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.[7] New DNA samples from these suspects are then compared with the sample found at a crime scene.[8]

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 (NDNAD) or the United [9] 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.[10] 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.).[11] This dramatic increase in the amount and availability of genetic data is ideal for the success and optimization of IGG in these two countries.[12] 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.[13]

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.[14] 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.[15] In comparison, as of April

[7]

sixteen million and five million samples, respectively.

which will likely be challenged and overturned if the request is overly broad or invalid.[26] Living

personal information with law enforcement agencies unless [the company] believe[s] that [the [27] Despite the growing size and value of genetic databases

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.[28] Compared

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.[29] Law enforcement in the U.S. was also quick to try IGG because under U.S. criminal

[30] 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 eritil IGG 3(t)7(i)7(c)6(t)-130.0012 00.000018246 0

[34] 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 identify and register themselves as such within the website.[35] To promote efficient use of IGG, 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.[36]

contractors to conduct the genealogical research, or grants for the purpose of forensic genealogy to the federal, state, or local agency leading the investigation.[37] While these criteria include many cases that will use IGG, the DOJ policy leaves room for states to make varying laws regarding [38]

2. State Law

In 2021, some states within the U.S. began to enact legislation to protect the privacy of individuals

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 [45] Other requirements that promote accuracy and efficiency in the use of IGG include the proper licensing

nd success.[46] Lastly, if IGG and its associated

[47] Despite the multiple barriers and regulations that limit the use of IGG, Maryland pioneered the regulation of IGG in the U.S.

versions of laws regulating IGG. For example, Montana soon after passed an act requiring law

obtain familial DNA search results from a database that provides DTC genetic testing services.[48]

the constitutionality of an IGG search.[55] 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

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

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.[70] 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.[71] 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. e 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.[72]

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 retainment 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 argest measured by the proportion of citizens on the database, holding DNA profiles representing over [73] Due to this large proportion, as of 2020, over sixty-five percent of new samples uploaded received a direct match in the NDNAD.[74] 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 dures and genetic privacy and data protection regulations.[75] 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.

[70] *See* Glynn, *supra* note 13, at 1392.
[71] *See id.* at 1394.
[72] *See* Lund, *supra* note 1, at 207.
[73] Amankwaa & McCartney, *supra* note 60, at 119; *see also* Maguire et al.,

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

investigative procedures involving DNA have prevented IGG from developing any roots within

IGG will likely continue to develop primarily in the U.S. until it