



Fall 2022 Case Note

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## **Uncovering Lies with Family Ties: The Use and Legal Implications of Investigative Genetic Genealogy in the United States and United Kingdom**

Rebecca James

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# Uncovering Lies with Family Ties: The Use and Legal Implications of Investigative Genetic Genealogy in the United States and United Kingdom

By: Rebecca James<sup>1</sup>  
October 28, 2022

Investigative genetic genealogy is a fascinating, yet controversial, forensic technique that began to gather recognition around 2018. Investigative genetic genealogy takes identification through familial matches to a new level by comparing unidentified DNA samples to the samples submitted to increasingly popular direct-to-consumer databases, like AncestryDNA, 23andME, and FamilyTreeDNA. Because of the technique's ability to supply significant leads in new and old cases, countries around the world have begun to consider the use of investigative genetic genealogy. However, some countries have been slower than others to adopt the technique due to privacy concerns and countries' existing privacy laws. Using the United States and the United Kingdom as examples, this case note analyzes the effects of a country's privacy laws on the country's ability and willingness to implement investigative genetic genealogy into its regular forensic practices. The case note first walks through and explains the intricacies of investigative genetic genealogy and its use of direct-to-consumer databases to aid in identifying violent criminals. Next, the case note compares the current use and limitations of investigative genetic genealogy within the United States and United Kingdom before lastly discussing the likely implementation and development of the technique within each country. Through thorough analysis and comparison, the case note will answer whether investigative genetic genealogy will ever develop and reach its full potential within countries with stringent privacy laws.

## I. Introduction

The Golden State Killer, one of the United States' most prolific serial killers, terrorized California for ten years throughout the 1970s and 1980s and is "responsible for committing sixty home invasions, fifty rapes, and thirteen murders."<sup>2</sup> Despite his rampage and a sample of his DNA left at a crime scene, the case of the Golden State Killer went cold.<sup>3</sup> However, with the use of investigative genetic genealogy, the Golden State Killer was identified and caught in 2018—over thirty years later.<sup>4</sup> This infamous case brought the use of investigative genetic genealogy to the forefront of criminal forensics worldwide.<sup>5</sup>

Investigative genetic genealogy (IGG), also known as forensic genetic genealogy (FGG), is the practice of using familial DNA and forensic DNA profiling to identify an unknown suspect.<sup>6</sup> Each individual shares DNA with blood-related family members, which creates the opportunity to identify a primary sample of DNA by first identifying the DNA of a relative and constructing a

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<sup>1</sup> J.D. Candidate, SMU Dedman School of Law, 2024; Staff Editor for the International Law Review Association.

<sup>2</sup> Solana Lund, *Ethical Implications of Forensic Genealogy in Criminal Cases*, 13 J. BUS. ENTREPRENEURSHIP & L. 185, 186 (2020), <https://heinonline.org/HOL/P?h=hein.journals/jbelw13&i=502> [<https://perma.cc/XCT5-XDJL>].

<sup>3</sup> *See id.*

<sup>4</sup> Daniel Kling et al., *Investigative Genetic Genealogy: Current Methods, Knowledge and Practice*, 52 FORENSIC SCI. INT'L: GENETICS 1, 2 (2021), <https://doi.org/10.1016/j.fsigen.2021.102474> [<https://perma.cc/Z6BU-P7AA>].

<sup>5</sup> *See id.*

<sup>6</sup> *See* Tracey Leigh Dowdeswell, *Forensic Genetic Genealogy: A Profile of Cases Solved*, 58 FORENSIC SCI. INT'L: GENETICS 1, 2 (2022), <https://doi.org/10.1016/j.fsigen.2022.102679> [<https://perma.cc/M683-UCTS>].

family tree. The family tree, combined with other investigative techniques, profiling, and evidence, helps to narrow down a list of suspects to an individual or individuals of interest.<sup>7</sup> New DNA samples from these suspects are then compared with the sample found at a crime scene.<sup>8</sup>

In the past, the DNA sample used to identify a familial match was a sample from a government official or a person who previously committed or was arrested for a crime, which was stored in a national database, like the United Kingdom's National DNA Database (NDNAD) or the United States' Federal Bureau of Investigation's Combined DNA Index System (CODIS).<sup>9</sup> In comparison, law enforcement using IGG search for familial matches in a direct-to-consumer (DTC) genetic database, such as AncestryDNA, 23andMe, FamilyTreeDNA (FTDNA), and MyHeritage, or similar services, like GEDmatch.<sup>10</sup> The popularity of these DTC genetic testing providers has grown significantly, particularly in the United States (U.S.) and to some extent in the United Kingdom (U.K.).<sup>11</sup> This dramatic increase in the amount and availability of genetic data is ideal for the success and optimization of IGG in these two countries.<sup>12</sup> Despite this new availability of genetic data, DTC genetic testing is an unregulated area, and there continue to be legal limitations surrounding privacy interests that complicate the use of IGG.<sup>13</sup>

This case note will begin with an overview of the IGG process and how DTC databases, GEDmatch, and similar websites have been utilized by law enforcement to identify DNA linked to a violent crime or unidentified remains. Next, the current use and limitations of IGG within the U.S. and U.K. will be analyzed and compared. Lastly, this case note will explore the likely implementation and development of IGG within criminal law with regard to the current and future legal restrictions. Although criminal forensics is rapidly progressing with the use of IGG, the laws in the U.S. and U.K. have yet to catch up. While the U.S. quickly adopted IGG, the U.K., with its stricter privacy laws, has been slower to accept the practice as both countries navigate the legal implications and the application of old privacy laws to new developments, which are likely to restrain IGG in the U.S. and prohibit it in the U.K.

## II. The Investigative Genetic Genealogy Process

### A. Using DTC Databases to Identify Suspects

The rise in popularity of DTC databases coincides with a significant increase in genetic data that law enforcement has accessed to expand the practice and increase the success of IGG.<sup>14</sup> As of July 2022, the four most used DTC databases cumulatively had over forty-one million users worldwide, with AncestryDNA serving about twenty-one million of those users.<sup>15</sup> In comparison, as of April 2019, the U.S.'s national DNA database, CODIS, and the U.K.'s database, NDNAD, stored over

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<sup>7</sup> See *id.*

<sup>8</sup> See *id.*

<sup>9</sup> Debbie Kennett, *Using Genetic Genealogy Databases in Missing Persons Cases and to Develop Suspect Leads in Violent Crimes*, 301 FORENSIC SCI. INT'L 107, 109 (2019), <https://doi.org/10.1016/j.forsciint.2019.05.016> [<https://perma.cc/FB3P-T6F5>].

<sup>10</sup> See *id.*

<sup>11</sup> See Kling et al., *supra* note 3, at 2.

<sup>12</sup> See Lund, *supra* note 1, at 188.

<sup>13</sup> See Lund, *supra* note 1, at 188.

<sup>14</sup> Claire L. Glynn, *Bridging Disciplines to Form a New One: The Emergence of Forensic Genetic Genealogy*, 13 GENES 1381, 1381 (2022), <https://doi.org/10.3390/genes13081381> [<https://perma.cc/ZFW2-LGVP>]; see also Lund, *supra* note 1, at 188.

<sup>15</sup> See Glynn, *supra* note 13, at 1383.

sixteen million and five million samples, respectively.<sup>16</sup> This growing mass of DTC data is significant because DTC databases use single nucleotide polymorphism (SNP) genotyping which allows for matches with close and distant relatives, even as far as third cousins.<sup>17</sup> On the other hand, national DNA databases typically only test collected DNA samples for Short Tandem Repeat (STR) markers, which limits matches to immediate relatives, such as parents, siblings, and children; any further matches are unlikely or unreliable.<sup>18</sup> Thus, if law enforcement can access DTC data, their likelihood of finding a familial match to an unidentified DNA sample increases exponentially.

With the growth and popularity of DTC databases, some websites, whether they sell genetic testing kits or not, allow users to expand their family tree map by uploading raw DNA data files to “make cross-platform comparisons between tests taken at different companies.”<sup>19</sup> The two most popular websites for genetic uploads are GEDmatch and FTDNA, which by 2019 cumulatively had over three million users.<sup>20</sup> When looking for a match that has been unidentifiable by other methods, law enforcement will upload kits containing the DNA data file of the unidentified perpetrator to a website, like GEDmatch, so it can be compared with the profiles of millions of other users.<sup>21</sup> In fact, this was the exact method and service provider used to identify the Golden State Killer.<sup>22</sup> This “cross-platform” feature helps law enforcement reach a wider span of genetic data, which increases the likelihood that a match can be made.

#### B. Restrictions within DTC Databases

The area of DTC genetic testing providers and the accessibility of their databases to law enforcement is widely unregulated, which means law enforcement’s access to a provider’s database is mostly left up to the provider and the extent to which the provider wishes to protect the privacy of its users.<sup>23</sup> Although DTC genetic testing providers have been essential to law enforcement for IGG, the genetic database providers quickly began to limit law enforcement’s accessibility to users’ genetic profiles following the providers’ realization of law enforcement’s exploitation of the databases and public backlash over privacy concerns.<sup>24</sup> Some databases, such as GEDmatch and FTDNA, allow users to “opt in” or “opt out” for comparison to registered law enforcement DNA profiles related to violent crimes or unidentified human remains.<sup>25</sup> Other DTC providers, such as AncestryDNA, 23andMe, and MyHeritage, have stricter policies that only allow law enforcement access to the database under orders of a search warrant, subpoena, or court order,

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<sup>16</sup> See Kennett, *supra* note 8, at 109.

<sup>17</sup> See Glynn, *supra* note 13, at 1383.

<sup>18</sup> See Kling et al., *supra* note 3, at 1.

<sup>19</sup> Kennett, *supra* note 8, at 110.

<sup>20</sup> See *id.* at 109.

<sup>21</sup> See *id.* at 110.

<sup>22</sup> See Rana Muhammad Mateen et al., *Familial DNA Analysis and Criminal Investigation: Usage, Downsides, and Privacy Concerns*, 318 FORENSIC SCI. INT’L 1, 4 (2021), <https://doi.org/10.1016/j.forsciint.2020.110576> [<https://perma.cc/C37F-KXSA>].

<sup>23</sup> See Ellen Wright Clayton et al., *The Law of Genetic Privacy: Applications, Implications, and Limitations*, 6 J.L. & BIOSCIS. 1, 18 (2019), <https://doi.org/10.1093/jlb/lbz007> [<https://perma.cc/X7WF-EWS3>]. (“The FDA has asserted authority to regulate only companies like 23anMe that provide certain health-related tests. The rest of the industry is largely left to self-regulate.”); see also Lund, *supra* note 1, at 192-193 (The DTC market has been described as the “wild west” due to the current lack of regulations.”).

<sup>24</sup> See Kennett, *supra* note 8, at 111-112.

<sup>25</sup> See Kling et al., *supra* note 3, at 12-14.

which will likely be challenged and overturned if the request is overly broad or invalid.<sup>26</sup> Living DNA, a newer and smaller DTC provider based in the U.K., similarly promises to not “share personal information with law enforcement agencies unless [the company] believe[s] that [the company is] legally compelled to do so.”<sup>27</sup> Despite the growing size and value of genetic databases and their potential to solve cold cases, law enforcement’s ability to tap into this resource for the use and development of IGG is becoming increasingly more difficult due to new privacy policies and restrictions set by DTC genetic testing providers and other family mapping services.

### III. Current Use and Legal Limitations of IGG in the U.S. and U.K.

#### A. IGG in the U.S.

IGG is used within the U.S. significantly more than any other country, not only due to the abundance of DTC genetic data, but also because regulations surrounding the forensic practice and DNA privacy are minimal and mostly vary state by state. Although there is no exact number available, it is estimated that over five hundred cases involving violent crimes, like homicide and sexual assault, or unidentified human remains have benefited from the use of IGG.<sup>28</sup> Compared to other countries, the U.S.’s extensive use of IGG is partly due to the country’s overall contribution to direct-to-consumer (DTC) databases and family mapping services. For example, within the GEDmatch database as of September 2020, over sixty-five percent of the uploads originated from the U.S., and the U.K. had the second highest amount of uploads at only nine percent.<sup>29</sup> Law enforcement in the U.S. was also quick to try IGG because under U.S. criminal law, “law enforcement officers can use any technology in their investigations that is readily available to the public,” thus there is no specific bar to the use of forensic genealogy.<sup>30</sup> As the use of IGG developed in the U.S., the laws and regulations regarding the forensic practice, while still scarce, began to develop as well.

#### 1. Federal Approach to IGG

The leading legal guide to the use of IGG is an interim policy released by the U.S. Department of Justice (DOJ) that went into effect in November 2019.<sup>31</sup> This policy was “committed to developing practices that protect reasonable interests in privacy, while allowing law enforcement to make effective use of forensic genetic genealogical DNA analysis and searching.”<sup>32</sup> To protect privacy, the policy clarifies that any personal information used, such as a person’s DNA data file on a DTC database, will not be retained or transferred by law enforcement during the search and comparison process.<sup>33</sup> Additionally, before law enforcement can even access the personal genetic information of others, they must have searched CODIS for any “probative and confirmed match” and “pursued

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<sup>26</sup> See *id.* at 11.

<sup>27</sup> *Living DNA Privacy Statement 2019*, LIVING DNA, <https://livingdna.com/legal/Privacy-Policy> [<https://perma.cc/BKZ2-CDMK>] (last visited Oct. 10, 2022).

<sup>28</sup> See Glynn, *supra* note 13, at 1381; see also Dowdeswell, *supra* note 5, at 2 (“To date, FGG investigations fall into four broad categories: 350 cases (80%) are criminal investigations, and 82 (19%) are investigations to identify unknown decedents.”).

<sup>29</sup> See Kling et al., *supra* note 3, at 2.

<sup>30</sup> See Lund, *supra* note 1, at 198.

<sup>31</sup> See Kling et al., *supra* note 3, at 9; see generally Interim Policy: Forensic Genetic Genealogical DNA Analysis and Searching, U.S. DEP’T OF JUST. (2019), <https://www.justice.gov/olp/page/file/1204386/download> [<https://perma.cc/KUX4-H2HR>].

<sup>32</sup> Lund, *supra* note 1, at 199.

<sup>33</sup> See *id.*

reasonable investigative leads.”<sup>34</sup> If no match is available in CODIS, law enforcement that decide to use IGG to further the investigation may only access genealogical services that have given “explicit notice” to their users of potential law enforcement access, and law enforcement must identify and register themselves as such within the website.<sup>35</sup> To promote efficient use of IGG, the DOJ’s policy provides criteria that limit the potential scope of IGG. Primarily, IGG can only be used for identification of remains of a homicide victim and for violent crimes, such as homicide or sex crimes, when the DNA sample belongs to the perpetrator.<sup>36</sup> The interim policy’s application is limited to cases within the DOJ’s jurisdiction and to cases where the DOJ provides funding, contractors to conduct the genealogical research, or grants for the purpose of forensic genealogy to the federal, state, or local agency leading the investigation.<sup>37</sup> While these criteria include many cases that will use IGG, the DOJ policy leaves room for states to make varying laws regarding IGG for cases exempt from the DOJ’s regulations.<sup>38</sup>

## 2. State Law

In 2021, some states within the U.S. began to enact legislation to protect the privacy of individuals with DNA profiles in DTC databases and to strictly regulate the use of IGG in cases not covered by the DOJ interim policy.<sup>39</sup> In May 2021, Maryland enacted the first and most extensive legislation “in the United States—and in the world—that comprehensively regulates law enforcement’s use of consumer genetic data to investigate crimes.”<sup>40</sup> Maryland’s law created a uniform process and strict regulation for IGG, so law enforcement would not have to rely on their own judgment and the policies of DTC providers or genetic databases, which vary from platform to platform and often have inconsistent application.<sup>41</sup> Recognizing that the IGG process can reveal “deeply sensitive information,” the Maryland law requires judicial authorization for an IGG search and certification “that the forensic sample and the criminal case satisfy specified criteria” similar to those in the DOJ interim policy.<sup>42</sup> In contrast to the DOJ interim policy, which permits law enforcement to only access genetic platforms that provide “explicit notice” to users regarding law enforcement use, the Maryland law limits access to platforms that obtain “affirmative consent” from users, which law enforcement can then certify in its application to a judge.<sup>43</sup> While “explicit notice” can be satisfied through a disclosure hidden within a platform’s terms and conditions, “affirmative consent” to law enforcement matching “requires a knowing and voluntary choice to participate in law enforcement efforts.”<sup>44</sup> The judicial authorization and affirmative consent aspects of the Maryland law significantly limit law enforcement’s ability to access genetic data within DTC platforms for IGG.

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<sup>34</sup> Kling et al., *supra* note 3, at 9-10.

<sup>35</sup> *See id.* at 10.

<sup>36</sup> Lund, *supra* note 1, at 199.

<sup>37</sup> *Id.*, at 200.

<sup>38</sup> *See id.*

<sup>39</sup> *See* Ray Wickenheiser, *Investigative Genetic Genealogy: Current Status and Future Potential*, 3 FORENSIC SCI. INT’L: SYNERGY 1, 2 (2021), <https://doi.org/10.1016/j.fsisyn.2021.100174> [<https://perma.cc/X3ZW-787X>].

<sup>40</sup> Natalie Ram et al., *Regulating Forensic Genetic Genealogy*, 373 SCI. (AM. ASS’N ADVANCEMENT SCI.) 1444, 1444 (2021), <https://doi.org/10.1126/science.abj5724>

[<https://perma.cc/J2BS-FD4W>]; *see* Wickenheiser, *supra* note 38, at 2.

<sup>41</sup> *See* Ram et al., *supra* note 39, at 1444.

<sup>42</sup> *Id.* at 1444-1445.

<sup>43</sup> *Id.* at 1445.

<sup>44</sup> *Id.*

In addition to protecting DTC platform users, the Maryland law includes other restrictions and regulations for IGG. Following a match with a genetic profile and the construction of a family tree, law enforcement must receive informed consent for the collection of DNA from non-suspect third parties, or “target testers,” thus prohibiting any form of covert collection of DNA.<sup>45</sup> Other requirements that promote accuracy and efficiency in the use of IGG include the proper licensing of genetic genealogists involved in the investigation and “requirements for storage and destruction of files and mandatory reporting” of IGG searches and success.<sup>46</sup> Lastly, if IGG and its associated data is misused, Maryland allows the owner of the misused profile to sue for a “minimum of \$5,000 in damages.”<sup>47</sup> Despite the multiple barriers and regulations that limit the use of IGG, Maryland pioneered the regulation of IGG in the U.S.

Following the passage of Maryland’s law, other states began to pass their own, less extensive, versions of laws regulating IGG. For example, Montana soon after passed an act requiring law enforcement to acquire a “search warrant issued by a court on a finding of probable cause” to obtain familial DNA search results from a database that provides DTC genetic testing services.<sup>48</sup> Additionally, in October 2021, California passed the Genetic Information Privacy Act to protect consumers who use DTC genetic testing providers.<sup>49</sup> This act requires DTC genetic testing providers to give consumers complete information regarding the set policies and procedures “for the collection, use, maintenance, and disclosure” of genetic data, and the act requires the companies to “obtain a consumer’s express consent for collection, use, or disclosure of genetic data” for each circumstance specified.<sup>50</sup> In 2021, other states, including Arizona, South Dakota, Florida, and Utah, began passing consent and privacy laws in regards to genetic data, but not every new law specifically applies to criminal investigations or IGG.<sup>51</sup> While state laws regarding or affecting IGG still widely vary, the increase in legal restrictions and regulations on IGG create more potential for pushback against IGG in courts.

### 3. Court Rulings on IGG

Despite its novelty, IGG has already appeared in U.S. courts and has yet to be limited. As of February 2022, “about [twenty-seven percent] of U.S. courts have admitted the DNA evidence for identification of the suspect as obtained through the FGG investigation.”<sup>52</sup> At the same time, although seventy-one percent of cases including DNA evidence obtained through an IGG investigation were pending, “no court had ruled to exclude evidence obtained through FGG during the data collection period.”<sup>53</sup> In one notable case, a defendant challenged the constitutionality of the FGG search, but the court ruled the defendant lacked standing to challenge the search because “it was his relative’s DNA, and not his own, that first provided a partial match to crime scene evidence.”<sup>54</sup> Under this ruling, only the relative whose DNA was used could bring suit to challenge

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<sup>45</sup> See Glynn, *supra* note 13, at 1394; see also Ram, *supra* note 39, at 1446.

<sup>46</sup> Wickenheiser, *supra* note 38, at 2.

<sup>47</sup> Ram, *supra* note 39, at 1446.

<sup>48</sup> H.B. 602, 2021 Leg., 67th Reg. Sess. (Mont. 2021); see Wickenheiser, *supra* note 38, at 2.

<sup>49</sup> S.B. 41, 2021 Leg., Reg. Sess. (Cal. 2021).

<sup>50</sup> *Id.*

<sup>51</sup> See Wickenheiser, *supra* note 38, at 2.

<sup>52</sup> Dowdeswell, *supra* note 5, at 5.

<sup>53</sup> *Id.*

<sup>54</sup> See Ram et al., *supra* note 39, at 1445.

the constitutionality of an IGG search.<sup>55</sup> The outcome of pending cases involving IGG have the potential to alter the admissibility of DNA evidence procured through an IGG search, but IGG has yet to be limited by the U.S. courts.

#### A. IGG in the U.K.

The U.K. enforces strict laws when it comes to genetic privacy and data protection, the two biggest concerns within IGG, and, thus, has yet to implement IGG. Implementing IGG, however, would not be the U.K.'s first time using familial DNA to aid in criminal investigations. In fact, the U.K. pioneered the use of familial DNA for forensic searching purposes in 2002 by being the first country to use and successfully prosecute with the aid of familial DNA.<sup>56</sup> Familial DNA Searching (FDS) is similar to IGG in that DNA found at a crime scene is matched to a relative's DNA in order to then identify the perpetrator, but FDS is limited to searching a criminal or national DNA database and matching with immediate family, such as a parent, full-sibling, or child.<sup>57</sup> Although IGG has not been fully exploited in the U.K., the U.K. has also not placed legal restrictions on the type of DNA analysis required to use IGG, unlike some other European countries.<sup>58</sup> The most significant indirect restrictions on IGG in the U.K. are laws regulating genetic privacy and data protection.

##### 1. Genetic Privacy

The U.K. has restricted the government's ability to retain DNA profiles and samples and others' ability to collect and analyze DNA as a means of protecting the genetic privacy of its citizens. The FDS process is procedurally formulated in the U.K. and requires officers to receive approval from the NDNAD Strategy Board and complete a form that indicates their understanding of the process.<sup>59</sup> To further protect individuals' rights to privacy when it came to their DNA and its retention by the government, the U.K. passed the Protection of Freedom Act (PFA) in 2012, which significantly decreased the amount of genetic data retained by the NDNAD.<sup>60</sup> The PFA led to the destruction of six million "legacy samples" of DNA and required all new DNA samples analyzed and uploaded to the NDNAD to be destroyed after six months, and the act further decreased the size of the NDNAD by mandating the deletion of innocent individuals' profiles after their investigation or legal proceeding.<sup>61</sup> Although older, another relevant act to potential IGG use is the 2004 Human Tissue Act, which criminalizes DNA theft by prohibiting individuals from non-consensually taking and analyzing the genetic material of others.<sup>62</sup> While this law does not apply to law enforcement, and law enforcement is generally allowed to analyze any DNA found or taken for a direct match, "it is unclear whether a genealogical link," like one obtained through IGG,

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<sup>55</sup> See Lund, *supra* note 1, at 200.

<sup>56</sup> See Mateen et al., *supra* note 21, at 2.

<sup>57</sup> See Glynn, *supra* note 13, at 1382.

<sup>58</sup> See G. Samuel & D. Kennet, *The Impact of Investigative Genetic Genealogy: Perceptions of UK Professional and Public Stakeholders*, 48 FORENSIC SCI. INT'L: GENETICS 1, 1 (2020), <https://doi.org/10.1016/j.fsigen.2020.102366> [<https://perma.cc/KY98-AXVC>].

<sup>59</sup> See C.N. Maguire et al., *Familial Searching: A Specialist Forensic DNA Profiling Service Utilising the National DNA Database to Identify Unknown Offenders Via Their Relatives – the UK Experience*, 8 FORENSIC SCI. INT'L: GENETICS 1, 1, 3 (2014), <https://doi.org/10.1016/j.fsigen.2013.07.004> [<https://perma.cc/4958-VLJJ>].

<sup>60</sup> See *id.*, at 7.

<sup>61</sup> See *id.*; see also Aaron O. Amankwaa & Carole McCartney, *The UK National DNA Database: Implementation of the Protection of Freedoms Act 2012*, 284 FORENSIC SCI. INT'L 117, 119 (2018), <https://doi.org/10.1016/j.forsciifo.2017.12.041> [<https://perma.cc/MDS7-9CNK>].

<sup>62</sup> See Lund, *supra* note 1, at 205; see also Clayton et al., *supra* note 22, at 32.



“would be sufficient justification in the U.K. for taking a DNA sample without consent,” even for investigation purposes.<sup>63</sup> If the genetic link is insufficient, gathering DNA samples to confirm IGG matches would be more difficult.

## 2. *Data Protection*

In addition to protecting individuals’ genetic privacy, the U.K. has extensive and strict laws regarding data protection, specifically, the protection of personal data. In 2018, the U.K. revised and updated the Data Protection Act (DPA), which “controls how personal information is used by organizations, businesses, or the government”, and provides “stronger legal protection for more sensitive information,” such as genetics.<sup>64</sup> In the act, “personal data” is defined as “any information relating to an identified or identifiable living individual.”<sup>65</sup> Part Three of the DPA pertains only to law enforcement processing and specifies when law enforcement may engage in “sensitive processing,” which includes “the processing of genetic data . . . for the purpose of uniquely identifying an individual.”<sup>66</sup> Sensitive processing by law enforcement is only permitted when “the data subject has given consent to the processing for the law enforcement purpose” or when “the processing is strictly necessary for the law enforcement purpose,” and in both cases, the controller of the personal data must have “an appropriate policy document in place” that complies with data protection principles and explains the controller’s policies on retention and erasure of personal data in reliance on a subject’s consent.<sup>67</sup>

In relation to IGG, application of the DPA means law enforcement cannot access and process DNA profiles in DTC platforms unless the users have provided informed consent. Additionally, the DPA prohibits controllers of personal data, such as a DTC provider or similar service, from making an automated significant decision on behalf of a data subject.<sup>68</sup> For this reason, FamilyTreeDNA and other DTC providers with “opt-in” and “opt-out” options, opt out all European users from law enforcement use, and users must intentionally “opt-in” to allow law enforcement access to their DNA profile.<sup>69</sup> Similar to the U.K.’s genetic privacy legislation, the DPA’s protection of personal data would severely limit law enforcement’s ability to access and process DNA profiles in DTC genetic databases for IGG searches.

## 3. *Comparison*

U.S. laws and the U.S.’s significant DTC genetic testing use are far more favorable for IGG searches in comparison to the laws and DTC genetic testing use in the U.K., which is likely why IGG was quickly adopted and developed in the U.S. and not the U.K. Aside from states with strict IGG laws, like Maryland, IGG searches in the U.S. are subject primarily to the privacy policies of DTC databases. On the other hand, U.K. genetic privacy and data protection laws allow only the

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<sup>63</sup> Kennett, *supra* note 8, at 113.

<sup>64</sup> DATA PROTECTION, <https://www.gov.uk/data-protection>.

<sup>65</sup> Data Protection Act 2018, c. 12, § 3(2) (UK), <https://www.legislation.gov.uk/ukpga/2018/12/contents/enacted/data.pdf> [<https://perma.cc/4SWV-KKLQ>].

<sup>66</sup> *Id.* at § 35(3), (8)(b)

<sup>67</sup> *Id.* at § 42(2)

<sup>68</sup> *Id.* at § 49(1)-(2).

<sup>69</sup> Should We be Making Use of Genetic Genealogy to Assist in Solving Crime? A Report on the Feasibility of Such Methods in the UK, BIOMETRICS & FORENSICS ETHICS GRP. 1, 4 (Sept. 9, 2020), [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/916364/BFEG\\_Genetic\\_Genealogy\\_Final.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/916364/BFEG_Genetic_Genealogy_Final.pdf) [<https://perma.cc/4HMW-TR7R>].

retention, accessing, and processing of genetic data in limited circumstances and, typically, with informed consent, which would severely limit the use and range of IGG. IGG searches also depend on the availability of DNA profiles that are typically generated by DTC providers and similar services. Thus, because most DTC genetic testing users are from the U.S., the U.S. has an advantage in IGG, even if European users were not automatically opted out from law enforcement access. Overall, the U.S. legal system and access to genetic data is better suited for IGG, but this does not mean the U.K. cannot continue to consider and develop IGG practices that conform with the country's current and future policies.

#### **IV. Feasibility and Implementation of IGG**

##### **A. The Future of IGG in the U.S.**

As the notoriety of IGG continues to grow, restrictions protecting the privacy of citizens and potential suspects will also grow, which will create more formalized and transparent procedures that are likely to limit this forensic practice. As of 2022, agencies at the federal and state level formed specific FGG units to implement FGG when deemed necessary, and private companies offering FGG services have even been contracted by law enforcement on a case-by-case basis.<sup>70</sup> The DOJ intended to replace their 2019 interim policy regarding IGG with a final policy in 2020, but that policy has yet to be released, suggesting, despite the rising popularity of IGG, the federal government does not regard a uniform regulation of IGG a priority or a concern.<sup>71</sup> With no final federal policy in sight, all further regulation of IGG will likely continue to be done at the state level and by DTC providers, which will vary from state to state and from provider to provider. Given IGG's relative success in the U.S., the forensic practice will likely continue to grow and garner attention, which will consequentially lead to more states regulating the use and process of IGG across a spectrum of strictness and flexibility.<sup>72</sup>

##### **B. The Future of IGG in the U.K.**

The current and developing laws of the U.K. still allow for the use of IGG, but due to intense restrictions on the retention of DNA and access to genetic data, further genetic analysis and broad success of IGG is unlikely. The database the U.K. uses for FDS, the NDNAD, is the "largest measured by the proportion of citizens on the database,"—holding DNA profiles representing over eight percent of the country's population.<sup>73</sup> Due to this large proportion, as of 2020, over sixty-five percent of new samples uploaded received a direct match in the NDNAD.<sup>74</sup> The use of IGG would aid in identifying a portion of the remaining thirty-five percent, but the implementation of the new method would also increase both the cost of investigation and the effort necessary to follow the U.K.'s strict law enforcement procedures and genetic privacy and data protection regulations.<sup>75</sup> From a cost-benefit analysis perspective, the benefit of additional identifications provided through IGG would have to outweigh the burdens associated with achieving those identifications for the U.K. to consider fully implementing IGG.

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<sup>70</sup> See Glynn, *supra* note 13, at 1392.

<sup>71</sup> See *id.* at 1394.

<sup>72</sup> See Lund, *supra* note 1, at 207.

<sup>73</sup> Amankwaa & McCartney, *supra* note 60, at 119; see also Maguire et al., *supra* note 58, at 6.

<sup>74</sup> See Samuel & Kennet, *supra* note 57, at 2.

<sup>75</sup> See Should We be Making Use of Genetic Genealogy to Assist in Solving Crime, *supra* note 68, at 5; see also *id.*

Because of the similarity between the forensic principles, it is reasonable any future regulation of IGG will mirror or build from the U.K.’s current FDS regulations and practices, which are already restrictive. While there are currently no specific legal restrictions against IGG, the trajectory of the U.K.’s current laws promoting genetic privacy and data protection is unlikely to shift and allow unregulated use of IGG if the practice is adopted.<sup>76</sup> In a report published by the U.K. Biometric and Forensics Ethics Group in September 2020, which covered the feasibility of IGG, the National Police Chiefs Council recommended “against use of genetic genealogy databases.”<sup>77</sup> Considering the associated costs and current legal limitations, it is unlikely the U.K. will adopt IGG.

### C. Comparison

Unless the U.K. were to significantly change its approach to accessing and processing genetic data, the U.K. is unlikely to adopt IGG to the extent the U.S. has accepted and implemented the practice. Unlike the U.S., the U.K. does not have specific laws or policies regarding IGG, but the country does have extensive, uniform privacy laws.<sup>78</sup> On the other hand, the U.S. does have specific federal and state laws and policies regarding IGG, but these laws and other privacy laws often vary by state and are, thus, inconsistent nationwide. IGG struggles to develop in the U.K., much like how the practice struggles to develop under the strict IGG laws of Maryland, yet in the U.S., IGG still has room to develop and flourish in the majority of the states where laws are less restrictive or nonexistent.<sup>79</sup> Even if more states in the U.S. begin to adopt stricter IGG laws, IGG will continue to develop in other states until a more extensive, final federal policy is established, but if the U.K. passes an IGG law in line with current regulations, it will officially hinder IGG development nationwide.

Additionally, while DTC genetic testing use is significantly less in the U.K. than the U.S., this is not the primary contributing factor to the lack of IGG in the U.K. A small-scale experiment by a UK forensic science provider determined the identification success rate using IGG on U.K. participants was about forty percent—similar to the applicability demonstrated in the U.S.<sup>80</sup> Although, the effectiveness of IGG in the U.K. matters less than its effectiveness in the U.S. due to the success of the U.K.’s NDNAD, which provides matches for sixty-five percent of uploaded samples.<sup>81</sup> The U.S.’s CODIS has significantly more DNA profiles, but a smaller proportion of the population compared to the NDNAD, and CODIS has an increasing amount of missing DNA profiles that contribute to the “CODIS gap,” which decreases the database’s efficacy and increases the need for supplemental matches through IGG.<sup>82</sup> As discussed, if the U.K. adopted IGG, severe legal implications would arise either by the U.K. completely restructuring current genetic and data privacy laws or by significantly restructuring the IGG process to accommodate the current, unmodified laws. Going forward, the U.S. is likely to endure the legal implications of IGG to improve the country’s forensic progress, but the U.K. likely will not find it necessary to bear the burden of the legal implications any time soon.

## V. Conclusion

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<sup>76</sup> See Samuel & Kennet, *supra* note 57, at 1.

<sup>77</sup> Kling et al., *supra* note 3, at 10.

<sup>78</sup> See generally Samuel & Kennet, *supra* note 57, at 2.

<sup>79</sup> See generally Ram et al., *supra* note 39, at 1444.

<sup>80</sup> See Should We Be Making Use of Genetic Genealogy to Assist in Solving Crime, *supra* note 68, at 4.

<sup>81</sup> See Samuel & Kennet, *supra* note 57, at 2.

<sup>82</sup> See Kling et al., *supra* note 3, at 20.

IGG was a momentous innovation within criminal law and criminal forensics. Access to DTC genetic databases allowed law enforcement to widen the scope of an investigation with data unattainable by the national database and increased the likelihood of pinpointing perpetrators of violent crimes. IGG quickly began to develop faster than it could be regulated, despite the extensive privacy concerns and legal implications involved. IGG developed particularly well in the U.S., even after stricter regulations began to be implemented by states and DTC providers, mostly due to the lack of a far-reaching federal policy and the inconsistency of IGG laws among states. At the same time, IGG has yet to be adopted by the U.K. and likely will not be any time soon. The U.K.'s extensive genetic privacy and data protection laws and detailed law enforcement investigative procedures involving DNA have prevented IGG from developing any roots within the country's forensic practices. IGG will likely continue to develop primarily in the U.S. until it is ready for more widespread use, and as the popularity of the practice grows, regulations that balance public safety with personal privacy will likely also increase.