches in cases "presenting a significant public safety threat."[138] The regulations attempt to protect individuals' privacy rights by enumerating crimes for which familial searching may be conducted. However, similar to CBI's policy, the inclusion of the catch-all phrase undermines these protections by permitting law enforcement to circumvent the safeguards intended to limit familial searches to particularly heinous crimes. Furthermore, the requesting agency

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[132] Letter from Erin Murphy, to Michael C. Green, Comm'r N.Y.S. Forensic Sci. Comm'n, re: Familial Searching , Agenda of the Special Joint Meeting of the N.Y. State Comm'n. on Forensic Sci., DNA Subcommittee, at 193 (Jan. 18, 2017) (on file with author).

[133] Statement of N.Y.C. Police Dep't, NYPD's Position on Familial Searching, Agenda of the Special Joint Meeting of the N.Y. State Comm'n. on Forensic Sci., DNA Subcommittee, at 260 (on file with author).

[134] N.Y. COMP. CODES R. & REGS. tit. 9, § 6192.3(h)-(i). A "partial match refer[s] to the determination during the CODIS candidate match confirmation process that a forensic DNA profile is similar to a DNA profile in the offender index and a comparison reveals that the offender may be a close biological relative of the source of the forensic index profile." § 6192.1(q). A familial search, however, is a deliberate "evaluation of offenders' DNA profiles . . . which generates a list of candidate profiles to indicate potential biologically related individuals." § 6192.1(ab).

[135] § 6192.1(q).

[136] § 6192.1(ab).

[137] § 6192.3(h)(1). The regulations state that the forensic DNA profile must be related to a homicide, a violent felony sexual offense or an A felony for kidnapping, arson, or terrorism. *Id.*

[138] § 6192.3(h)(1)(iv).

must confirm that "reasonable investigative efforts have been taken" or "exigent circumstances exist."[139] Once again, by including the exigency exception, the regulations leave a gap that may encourage law enforcement to avoid employing traditional investigative methods prior to requesting familial searching.

The New York regulations also necessitate that certain sample requirements are met.[140] The profile must: be a single source profile or deduced from a mixture such that it can be treated as a single source profile; appear to be directly related to the perpetrator; reside in SDIS; and have been run through the CODIS offender index.[141] If the crime scene sample is accepted for a familial search, the New York state police crime laboratory is required to use validated software to perform the familial search and then must generate a candidate list.[142] That candidate list will be evaluated based on "established kinship threshold value(s)" and, if possible, the lab must also perform Y-STR testing on the candidate samples to determine if the candidate's DNA is from the same paternal line as the crime scene sample.[143] Lastly, when the results of a familial DNA search are released, they must be in writing and contain the following statements:

> (i) the information provided is for investigatory law enforcement purposes only; (ii) the forensic DNA profile could not have come from the named offender in the DNA databank; (iii) the information provided is not a definitive statement of a familial (i.e., biological) relationship; and (iv) the information provided shall be treated only as an investigative lead.[144]

The extensive conditions required for New York law enforcement to conduct a familial search and then release the results aim to protect privacy rights and ensure that law enforcement agencies are conducting familial searches in an ethical and measured manner. Yet, with the broad language of some conditions, the regulations fail to sufficiently balance individuals' privacy rights with the advantages of familial searching.

III. INVESTIGATIVE GENEALOGY SEARCHES

The market for direct-to-consumer genealogy testing has mesmerized thousands of consumers who are interested in finding out more about their ancestry, as well as people

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139 § 6192.3(h)(2)(i)–(ii).
140 *Familial Search Process Overview*, *supra* note 65.
141 *Id.*; *see also* § 6192.3 (h)(3).
142 § 6192.3(j)(1).
143 § 6192.3(j)(2)–(3).
144 § 6192.3(k)(2)(i)–(iv).

intrigued by the numerous other uses of such websites.[145] The "convergence of two long-standing trends"—direct-to-consumer genetic testing and open-access genealogy databases—caused the rise of law enforcement's use of such sites to assist in locating serial rapists and killers who have evaded law enforcement for decades.[146] Participants in these trends implicate, perhaps unknowingly, the Fourth Amendment privacy rights of their relatives when law enforcement uses the information on such sites to locate the relatives of those who uploaded their DNA profile to a public genealogy site.[147]

A. The Rise of Genealogy Websites: 23andMe and Ancestry.com

As genealogical testing becomes more affordable and publicly accessible through online websites, more and more individuals are captivated by direct-to-consumer genetic genealogy tests.[148] Today, "genealogy is the second most popular hobby in the U.S. after gardening . . . , and the second most visited category of websites, after pornography."[149] The number of people who have used direct-to-consumer genetic tests to analyze their DNA more than doubled in 2017 alone.[150] Studies suggest that more than twelve million people have utilized such tests, with the leading company being Ancestry.com, followed by

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[145] *See generally* McKenna Moore, *Spotify Will Use Your DNA to Personalize Your Music Playlists*, FORTUNE (Sept. 28, 2018), https://fortune.com/2018/09/28/spotify-to-use-your-dna-for-playlists/ [https://perma.cc/6L28-TF67] (explaining that music streamer Spotify has suggested another use for genetic databases which invites Ancestry customers to type their DNA information into a playlist generator to "experience their culture" through specially-selected music based on their genetic background); Jenae Sitzes, *Who's More Likely to Keep Their New Year's Resolutions: Men or Women?*, PREVENTION (Dec. 27, 2018), https://www.prevention.com/life/a25693301/new-years-resolutions-study-23-and-me/ [https://perma.cc/ZXW3-PYBN] (explaining how 23andMe performed a study using genome data contained on their website in hopes of finding a genetic explanation for why some people are better at keeping their New Year's resolutions).

[146] Deborah Netburn, *So Many People Have Had Their DNA Sequenced That They've Put Other People's Privacy in Jeopardy*, L.A. TIMES (Oct. 12, 2018), https://www.latimes.com/science/sciencenow/la-sci-sn-DNA-genealogy-privacy-20181012-story.html [https://perma.cc/EF2M-PEWD].

[147] *Privacy Concerns After Public Genealogy Database Used to ID "Golden State Killer" Suspect*, CBS NEWS (Apr. 27, 2018), https://www.cbsnews.com/news/privacy-concerns-after-public-genealogy-database-used-to-id-golden-state-killer-suspect/ [https://perma.cc/PA9A-TY7A].

[148] *See* Antonio Regalado, *2017 Was the Year Consumer DNA Testing Blew Up*, MIT TECH. REV. (Feb. 12, 2018), https://www.technologyreview.com/s/610233/2017-was-the-year-consumer-DNA-testing-blew-up/ [https://perma.cc/W3DS-WMZQ].

[149] Gregory Rodriguez, *How Genealogy Became Almost as Popular as Porn*, TIME (May 30, 2014), http://time.com/133811/how-genealogy-became-almost-as-popular-as-porn/ [https://perma.cc/XN9L-XPZU].

[150] Regalado, *supra* note 148.

23andMe.[151] Direct-to-consumer genetic tests can readily be purchased online or in stores, thereby increasing their appeal.[152] Customers collect their own DNA by spitting into a test tube and sending their DNA to these private companies.[153] The companies then return the results directly to the consumer through a secure website or written report.[154] Many of the popular sites offer these services at low costs, especially during the holiday seasons, ranging from $79 to $99, incentivizing consumers to test themselves or to give the test as a gift.[155]

B. Open-Access Genealogy Databases: A Gold Mine for Law Enforcement

The direct-to-consumer genetic genealogy testing industry is predicted to continue growing at an exponential rate.[156] The use of these direct-to-consumer genealogy sites in conjunction with open-access genealogy websites, such as GEDmatch, provides law enforcement with a uniquely probative tool.[157] Unlike membership fee-based sites, such as 23andMe and Ancestry.com, GEDmatch is a free genealogy website where users can upload DNA profiles previously obtained from commercial companies and widen their search for ancestors.[158] Often people will pay 23andMe or Ancestry.com to generate their DNA profile, and then upload that profile to GEDmatch for free.[159]

At the same time as GEDmatch gives their users the joyful possibility of charting their family trees, the database simultaneously serves as a resource for law enforcement officers

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[151] *Id.*

[152] *See What Is Direct-To-Consumer Genetic Testing?*, U.S. NAT'L LIBR. MED. (Oct. 1, 2018), https://ghr.nlm.nih.gov/primer/dtcgenetictesting/directtoconsumer [https://perma.cc/G7QK-BMU6].

[153] *How It Works*, 23ANDME, https://www.23andme.com/howitworks/ [https://perma.cc/AQE2-KJ5X]; *Taking an AncestryDNA® Test*, ANCESTRYDNA, https://support.ancestry.com/s/article/Taking-an-AncestryDNA-Test [https://perma.cc/U9NE-VAKC].

[154] *What Is Direct-To-Consumer Genetic Testing?*, *supra* note 152.

[155] *See Which Genealogy DNA Test Is the Best? A Detailed Comparison Guide to Help You Decide*, FAM. HIST. DAILY, https://familyhistorydaily.com/genealogy-help-and-how-to/ancestry-DNA-tests-comparison-guide/ [https://perma.cc/Z3U5-RPSC].

[156] Regalado, *supra* note 148.

[157] *See* Matthias Gafni & Lisa M. Krieger, *Here's the 'Open-Source' Genealogy DNA Website That Helped Crack the Golden State Killer Case*, MERCURY NEWS (Apr. 20, 2018), https://www.mercurynews.com/2018/04/26/ancestry-23andme-deny-assisting-law-enforcement-in-east-area-rapist-case/ [https://perma.cc/3PRR-4BQU].

[158] *Privacy Concerns*, *supra* note 147.

[159] *See* Gina Kolata & Heather Murphy, *The Golden State Killer Is Tracked Through a Thicket of DNA, and Experts Shudder*, N.Y. TIMES (Apr. 27, 2018), https://www.nytimes.com/2018/04/27/health/DNA-privacy-golden-state-killer-genealogy.html [https://perma.cc/A8TU-JD2P].

whose rape and murder investigations have gone cold.[160] In contrast to CODIS, which generally examines STRs at twenty loci and thus is not known to code for any specific traits, the DNA profiles generated from commercial databases use technology which looks at thousands of locations on the genome called single-nucleotide polymorphisms (SNPs).[161] Unlike the twenty core loci used by CODIS, these SNPs reveal information about an individual's geographic origins, heredity, and physical traits.[162]

No extraordinary measures need to be taken in order for law enforcement to access data on public websites such as GEDmatch, MyHeritage, and Family Tree DNA.[163] Officers do not need to obtain search warrants or follow statutory strictures to access these sites.[164] These sites are open to all users, including law enforcement, to access voluntarily posted information, including raw DNA profiles generated and uploaded from sites such as 23andMe and Ancestry.com.[165]

Until May 2019, GEDmatch was clear in their Terms of Service and Privacy Policy that although the intended use of the website was for genealogical research, the company could not guarantee that the information would not be used for other purposes.[166] The Terms of Service explicitly stated that such other uses could include "[f]amilial searching by third parties such as law enforcement agencies to identify the perpetrator of a crime, or to identify remains."[167] After much backlash from privacy advocates, GEDmatch reversed their policy to require

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[160] Genealogist Colleen Fitzpatrick described GEDmatch as "a desert island where all the genealogists can go play in the sand." Jessica Testa, *Nobody Was Going to Solve These Cold Cases. Then Came the DNA Crime Solvers*, BUZZFEED NEWS (Sept. 22, 2018), https://www.buzzfeednews.com/article/jtes/DNA-cold-case-crime-doe-project-genealogy [https://perma.cc/X8BT-KTVU]. Not only do genealogists benefit from the sandbox of GEDmatch, but so too do members of law enforcement when they attempt to solve cold cases.

[161] Sarah Zhang, *How a Tiny Website Became the Police's Go-To Genealogy Database*, ATLANTIC (June 1, 2018), https://www.theatlantic.com/science/archive/2018/06/gedmatch-police-genealogy-database/561695/ [https://perma.cc/Q32D-CGAN].

[162] *Id.*

[163] *See* Brown, *supra* note 21.

[164] *See Privacy Concerns*, *supra* note 147.

[165] Brown, *supra* note 21.

[166] *Terms of Service and Privacy Policy*, GEDMATCH (May 20, 2018) [hereinafter GEDmatch 2018 Terms of Service] (on file with the author). The Terms of Service and Privacy Policy have since been updated to require users to specifically opt-in to permit comparison of their DNA profiles with profiles uploaded by law enforcement. *GEDmatch.com, Terms of Service and Privacy Policy*, GEDMATCH (May 18, 2019), https://www.gedmatch.com/tos.htm [https://perma.cc/S3RT-YQ79 [hereinafter GEDmatch 2019 Terms of Service].

[167] GEDmatch 2018 Terms of Service, *supra* note 166.

users to affirmatively opt in to law enforcement searches.[168] Users are now automatically unsearchable by law enforcement, unless they choose to opt in to such searches.[169] Unlike GEDmatch, 23andMe and Ancestry.com explicitly state that it is their policy to oppose inquires by law enforcement to protect customer privacy, unless compelled by court order.[170]

While complete restriction on law enforcement's ability to use open-access genealogy sites would successfully protect everyone's privacy, it shuts down a valuable and effective new method of investigation. Although opponents challenge familial searching based on the Fourth Amendment right to be free from unreasonable searches and seizures, the state interests in familial searching for investigating and prosecuting violent serial criminals cannot be ignored.[171] In applying the Fourth Amendment balancing test, law enforcement should be able to access genealogy websites, but Congress must implement a statute that requires certain conditions and procedures be met prior to the search in order to protect the privacy rights of users and their relatives.

C. Case Study of Investigative Genealogy: A Search for Serial Killers and Rapists

One of the most compelling arguments that supporters of familial searching can make is to point to the success stories that have removed serial murders and rapists from the streets. On April 24, 2018, Joseph James DeAngelo, 72, was arrested in connection with more than fifty rapes and thirteen murders, all cold cases from the 1970s and 1980s.[172] DeAngelo, commonly known as the "Golden State Killer," evaded law enforcement for over four decades.[173] Investigators uploaded DNA collected from one of the crime scenes to GEDmatch, and for the first time

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[168] Eric Levenson, *How a Utah Assault Case Upended the Cutting-edge Website that Caught the Golden State Killer*, CNN, https://www.cnn.com/2019/05/27/us/genetic-genealogy-gedmatch-privacy/index.html [https://perma.cc/7PBU-EDT7].

[169] *Id.*

[170] *Privacy Concerns*, *supra* note 147. Both Ancestry.com and 23andMe make a point to disclose the number of government requests that they have successfully fought off in order to protect the privacy interests of their customers. *See Ancestry 2018 Transparency Report*, ANCESTRY, https://www.ancestry.com/cs/transparency [https://perma.cc/C8XU-JFEN]; *Transparency Report*, 23ANDME, https://www.23andme.com/transparency-report/ [https://perma.cc/7X58-GDL4].

[171] *See* David H. Kaye, *The Genealogy Detectives: A Constitutional Analysis of "Familial Searching*," 50 AM. CRIM. L. REV. 109, 128–29 (2013); Pattock, *supra* note 28, at 852.

[172] Stevick, *supra* note 3.

[173] *Id.*

successfully ran a familial search through a genealogy database not created for law enforcement purposes.[174]

In DeAngelo's case, law enforcement officers created a fake user profile on GEDmatch and submitted a DNA profile generated from a sample recovered from a 1980 murder, which returned numerous matches to distant relatives.[175] After receiving basic information on these distant relatives from GEDmatch, genealogist Barbara Rae-Venter created dozens of family trees to narrow down the potential suspects.[176] For four months, the team working on the case "pored over census records, newspaper obituaries, gravesite locaters, and police and commercial databases to find each relative and, ultimately, DeAngelo."[177] Even after DeAngelo was the sole suspect left, detectives used traditional investigative methods to confirm his identity and build the case. Detectives surreptitiously collected DNA from DeAngelo's car door handle and a discarded tissue and tested those items against the crime scene sample, confirming the match.[178] With this information, DeAngelo was apprehended in 2018 and charged with thirteen counts of murder.[179] The case of the "Golden State Killer" is now just one example of how law enforcement successfully employed open-access genealogy databases to locate relatives, and eventually the perpetrators, of decades-old homicides.

Just five months later, a second serial rapist known as the "NorCal rapist" was identified using the same techniques used to

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[174] Tim Arango et al., *To Catch a Killer: A Fake Profile on a DNA Site and a Pristine Sample*, N.Y. TIMES (Apr. 27, 2018), https://www.nytimes.com/2018/04/27/us/golden-state-killer-case-joseph-deangelo.html [https://perma.cc/36N6-Q6UU]; Natalie Ram, *Incidental Informants: Police Can Use Genealogy Databases to Help Identify Criminal Relatives – But Should They?*, 51 MD. B.J. 8, 9 (2018) [hereinafter Ram, *Incidental Informants*].

[175] Arango et al., *supra* note 174; Avi Selk, *The Ingenious and 'Dystopian' DNA Technique Police Used to Hunt the 'Golden State Killer' Suspect*, WASH. POST (Apr. 28, 2018), https://www.washingtonpost.com/news/true-crime/wp/2018/04/27/golden-state-killer-DNA-website-gedmatch-was-used-to-identify-joseph-deangelo-as-suspect-police-say/?noredirect=on&utm_term=.648db25d3b7f [https://perma.cc/M24N-Z26H].

[176] Mathias Gafni, *The Woman Behind the Scenes Who Helped Capture the Golden State Killer*, MERCURY NEWS, https://www.mercurynews.com/2018/08/24/exclusive-the-woman-behind-the-scenes-who-helped-capture-the-golden-state-killer/ [https://perma.cc/6Y7C-H5YF].

[177] Justin Jouvenal, *To Find Alleged Golden State Killer, Investigators First Found His Great-Great-Great-Grandparents*, WASH. POST (Apr. 30, 2018), https://www.washingtonpost.com/local/public-safety/to-find-alleged-golden-state-killer-investigators-first-found-his-great-great-great-grandparents/2018/04/30/3c865fe7-dfcc-4a0e-b6b2-0bec548d501f_story.html?utm_term=.f177697726c0 [perma.cc/5SVH-R3T5].

[178] Breeanna Hare, *What We Know About the Golden State Killer Case, One Year After a Suspect Was Arrested*, CNN (Apr. 24, 2019), https://www.cnn.com/2019/04/24/us/golden-state-killer-one-year-later/index.htmlear-later/index.html [https://perma.cc/PR7Y-62N3].

[179] *Id.*

locate DeAngelo.[180] Roy Charles Waller, 58, was suspected of raping at least ten women between 1991 and 2006.[181] DNA from the crime scenes indicated that the same suspect committed a number of these attacks, but the suspect remained unknown.[182] Investigators then uploaded a DNA profile derived from blood at one scene to GEDmatch, which returned a list of possible relatives, and identified Waller as the suspect about a week later.[183] Investigators were able to quickly locate "Waller based on his height, weight, appearance, past addresses and his 'owning similar guns to the ones used in the crimes,'" and confirmed his identity as the perpetrator by comparing his DNA with evidence collected from various crime scenes.[184]

The DeAngelo and Waller cases are just two of the many examples that show the benefits of law enforcement's use of genetic genealogy sites. But the use of open-access genealogy websites "[has] raised questions about how the growing and often public repository of consumers' most intimate data could be used by authorities."[185] Along with the relief brought by removing serial killers from the streets, there are also critical ethical and privacy implications of law enforcement trolling genealogical websites.[186]

IV. PRIVACY AND POLICY CONCERNS OF CODIS-BASED FAMILIAL SEARCHING AND INVESTIGATIVE GENEALOGY SEARCHES

Familial searching on CODIS raises significant privacy concerns under the Fourth Amendment; these concerns are even greater with the emergence of investigative genealogy searches.[187]

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[180] Alex Emslie, *UC Berkeley Employee Arrested, Suspected of NorCal Rape Series Spanning 15 Years*, KQED: CAL. REP. (Sept. 21, 2018), https://www.kqed.org/news/11693951/uc-berkeley-employee-arrested-suspected-of-norcal-rape-series-spanning-15-years [https://perma.cc/R3PG-X4K8].

[181] Sam Stanton et al., *NorCal Rapist Suspect Arrested. He's a 58-Year-Old Safety Specialist at UC Berkeley*, SACRAMENTO BEE (Sept. 21, 2018), https://www.sacbee.com/news/local/crime/article218793610.html [https://perma.cc/BDN2-EDNH].

[182] *Id.* The DNA profile from the incident was obtained after the NorCal rapist assaulted the victim and bound her, and, in her attempt to fight back, the victim stabbed her attacker. The perpetrator attempted to clean up the crime scene, but there was too much blood, thus providing investigators with pools of DNA evidence. Eliott C. McLaughlin, *DNA in NorCal Rapist Case Links Suspect to Sexual Assaults in 6 Counties*, CNN (Sept. 23, 2018), https://www.cnn.com/2018/09/23/us/norcal-rapist-arrest-arraignment-DNA-genetic-genealogy/index.html [https://perma.cc/7L74-3ZJD].

[183] Stanton et al., *supra* note 181.

[184] *Id.*

[185] Brown, *supra* note 21.

[186] *See* Ram, *Incidental Informants*, *supra* note 174, at 9–10; *Privacy Concerns*, *supra* note 147.

[187] *See* Suter, *supra* note 24, at 328.

CODIS-based familial searching is often criticized for encroaching on two groups' privacy interests. The first group consists of "genetic informants,"[188] or the databased person—the person who is already in the databank and whose sample is a close match to the forensic sample. The second group includes innocent family members who come under police surveillance merely because of their relatives' criminal history.[189] As law enforcement increasingly utilizes CODIS-based familial searches and investigative genealogy searches in criminal investigations, a growing number of individuals' Fourth Amendment privacy rights are being implicated. Congress must act quickly to protect these privacy rights by regulating such searches.

A. Privacy Interest of Databased Persons

There are dramatic differences in the privacy interests of individuals whose DNA profiles have been uploaded to a government-operated databank as opposed to those who voluntarily upload their profiles to an open-access genealogy database. The Fourth Amendment ensures protections against unreasonable searches and seizures by the government and law enforcement officers.[190] The U.S. Supreme Court effectuated a two-step inquiry, laid out by Justice Harlan's concurring opinion in *Katz v. United States*, to determine what constitutes a reasonable expectation of privacy under the Fourth Amendment.[191] First, one must exhibit an "actual (subjective) expectation of privacy, and, second, that the expectation be one that society is prepared to recognize as 'reasonable.'"[192] The Court has long held that the cornerstone of the Fourth Amendment is reasonableness, which should be determined by balancing the degree of government intrusion on one's privacy with the legitimate governmental interest served.[193]

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[188] Murphy, *Relative Doubt*, *supra* note 32, at 320 (citation omitted). Genetic informant is a loaded term often used by privacy advocates when discussing people who have their DNA stored in the national database, and thus, may involuntarily implicate their family members. *See* Erica Haimes, *Social and Ethical Issues in the Use of Familial Searching in Forensic Investigations: Insights from Family and Kinship Studies*, 34 J.L. MED. & ETHICS 263, 269 (2006); Murphy, *Relative Doubt*, *supra* note 32, at 320.

[189] Suter, *supra* note 24, at 322, 349.

[190] U.S. CONST. amend. IV ("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.").

[191] *See* Katz v. United States, 389 U.S. 347, 361 (1967) (Harlan, J., concurring).

[192] *Id.* at 361.

[193] Samson v. California, 547 U.S. 843, 848 (2006) (citing United States v. Knights, 534 U.S. 112, 118–19 (2001)).

It is well established that designated offenders of qualifying crimes have a reduced expectation of privacy under the Fourth Amendment.[194] The compulsory collection of DNA from qualifying offenders is not a violation of privacy under the Fourth Amendment, as courts have held that individuals legally taken into police custody have a diminished expectation of privacy.[195] Thus, when a CODIS-based familial search is run, there is no Fourth Amendment violation of the databased person because of their reduced expectation of privacy.[196]

When applying this rationale to genealogy databases, however, the argument becomes more complicated. Customers who pay to have their DNA profiled and uploaded to a public genealogy website may not have the same diminished expectation of privacy as offenders whose DNA is stored in the government databank due to an arrest or conviction.[197] But, consumers effectively waive their privacy rights by agreeing to the terms of service of the genealogical websites they are using.[198] Yet, many consumers who upload their DNA to genealogy websites do not focus on the conditions buried in the website's terms of service.[199] Customers, therefore, may agree to these terms but still not expect law enforcement to gain access to their genetic information.[200]

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[194] *See* Maryland v. King, 569 U.S. 435, 462–63 (2013). Due to these "substantially diminished expectations of privacy, the minimal intrusion . . . and the overwhelming societal interests so clearly furthered by the collection of DNA information from convicted offenders, [the court] must conclude that compulsory DNA profiling of qualified federal offenders is reasonable under the totality of the circumstances." United States v. Kincade, 379 F.3d 813, 839 (9th Cir. 2004).

[195] *See King*, 569 U.S. at 461–63; *see also* Banks v. United States, 490 F.3d 1178, 1188 (10th Cir. 2007) ("Numerous courts addressing DNA-indexing statutes have explained that the identification of suspects is relevant not only to solving the crime for which the suspect is arrested, but also for maintaining a permanent record to solve other past and future crimes." (internal quotation marks and citations omitted)); People v. Robinson, 224 P.3d 55, 65–66 (Cal. 2010); Suter, *supra* note 24, at 330.

[196] *See* Suter, *supra* note 24, at 330.

[197] Guerrini et al., *supra* note 23, at 2.

[198] *See* GEDmatch 2018 Terms of Service, *supra* note 166. By agreeing to these terms, users indicate that the site cannot "guarantee that users will not find other uses, including both current and new genealogical and non-genealogical uses." The site specifies as one of these uses, "[f]amilial searching by third parties such as law enforcement agencies to identify the perpetrator of a crime." *Id.* Similarly, Ancestry informs users that the site may share personal information if "reasonably necessary to . . . [c]omply with valid legal process[es]." *Your Privacy*, ANCESTRY, https://www.ancestry.com/cs/legal/privacystatement [https://perma.cc/MW9N-5CZ3].

[199] *See generally* Natalie Ram, *Genetic Privacy After Carpenter*, 105 VA. L. REV. 40 (forthcoming 2019) (examining reasonable consumer privacy expectations regarding genetic information in the wake of recent Supreme Court Fourth Amendment decisions and the increased use of consumer genetic data by law enforcement).

[200] *See* Brendan Koerner, *Your Relative's DNA Could Turn You into a Suspect*, WIRED (Oct. 13, 2015), https://www.wired.com/2015/10/familial-dna-evidence-turns-innocent-people-into-crime-suspects/ [https://perma.cc/44VQ-9AK6]; Natalie Ram, *The U.S. May Soon Have a De Facto National DNA Database*, SLATE (Mar. 19, 2019), https://

Courts have yet to decide whether it is reasonable for consumers who have been forewarned of the possible uses of their data to claim a reasonable expectation of privacy in this information.[201] Nonetheless, when law enforcement officers access these databases to conduct an investigative genealogy search, customers who voluntarily upload their DNA are now under the same scrutiny as designated offenders whose DNA is stored in CODIS. Though the privacy interests implicated for the databased person are significant, that individual is explicitly *not* the target of an investigation in a CODIS-based familial search or an investigative genealogical search.[202] Rather, it is their biological relatives that may be the source of the crime scene sample, and thus, subject to investigation.[203] The privacy interests of relatives of databased individuals—whether in CODIS or a genealogy site—are now significantly implicated by a CODIS-based familial search or an investigative genealogy search.

B. Privacy Interests of Relatives

Similar privacy concerns apply to both groups of relatives—relatives implicated through genealogy searches and relatives implicated through CODIS-based familial searches.[204] In both circumstances, potentially innocent relatives of the databased person may be subject to investigation solely based on their relatedness to the databased person.[205] Unlike databased persons, their relatives do not have a diminished expectation of privacy by virtue of being an offender or by agreeing to the terms of service on a genealogy site.[206] Relatives, however, may be unable to sustain a Fourth Amendment challenge to these searches due to lack of standing.[207]

The constitutional doctrine of standing concerns who has the right to challenge an action or law under the Constitution.[208]

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slate.com/technology/2019/03/national-dna-database-law-enforcement-genetic-genealogy.html [https://perma.cc/UDK8-PLYL] [hereinafter Ram, *De Facto Database*].

[201] Laura Hautala, *How Sharing Your DNA Solves Horrible Crimes . . . and Stirs a Privacy Debate*, CNET (July 2, 2019), https://www.cnet.com/news/how-sharing-your-dna-solves-horrible-crimes-and-stirs-a-privacy-debate/ [https://perma.cc/K2BY-UKHG].

[202] Ram, *DNA by the Entirety*, *supra* note 62, at 882.

[203] *Id.*

[204] Joseph Zabel, Note, *The Killer Inside Us: Law, Ethics, and the Forensic Use of Consumer Genetics*, 25 BERKELEY J. CRIM. L. 18–19 (forthcoming 2019).

[205] Ram, *De Facto Database*, *supra* note 200.

[206] *See* Ram, *DNA Confidential*, *supra* note 70, at 1.

[207] Alexandra Nieto, Note, *Familial Searching: How Implementing Minimum Safeguards Ensures Constitutionally-Permissible Use of This Powerful Investigative Tool*, 40 CARDOZO L.R. 1765, 1785–86 (2019).

[208] Rakas v. Illinois, 439 U.S. 128, 132–33 (1978); *see also* Wong Sun v. United States, 371 U.S. 471, 492 (1963).

The Supreme Court has held that "the issue of standing involves two inquiries: first, whether the proponent of a particular legal right has alleged 'injury in fact,' and second, whether the proponent is asserting his own legal rights and interests rather than basing his claim for relief upon the rights of third parties."[209] Relatives who are identified from a CODIS-based familial search or an investigative genealogy search will have difficulty proving that the harm they suffered was caused by a Fourth Amendment violation of their own rights, rather than the rights of their databased relatives.[210]

Even if there are no Fourth Amendment issues at stake, society may still wish to protect the privacy interests of relatives of offenders in government databanks or relatives of customers in genealogy databases on an ethical or policy basis.[211] Opponents of familial searching argue that due to the number of false positives generated, investigations will unfairly scrutinize completely innocent citizens.[212] To balance the privacy and ethical concerns with the immense benefits of CODIS-based familial searching and investigative genealogy searches, safeguards should be implemented to regulate law enforcements' use of genealogy websites in criminal investigations.

V. REGULATING INVESTIGATIVE GENEALOGY SEARCHES: BALANCING PUBLIC SECURITY WITH PRIVACY CONCERNS

Investigative genealogy searches by law enforcement, where the warnings and privacy policies agreed to by customers are often buried by the fine print of terms and conditions,[213] must be guided by a statutory framework.[214] A balance must be struck

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[209] *Rakas*, 439 U.S. at 139 (citations omitted).

[210] Nieto, *supra* note 207, at 1784–85.

[211] *See* D. H. Barnes, *Big Brother Is Watching You (And Your Family, Too): Familial DNA Searches in Criminal Investigations*, CRIM. LAW BULLETIN art. 2, Winter 2014.

[212] *See* Murphy, *Relative Doubt*, *supra* note 32, at 317.

[213] Guerrini et al., *supra* note 23.

[214] On September 24, 2019 the United States Department of Justice released an interim policy on "Forensic Genetic Genealogical DNA Analysis and Searching" that goes into effect on November 1, 2019. U.S. DEP'T OF JUSTICE, INTERIM POLICY, FORENSIC GENETIC GENEALOGICAL DNA ANALYSIS AND SEARCHING (effective Nov. 1, 2019) [hereinafter DOJ INTERIM POLICY]. Although law enforcement has increasingly used genetic genealogy to solve cold cases for a few years, the Interim Policy provides "the first substantial attempt to address 'how genetic genealogy should be done.'" Thomas F. Callaghan, *Responsible Genetic Genealogy*, 366 SCI. 155, 155 (2019). The first page of the Interim policy, however, states that the policy "is not intended to, does not, and may not be relied upon to create any substantive or procedural rights or benefits enforceable at law." DOJ INTERIM POLICY, at 1 n.1. Thus, even with this guidance, it is still necessary for Congress to pass a statute that creates uniformity among state and federal law enforcement officers attempting to conduct investigative genealogy searches. The DOJ's policy contains nine sections detailing the essential requirements for law enforcement's use of forensic genetic genealogy. Press Release, U.S.

between the state's interest in locating and arresting violent criminals, and the broader public interest in safeguarding privacy rights. Congress should implement a statutory framework with policies, procedures, and requirements that must be met prior to law enforcement's use of investigative genealogy searches in criminal investigations. The proposed statute will help fairly and predictably balance the competing interests.

A multi-step process must be implemented to regulate investigative genealogy searches, borrowing from New York's regulations and Colorado's policy on CODIS-based familial searching.[215] First, prior to any investigative genealogy search, law enforcement should be required to certify that "[the] standard investigative leads have been exhausted"[216] by laying out, in detail, what investigative methods have already been employed. Second, the forensic profile must initially be searched in the government database to ensure that there are no exact or partial matches in CODIS.[217] This requirement is vital to avoid any unnecessary searches of genealogy databases when such information can be found in CODIS. Third, investigative genealogy searches should only be permitted if the forensic DNA profile recovered from the crime scene meets certain requirements. The forensic profile must be associated with a particularly violent crime, as laid out by specific penal law offenses, and the profile must be a robust, single-source profile, in order to reduce the number of false leads.[218] Fourth, pre-approved, validated software should be used to conduct the search and "generate a candidate list,"[219] which should then be evaluated based on "kinship threshold value(s)."[220] Any additional Y-STR analysis must be conducted if necessary.[221]

Once an investigative genealogy search is conducted and a candidate list is generated, law enforcement should be required

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Dep't of Justice, Department of Justice Announces Interim Policy on Emerging Method to Generate Leads for Unsolved Violent Crimes (Sept. 24, 2019), https://www.justice.gov/opa/pr/department-justice-announces-interim-policy-emerging-method-generate-leads-unsolved-violent [https://perma.cc/C2FU-MYPN].

[215] *See* N.Y. COMP. CODES R. & REGS. tit. 9 § 6192.3; CBI FAMILIAL SEARCH POLICY, *supra* note 88, at 3–4.

[216] CBI FAMILIAL SEARCH POLICY, *supra* note 88, at 2.

[217] The New York regulations on familial searching require that the forensic profile be "searched against DNA profiles in the DNA databank's offender index." § 6192.3(h)(3)(iv). However, prior to the use of investigative genealogy searches, law enforcement should first be required to determine if there are any CODIS-based familial matches before turning to the genealogy database to look for relatives.

[218] *See* § 6192.3(h)(3); *see also* CBI FAMILIAL SEARCH POLICY, *supra* note 88, at 2; SWGDAM RECOMMENDATIONS, *supra* note 118.

[219] § 6192.3(j)(1).

[220] § 6192.3(j)(2).

[221] *See* § 6192.3(j).

to take further traditional investigative measures, including but not limited to: making a family tree; conducting background checks; reviewing any court or prison records; and re-evaluating evidence previously collected in association with the crime to determine the likelihood that any candidate is the perpetrator.[222] Additionally, the results of a genealogy search must be released in writing and include a statement indicating that the results should be used for law enforcement purposes only, and serve merely as an investigative lead—not as an indication of identity or as a "definitive statement of familial (i.e., biological) relationships."[223] Finally, if a suspect is identified through a genealogy search and further investigation, law enforcement must take the extra step of collecting and directly comparing the suspect's DNA profile to the forensic profile recovered from the crime scene.[224] This provision ensures that no individual is arrested before it has been confirmed that the forensic profile collected from the crime scene matches the suspect's profile.

These requirements will ensure that investigators do not "follow the genetic leads at the expense of more traditional leads"[225] in an attempt to sidestep search warrant and other due process requirements. The proposed framework encourages genealogists and law enforcement to scour public records, obituaries, census data and much more to further develop their investigation. [226] Investigative genealogy searches do not hinder traditional investigative tools; rather, such searches provide a lead to enhance customary methods of police investigations.

Genealogy websites offer a wealth of data that can assist in achieving incredibly important public safety goals,[227] but Congress should enact a statutory framework, similar to the one laid out above, to balance these goals with protecting individual privacy rights.

CONCLUSION

The Supreme Court reiterated in *Maryland v. King* what it has stated historically: "The reasonableness of any search must be

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[222] *See* CBI FAMILIAL SEARCH POLICY, *supra* note 88, at 3.

[223] § 6192.3(k)(2); *see also* CBI FAMILIAL SEARCH POLICY, *supra* note 88, at 2.

[224] CBI FAMILIAL SEARCH POLICY, *supra* note 88, at 4.

[225] Suter, *supra* note 24, at 386.

[226] *See* Heather Murphy, *She Helped Crack the Golden State Killer Case. Here's What She's Going to Do Next*, N.Y. TIMES (Aug. 29, 2018), https://www.nytimes.com/2018/08/29/science/barbara-rae-venter-gsk.html [https://perma.cc/CPE5-XU5H] (noting the use of public records and print and online media resources in supplementing investigative genealogy searches).

[227] Suter, *supra* note 24, at 373.

considered in the context of the person's legitimate expectations of privacy."[228] The government has a strong interest in locating violent criminals and bringing victims justice. But, this interest cannot be accomplished at the cost of invading individuals' privacy rights. This note's proposed statute balances these concerns by serving both interests. It permits investigative genealogy searches, but only when specific protective measures have been met. Applying the conditions laid out above, investigative genealogy searches are reasonable under the Fourth Amendment balancing test, as sincere privacy and ethical concerns are outweighed by a legitimate government interest in public safety, as well as the societal benefits reaped by apprehending perpetrators of serious crimes. Outside of such cases, though, the government should not be barking up an individual's family tree.

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[228] Maryland v. King, 569 U.S. 435, 462 (2013).

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