

Testimony of Erin Murphy
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ORAL TESTIMONY:

Good morning. My name is Erin Murphy, and it is my great pleasure to offer testimony before you today. I am a professor at NYU School of Law, where my research focuses on forensic genetics, among other things. I have studied forensic DNA for almost twenty years; appeared numerous times before legislative bodies such as this one; and written extensively on the topic, including a book entitled *Inside the Cell: The Dark Side of Forensic DNA*.

I want to start by thanking you for convening this briefing. As I am sure you know, the state of Maryland has a long history as a national leader in DNA policy. Perhaps most famously, Maryland was a party to the Supreme Court's only decision directly addressing forensic DNA, which upheld the state's narrowly drawn arrested offender provisions in 2013.¹ Maryland is also one of only two jurisdictions – the other being Washington, D.C. -- to address in legislation, and in fact to ban, familial searches of DNA databases.² Maryland is also one of the few jurisdictions to have insisted, via a legislative mandate, that law enforcement collect and share actual data on the efficacy and impact of forensic DNA databases, rather than rely on anecdote or hollow assurances.³

In other words, Maryland has a reputation as a national leader in thoughtful, careful DNA policy and practice, and it is my pleasure to be here to speak to you as you continue to live up to that reputation by holding this briefing on investigative genetic genealogy ("IGG").

Given the limitations on my time, I will avoid repeating the points already made by Natalie Ram and Sonia Suter, although I share their concerns. I do want to underscore one point, however. Like others, one of the most troubling aspects of IGG is that it incentivizes and encourages law enforcement to collect the genetic material of people *known* to have committed no crime, and to test those samples in the coding, clinically significant regions of the genome (the "SNPs"). If

¹ *Maryland v. King*, 569 U.S. 435 (2013).

² Md. Code Ann., Pub. Safety, § 2-506(d) ("A person may not perform a search of the statewide DNA data base for the purpose of identification of an offender in connection with a crime for which the offender may be a biological relative of the individual from whom the DNA sample was acquired.").

³ Md. Code Ann., Pub. Safety § 2-513 (describing annual reporting obligation, including figures pertaining to the DNA database's operations in financial, demographic, quality assurance, and efficiency terms).

nothing else, I hope that this body prohibits law enforcement from collecting and invasively testing the DNA of people it knows have done no wrong. Although law enforcement argues that they have a constitutional right to take and test in any way anyone's genetic sample if it is "abandoned," I think such a view of the constitution is ill-advised. Moreover, although many people approached to give "voluntary" samples may in fact genuinely wish to cooperate with the police investigation, I worry that such "consent" is not always genuine given the authority of the police and the history of strained relations with certain communities, particularly communities of color. In my submitted written comments, I have outlined additional concerns along these lines, including specific shortcomings in the FBI's Interim Genetic Genealogy policy.

But rather than repeat or underscore points already made, I want to spend my time before you focused on another problematic dimension of genetic genealogical searches. Specifically, I want to address the argument that law enforcement should be able to shield IGG search practices from any public or judicial scrutiny. Because history teaches us that when law enforcement is not held accountable, abuses occur and trust is broken. And this is not unique to law enforcement – any person with power, left free from oversight and accountability – is prone to the same overreaching. So I want to talk about how – if this body decides to allow these searches to go forward – we can ensure that they are conducted in a manner consistent with the U.S. and Maryland Constitutions, and with enough transparency that the public and lawmakers like yourselves are able to make informed decisions about their successes or failures.

At the most fundamental level, we know that in our system, the criminal defendant is entrusted with primary responsibility for calling out police when they overstep their bounds. We may not like this – we may not think that a person accused of a crime is the best spokespersons for the innocent masses – but that is how it is. The restrictions that the Fourth Amendment and other constitutional provisions place on law enforcement's ability to investigate the innocent are often fought for and won by the guilty – the criminal defendants who have the lawyers, the incentive, and the opportunity to challenge certain investigative tactics.

So it will be the criminal defendant who will complain to the court if IGG practices exceed permissible constitutional or statutory bounds. For example: suppose police conduct an IGG search in a research or public health database. Perhaps the database even holds a "certificate of confidentiality" – federal legislative protection, created under the 21st Century Cures Act,⁴ that insulates certain research data even from law enforcement's grasp. If the defendant ultimately charged after such a search is never told what database was used, then how will the public ever learn it was used? And who will have the incentive of capacity to raise a challenge to that use, if not the criminal defendant?

⁴ Pub. L. No. 114-255, at 1050. (prohibiting disclosure of identifiable, sensitive information "in any Federal, State, or local civil, criminal, administrative, legislative, or other proceeding" without the consent of the individual); 42 U.S.C. § 241(d)(1)(D).

Or, suppose law enforcement takes a sample surreptitiously collected from a non-suspect and tests it for sensitive health information. Already one IGG company routinely tests samples for phenotypic characteristics (i.e., creates a “genetic mugshot” to aid in its IGG investigation). But what if they also thought it would be useful to discern health or other traits to help narrow the suspect pool? If the police don’t have to reveal their test methods, then how will the public learn that police are conducting such tests, or courts to review whether they are permissible?

Now, if you are thinking, “this is madness – of course the criminal defendant has a right to learn about the critical steps in the investigation, such as the database used to conduct the IGG search, or the type of testing done on any biological samples, or the algorithms used to make matches” – then I want to say that we have already seen the government make, and even succeed, with such arguments. In one case in California,⁵ for instance, prosecutors in California argued that the only pertinent evidence they had to disclose was the sample collected from the criminal defendant, and that from the crime scene. They argued, “the identity of the genealogy company that provided law enforcement with information or data, specific data provided by the genealogy company, and what particular investigative techniques law enforcement subsequently performed... is irrelevant and immaterial ... and they are not required to disclose it.” And the court there agreed.

So if this body drafts a legislative framework for these searches, you must explicitly and specifically include that the criminal defendant must be given a full and complete account of the IGG methods used. That includes: the database accessed; the authority through which it was accessed; the algorithms used to determine potential “matches”; the number and nature of such “matches” (including leads that turn out to be faulty); the number and type of any genetic testing that was performed; and the nature and extent of further investigation. And these disclosures should expressly include a general summary of the non-genetic sources consulted (e.g. criminal history records, financial records, birth records, death records, yearbooks, etc.), and specific information about any genetic sampling of suspects or non-suspects. To the extent that there are privacy concerns about the identity of any person in the investigation, then of course such information may be kept under seal or disclosed with confidentiality restrictions.⁶

Disclosure of this kind is not only imperative to ensure that IGG methods conform to statutory and constitutional law, but it also poses little danger to public safety. Unlike disclosure of other police methods, there is no risk that a defendant will manipulate or exploit this information to avoid conviction, or that future criminal actors will be able to evade detection as a result of disclosure. Disclosing drug observation posts or the identity of informants arguably enables offenders to retaliate or to alter future behavior. But that kind of manipulation or retaliation is not a concern with IGG.

⁵ State v. Waller, No. 18FE018342, (Super. Ct. of Calif. (Sacramento) Oct. 7, 2019) (J. Laurie M. Earl).

⁶ That case draws a parallel between IGG and the role of an “informant.” But such an analogy is inapt for the reasons given on page 7.

In addition, mandating disclosure of this information also ensures that law enforcement does not hide behind the policies and interests of private companies to fulfill their public duties. Most of these genealogical services are for-profit entities. As a result, they may have reasons to resist law enforcement exploitation of their data. But if such searches are mandated or allowed, these companies may want to minimize or hide law enforcement's use from the public. And I'm not just speculating: Family Tree DNA's website prominently promised exceptional privacy protection to its users; and if you clicked through to the Terms of Service, they insisted that it would not disclose genetic information to law enforcement unless compelled by law. FT DNA even joined a pledge to protect privacy, alongside the other DTC companies. Yet then a NY Times reporter uncovered FT DNA's cooperation with the FBI, in direct violation of its own promises.

What is more, private companies often cite an inflated notion of "trade secret law" when asked to reveal their methods and algorithms. This means that an upstart genetic genealogy service – perhaps a small company without resources to fight a warrant or subpoena – might run searches that return faulty or overbroad matches. Bad leads of this kind lead to bad investigations, as trees are built and relatives are investigated for what ultimately turns into a dead end. Yet if allowed, the company can hide its bad work behind a claim of "trade secret," insulating its bad match processes from any review.

This body should ensure that, if these searches are to happen, law enforcement does not end up partnering with cooperate interests to deceive the public about how genetic information is accessed and shared. It should not be corporate policy that determines the scope of privacy given to the people of Maryland, but judicial review and legislative oversight in the form of defense discovery disclosures and statutory public reporting requirements on the use of IGG methods. Without such protections, the people of Maryland will not know what the police are doing with their DNA; or, more likely, they will inevitably find out – whether it is through leaks to the Baltimore Sun or an investigation in a criminal case – and they may not like what they see.

Lastly, any policy that permits law enforcement to engage in IGG searches must give co-equal right to such searches to the criminal defendant. And to be clear, criminal defendants will want this ability. A wrongly convicted defendant arguing his freedom in post-conviction proceedings, like those made famous by the Innocence Project, often must identify the actual perpetrator in order to succeed. And pretrial, a criminal defendant might argue that a piece of evidence that the government has dismissed as inconsequential is in fact critical, in that it would point to the true perpetrator.

But many of the proponents of IGG often bristle at the suggestion that the defense be given access to this tool, even as they at times cite the "exoneration power" of the method as a reason to allow police to use it. Indeed, even though advocates of IGG often assert that law enforcement has the authority to do IGG searches because "any ordinary person could," they also claim that the defendant has no right to *information* about these law enforcement searches or to *conduct* such searches themselves. Genetic genealogy companies may back

them up – giving asymmetrical access to police while in fact restricting such access by ordinary users.

But if this method is justified because “anyone can do it.” If it is justified because we conceive of the invasion of privacy that IGG entails as either inconsequential (because people “consented” to sharing their genomic data) or worthwhile (because it can identify criminal offenders), then no principle supports denying equal access to IGG searches for the defense. And thus I encourage this body, if it determines to pursue a legislative framework to permit IGG searches, to expressly empower the criminal defendant – whether pre-trial or post-conviction – with the right to engage in such searches as well. Such a right follows directly from the constitutional right to compulsory process and confrontation of evidence, and from statutory rights to inspect and test the evidence in the case. To the extent that there may be concerns about privacy, I would argue that a single public defender poses far less of a threat to an individual’s privacy than the law enforcement arm of the state. But even so, such concerns are easily addressed by providing for an *ex parte* process by which a court could oversee any privacy-impinging aspects of the defense investigation.

In sum, should the Assembly choose approve IGG searches, I urge you to deliberately implement some basic safeguards. Because in the first instance, it will be the criminal accused who – given the tools – is best positioned to defend the interests of those innocent people in the form of suppression motions before the judicial branch. As a fallback, the public and the press – along with this body – should have access to complete data about IGG searches in order to continue to assess the tradeoffs between genetic and non-genetic privacy and public safety. If ultimately the legislature chooses to give police the authority to search and sample the coding regions of the genomes of the innocent people of Maryland – I urge you not to do so without any oversight or accountability.

ADDITIONAL WRITTEN TESTIMONY

In my additional written testimony, I want to address two separate issues. First, I want to anticipate some of the arguments made in favor of IGG, and attempt to respond to them. Second, I want to address what I perceive to be the flaws and shortcomings in the DOJ’s Interim Policy on Forensic Genetic Genealogical DNA Analysis and Searching.

Common claims advanced in support of IGG

- *“IGG searches are less invasive than traditional forensic investigations, because they rely on public data and require minimal police-civilian interaction”*

It is true that IGG searches may diminish some of the face-to-face aspect of a police investigation (although, presumably such interviews and canvassing still occurs if there is a requirement that IGG be a last-resort method). But just because the investigation takes place behind a computer screen does not mean it is not intrusive. We as a society are all just beginning to grapple with the extent to which technology has rendered our lives transparent.

Our phones track our every movement over the course of decades; our computers hold enormous stores of data from the most mundane email correspondence to intimate photos, records and exchanges; and now our genomic signatures may be publicly knowable even if no one in our known social family chose to participate in recreational testing. The fact that technology enables deeply invasive searches of people without their knowledge -- based on publicly-available data or readily mined stores of data -- is a reason for concern and deep reckoning, not dismissal. The Supreme Court has recognized as much on multiple occasions, when it distinguished between tracking a car in real-time in the world and tracking a car via placement of an electronic GPS device,⁷ and between searches of pockets and searches of cell phones,⁸ and between observing a person in the world versus gathering historical location data.⁹ Similarly, this legislative body should recognize that although police conducting an IGG search may be amassing “public” information, they are doing so at a scale and with a purpose far greater than any ordinary police investigation.

- *“IGG searches do not focus on the actual data contained in the coding region – they just focus on areas of overlap. Law enforcement isn’t invading genomic privacy”*

Depending on the service used, the search may return simple “match” information or it may return more detailed information about the precise regions of overlap. Again, it is true at this time that law enforcement does not take this genomic information and mine it for health or behavioral predispositions. But then, science has not yet reached a place where such information is readily available or useful. And to the extent that law enforcement claims such uses would never occur, they have little credibility. Already law enforcement has broken every promise it has made – only to test “junk” DNA; only to use databases to find convicted offenders; not to do phenotypic (trait) testing. Indeed, one of the IGG services (Parabon) routinely tests the crime scene sample for phenotypic traits in order to aid in the creation of the family tree. Should science evolve that makes such information available, it will undoubtedly be valuable to law enforcement, which means they will without question seek to use it. Opening the door now to this kind of trait testing of the human genome will make it all the harder to put the “genie back in the bottle” when that time inevitably comes.

- *“Why shouldn’t police be able to do what any hobbyist could do?”*

I find this the most difficult and vexing of all the arguments in favor of IGG. Because to the extent that a private person could in fact conduct such a search, it does seem troubling to exclude law enforcement – both as a matter of principle and as a matter of expedience (as presumably it would just incentivize law enforcement to encourage vigilante investigations).

⁷ United States v. Jones, 565 U.S. 400 (2012) (requiring a warrant to attach a GPS device to a car for the purpose of extended monitoring).

⁸ Riley v. California, 134 S. Ct. 2473 (2014) (requiring a search warrant to search the cell phone of an arrested person).

⁹ Carpenter v. United States, 138 S. Ct. 2206 (2018) (requiring a search warrant to obtain cell site location data of a suspect, while reserving question of “tower dumps”).

But this argument only holds as regards publicly-open databases with no restrictions on their terms of use.¹⁰ Once law enforcement seeks *special* access – for instance, police pose as an ordinary customer on a site that expressly prohibits law enforcement searches, or police obtain a warrant or subpoena to override users express restrictions on how their data is shared, then this argument ceases to hold. In such instances, law enforcement is not acting like “any ordinary person,” but rather seeking special access that would otherwise be denied (or a violation of the terms of service, which could carry legal or other consequences). So, to the extent that IGG searches are authorized in anything other than an open database, they must be justified on grounds other than that “anyone can do it.”

In addition, it is important as well to note that law enforcement is of course different from the ordinary consumer: law enforcement maintains near-exclusive control over the crime scene evidence, and has both the burdens and benefits of the police power.

- *“IGG is useful to exonerate, as well”*

IGG may indeed exonerate suspects, both when used by law enforcement and by the defense team. But IGG should not be necessary for this purpose. A crime scene sample that fails to match the accused should be viewed as exculpatory even when the true perpetrator has not been found. Law enforcement’s assertion that the exonerative value of IGG necessitates its adoption also rings false when they have regularly opposed defense efforts to conduct searches in regular government DNA databases that would potentially exonerate the accused.

- *IGG is no different than an informant who gives a tip about the perpetrator’s identity*

IGG is very different from an informant who gives information. First, informants give specific information, or else they are useless. An informant doesn’t say, “search these million houses – one of them has evidence pointing to a killer.” By nature, informants provide some degree of targeted, particular information even if not always exact and precise; otherwise their “leads” would be useless.

Second, the information revealed by an informant is limited to the lived experience of that informant. The informant can only know real information now, available in the social world. An informant cannot identify a person’s 6th cousin, or link two people who otherwise appear totally unrelated. An informant does not provide information that implicates descendants not yet born, or ancestors long dead. An informant’s information rarely bears relevance beyond the facts of the case, much less the moment in time. But genomic information is unalterable and enduring. It connects enormous numbers of people who are otherwise unconnected and implicates their privacy in profound ways.

¹⁰ The original GEDMatch database was one such database; but once GEDMatch switched its policy, the number of users who expressly “opted-in” to share with law enforcement plummeted from roughly 1.2 million to 180,000. Salvador Hernandez, BuzzFeed (Oct. 26, 2019).

- *“Any harm or incidental findings from the process of populating huge family trees can be dealt with directly, rather than by banning the practice”*

Genetics is a volatile, historically fraught subject. We have seen that genetics, or crude approximations of genetic identity, have throughout history been used to justify some of humankind’s worst atrocities: war, genocide, internment, exile, segregation, discrimination, and more. In America’s not too distant past, genetics (such as “one drop” rules about racial identity) were used by the government to determine who could marry, have children, get a business or home loan, or get an education. “Genetics” determined where people sat on public transportation or buy a home. Genetics is no ordinary tool of law enforcement; it is a field with a fraught and disturbing history that has been weaponized time and again.

In addition, we do not yet know what secrets the human genome holds. Billions of dollars in research are being spent to determine if the human genome can tell us something about disease propensity, longevity, behavioral propensities, character traits, and intellectual and mental capacity. Right now such research is in its infancy, but where will it be in twenty years, or fifty years, or 100 years? The databases amassed today will reveal the genetic codes of the generations yet to be born, and if research begins to unfold some of these secrets, can we protect such information from exploitation and abuse? If sharing DNA turns out to be unwise, or if that information falls into the wrong hands, we cannot change our genomic profile the way we would a social media account or credit card number. Should law enforcement have on file enormous troves of data mapping the biological connections between large numbers of people, and tied to specific information about their genomic data, when we do not even know what that data may come to mean?

DOJ’s Interim Policy

The DOJ announced an Interim Policy on IGG searches. Below is a rough sketch of some additional or altered features that such a policy ought to include.

- Warrant or court order required to initiate an IGG search. Order attests to:
 - qualifying sample (crime scene sample from a putative perpetrator, of sufficient quality)
 - qualifying testing laboratory (using a validated test kit and meeting NDIS quality assurance standards)
 - qualifying test (SNPs must be chosen to minimize any privacy implications)
 - case eligibility in terms of offense severity and exhaustion of all other methods
 - use of a qualified genetic genealogy service, ideally including a certified genetic genealogist
- Genetic genealogist may only use publicly available databases where users have opted-in to law enforcement access, and the platform has sufficient auditing mechanisms to ensure basic data integrity
 - No warrants or subpoenas may issue for searches of systems where users or the platform have rejected law enforcement access, whether recreational, research, or health.

- No samples collected or tested within the criminal case may be commingled or preserved within the database
- Genetic genealogist cannot investigate unless the search returns match(es) within third degree of relatedness, so as to minimize the scope of the intrusion on innocent people (research also indicates that matches more likely to occur by chance beyond the third degree).
- Genetic genealogist must record and report source categories of non-genetic investigatory material: e.g., criminal records, birth or death or marriage records, adoption records, yearbooks, social media, etc.
- Genetic testing of known non suspects forbidden, as is collection of genetic material (in any form) from known non-suspects
- Genetic genealogist may disclose possible suspects to law enforcement, who may then either approach those persons for a confirmatory DNA sample or seek a warrant to surreptitiously sample those persons
 - Any persons found *not* to match the crime scene evidence may not be placed in a database, and upon completion of the case must be destroyed.
- Once a suspect is confirmed, the genetic genealogist should give the court issuing the warrant all materials associated with the investigation, and delete that material from the genealogist's or private company's possession
 - Defense should receive a full report of the investigation, including the database searched, search methods used, leads generated, non-genetic investigative resources consulted, samples collected and tested, and results
- Law enforcement should aggregate data regarding these searches and issue a public report annually
- Abuse or misuse of any information gathered through a GG search, including by the genetic genealogist or law enforcement, shall be a crime. Abuse or misuse includes any disclosure of health, nonpaternity, behavioral or longevity associations, or any other incidental findings, to any person for any reason.