Title:

Genetic Testing as Genealogical Proof for Lineage Societies, Family Organizations, and its Wider Genealogical Applications

Presenter:

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Abstract:

DNA testing for genealogical purposes has permeated all aspects of the genealogical community since its debut in 2000. With the acceptance of DNA testing in lieu of paper records, lineages with little documentable proof can now be accepted for admission into family-oriented organizations. However, using DNA testing to confirm ancestral lineages is not without its share of controversies and challenges. Many organizations struggle with setting guidelines, determining what tests to accept, and how to document this information if they accept DNA results. The acceptance of DNA as proof of a lineage would ultimately lead to the creation of a larger family tree of verified lineages for these organizations. Yet, DNA testing can also call into question long-established genealogies. This paper discusses how DNA testing can be used to verify relationships, with examples from organizations that currently accept DNA results to confirm an applicant's submission. The experiences of these organizations and the implications of the Pringle Baronetcy case will be set in a wider context, referencing bodies such as the College of Arms in England and the Court of the Lord Lyon in Scotland. In addition, results concerning perceptions of including DNA results for applications to the groups from a survey conducted in conjunction with my Ph.D. research into American Lineage Societies will be discussed.

As genetic genealogy transitioned from laboratories to households in the early 2000s, it heralded a new era. It offered a glimmer of hope in solving genealogical puzzles, revealing birth parents for adoptees, and unraveling the intricate web of human relationships. However, the journey of genetic testing for genealogical purposes was not without its share of uncertainties, which would only grow with time.

The advent of DNA testing brought with it a significant potential—the ability to genetically disprove lineages that had been accepted as genealogical truths for decades, if not centuries. While the possibility of lineage breaks had always existed, genetics now provided concrete evidence of their frequency. This revelation, challenging long-standing genealogical beliefs, has rattled many institutions, underscoring the necessity for continuous learning and adaptation in the field of genealogy.

While genetic genealogy investigations utilize all forms of testing (autosomal, mitochondrial, and Y-chromosome), Y-chromosome testing to determine the direct paternal lineage occurs more frequently in historical genealogical questions.[1] This is because autosomal DNA is harder to confirm further back in time to the potential ancestor, and comparing mitochondrial DNA to maternal genealogies, which are often lacking in information, leads to frequent dead ends.[2]

This paper highlights two stories that have undergone genetic genealogy testing, a discussion of its use in lineage organizations within the United States, and results from the portion of a PhD project that asked participants their views on using DNA testing to prove lineages. From these examples, I will demonstrate that while genetic genealogy is shedding new light on how we are connected, it is also a very sensitive and, at times, controversial topic to tackle.

Upheaval in the Aristocracy: The Baronet of Stichill

Since 1683, the Baronetcy of Stichill has passed without issue through Robert Pringle's descendants. However, in 2016, the line shifted from the intended heir to his cousin due to genetic genealogy testing showing that they were not related through the Y chromosome.

Under Scots and English law, there is a presumption that children born into a marriage are those of the husband.[3] While this may be contested in Civil Court, the burden of proof was very large in the

[1] Cox, D. (2024, January 31). *Are you related to a king? Why you might carry royal DNA.* BBC News. https://www.bbc.com/future/article/20230503-coronation-of-king-charles-iii-do-you-carry-royal-dna

[2] Calafell F, Larmuseau MHD. The Y chromosome as the most popular marker in genetic genealogy benefits interdisciplinary research. Hum Genet. 2017 May;136(5):559-573. doi: 10.1007/s00439-016-1740-0. Epub 2016 Nov 5. PMID: 27817057.

[3] Legal500. (2016, September). *In the matter of the baronetcy of Pringle of Stichill UKPC 16.* Law Journals - WILLS & TRUSTS LAW REPORTS. https://www.lawjournals.co.uk/wills-trusts-law-reports/in-the-matter-of-the-baronetcy-of-pringle-of-stichill-ukpc-16/

past, and it often took years to gather the documentation. With the creation of paternity testing, this proof became more accurate, with fewer questions of the proof of illegitimacy when presented.

In 2009, Sir Steuart Pringle, 10th Baronet of Stichill, was asked to submit a DNA test to the Pringle Surname Project. This project was run by his nephew Murray Pringle, who wanted to submit evidence that his uncle should be instated as Chief of Clan Pringle, a title that had been vacant since 1738. The results should have been non-consequential, but the Y-chromosome results questioned the entire line of succession.

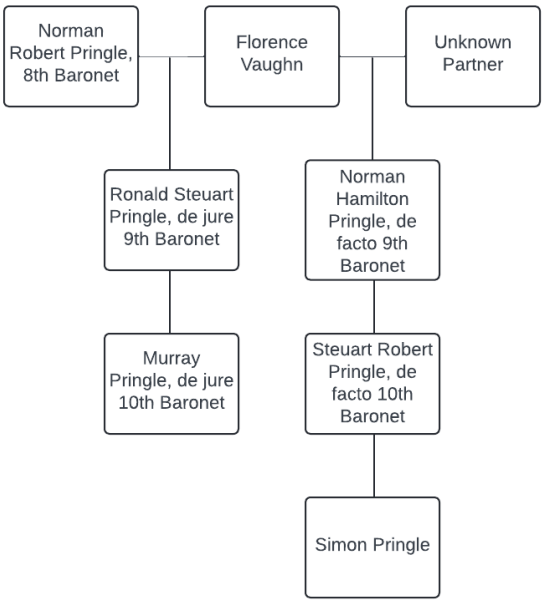

Figure 1: The descendants of Florence Vaughn

When Steuart's results returned, they showed that of the 15 samples collected, his paternal line DNA did not match that of the other Pringle men. To say that when confronted, Steuart was none too pleased would be an understatement. But when Steuart died in April 2013, Murray challenged Steuart's son Simon to his claim to the Baronetcy of Stichill. Eventually, Queen Elizabeth II asked the Judicial Committee of the Privy Council to make a judgment.

The country was captured in a media frenzy about what would happen and how it could affect the inheritance of lines in the future. It was found that Murray had not received his cousin Steuart's DNA under false pretenses. The DNA test was intended to establish the next Chief of Clan Pringle, and none of the parties knew that it might have found an illegitimate line. Descendants of the 9th Baronet were thus officially removed from the rolls in 2016, and the official lineage moved to the descendants of the legitimate son, Ronald Steuart Pringle. (Figure 2)

However, this leads to the wider question: Will members of the population use DNA testing in the future to assert claims to other hereditary titles? This question has been the subject of much debate, with general guidelines being taken that testing by DNA for genealogical purposes should not be done by anyone with a title.[4]

[4] Black, G & Agnew, SC 2018, 'The significance of status and genetics in succession to titles, honours, dignities and coats of arms: Making the case for reform', *Cambridge Law Journal*, vol. 77, no. 2, pp. 321- 348. https://doi.org/10.1017/S0008197318000417

Questioning a Presidential Lineage: Thomas Jefferson and Sally Hemings

One of the most well-known and largely fought-over paternity cases in American History was who fathered Sally Hemmings's six children. The debate can be found in newspaper articles beginning in 1802 from Jefferson's rivals while he was president. Hoping to discredit and turn opinion against him, rumors of his second family persisted for 200 years. Then, in November 1998, Dr. Eugene Foster published in *Nature* his findings that Jefferson, and not another male relative, was the father of Hemmings's six children.[5] To complicate matters on a different level, Jefferson's wife Martha Skelton (nee Wayles) and Sally Hemmings were half-sisters. (Figure 3)

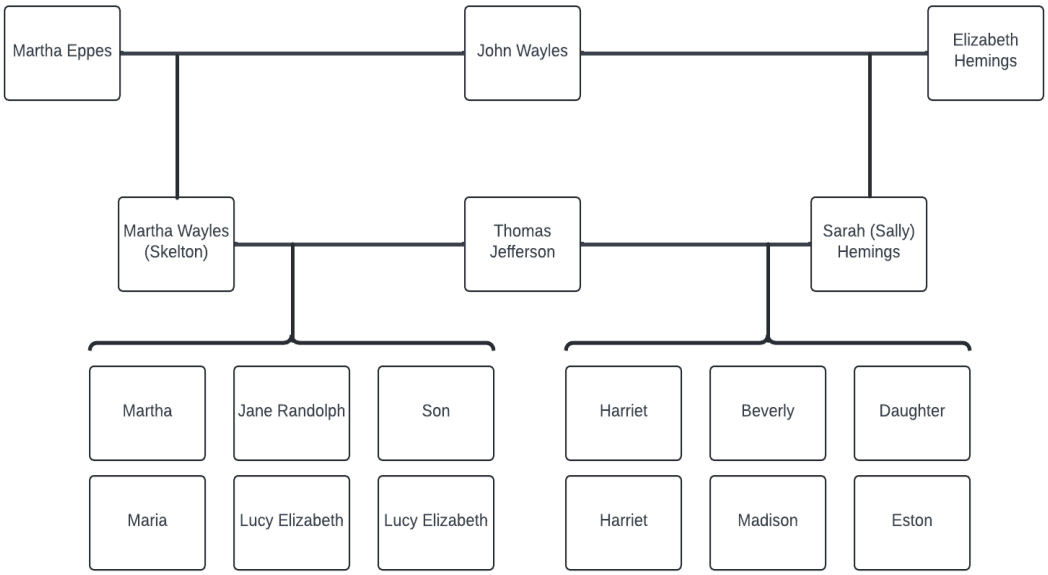

Figure 2: The descendants of John Wayles, father of Martha Wayles Skelton Jefferson and Sarah Sally Hemings.

Foster used Y-chromosome testing to determine whether the direct male descendants of Sally Hemmings's children matched living male descendants of the Jefferson line. Jefferson and his wife Martha had no sons live to majority, meaning Foster and his team relied on five male descendants of Jefferson's uncle Field. However, deniers of this union had always voiced that Hemmings's children were fathered by the sons of Jefferson's sister, Samuel and Peter Carr.

Those five men were compared to five male descendants of Thomas Woodson and one male descendant of Eston Hemmings, supposed children of Hemings and Jefferson. Plus, three other men who were descendants of John Carr, grandfather of Samuel and Peter Carr, were also tested.

[5] Foster, E., Jobling, M., Taylor, P. *et al.* Jefferson fathered slave's last child. *Nature* **396**, 27–28 (1998). https://doi.org/10.1038/23835

The results surprised and enraged many descendants of Thomas Jefferson. The male descendants of Thomas Woodson were discounted as being related to Jefferson. Four descendants showed a Y-chromosome haplotype that showed descent from Europeans but did not match Jefferson's descendants. Meanwhile, the fifth tester showed evidence of illegitimacy in the paternal line.

However, descendants of Field Jefferson and Eston Hemmings shared a haplotype. This rare microsatellite haplotype, K2, most often found in East Africa and the Middle East, is reported to be found in only 1% of the population.[6] Furthermore, while the Carr descendants matched each other, they did not match any of the Jefferson descendants. (Figure 4)

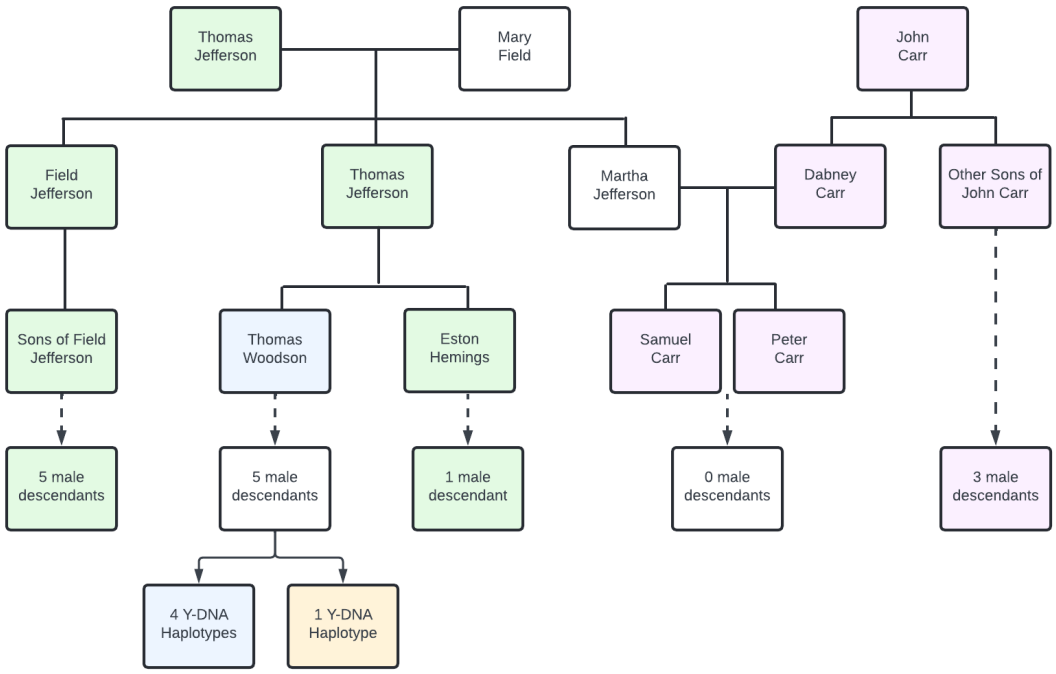

Figure 3: Male lineages used to show male descendants of Sally Hemings were fathered by Thomas Jefferson.

This article sparked a firestorm in the media, historical community, and The Thomas Jefferson Foundation. Naysayers were convinced it had to be another Jefferson male relative who fathered Hemmings's children. Historians felt there was conclusive evidence in the historical record to show that Thomas Jefferson was the only one with the opportunity. It wasn't until January 2020 that The Thomas Jefferson Foundation officially changed its position on the research presented in 1998-9.[7] Due to

[6] King, T. E., Bowden, G. R., Balaresque, P. L., Adams, S. M., Shanks, M. E., & Jobling, M. A. (2007). Thomas Jefferson's Y chromosome belongs to a rare European lineage. *American journal of physical anthropology*, *132*(4), 584–589. https://doi.org/10.1002/ajpa.20557

[7] The Hereditary Society Community. (2024). *Online directory: The Hereditary Society Community*. The Hereditary Society Community. https://www.hereditary.us/directory-online

subsequent research by historians and genetics, the Foundation fully accepts that Jefferson was the father of Hemmings's six children.

Acceptance of DNA as Proof of a Lineage: U.S. Heritage Organizations

The oldest acknowledged lineage society in the United States is the Society of the Cincinnati, founded in 1783.[8] These organizations celebrate and honor the heritage of those who helped found or participated in historical events in the United States. As of 2024, there are over 500 active organizations based on genealogical descent in the United States.[9]

Shows like *Who Do You Think You Are* and *Finding Your Roots* have showcased how genealogy with DNA testing can give users glimpses at previously unknown lineages. These shows also demonstrate that even famous people love knowing they descend from historically significant people or that their ancestors participated in historically significant events.

According to Dr. Turi King, millions descend from King Richard III.[10] This may be why dozens of lineage societies exist for various royal lineages, from Charlemagne to the Plantagenets. For American distinguished lineages, we can turn to Jamestown and the Mayflower. There are an estimated 30-35 million Mayflower descendants from the surviving 53 passengers worldwide, perhaps double that for the known 1000 possible ancestors of the Jamestowne Society.[11]

Each lineage society sets and maintains its own rules on processing an application. Some lineage societies hire trained genealogists to approve membership applications, while others rely on volunteers who are society members to analyze the applications and submitted documents. In addition, each lineage society determines what it will and will not accept as proof of lineage. This means an applicant cannot assume that documentation accepted by one society, will be acceptable to another.

Professional researchers have long raised concerns over the validity of the documentation provided to these organizations. Staff or volunteers responsible for validating research often encounter incorrect or fraudulent lineages perpetuated by unsubstantiated research and compounded by the public's blanket acceptance of those famously published lineages.

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[8] The Society of the Cincinnati. *Our story introduction*. The Society of the Cincinnati. (2024, February 26). https://www.societyofthecincinnati.org/our-story-introduction/

[9] The Hereditary Society Community

[10] Coughlan, S. (2021, November 1). *How millions don't know they're related to royalty*. BBC News. https://www.bbc.com/news/uk-59041055

[11] Gower, N. (2021, August 6). *Mayflower 400 years: How many people are related to the Mayflower Pilgrims?*. BBC News. https://www.bbc.com/news/world-us-canada-57698818; Jamestowne Society. (2021). *Qualifying ancestors*. Jamestowne Society. https://www.jamestowne.org/qualifying-ancestors.html

Some organizations have begun to accept DNA analysis as a part of their membership application process. The groups investigating this avenue to prove a lineage are doing so to allow individuals whose families have record losses, which in the past barred them from membership, to have a way to potentially join. Unfortunately, there is no standardized set of guidelines on using DNA as proof of lineage, just as there are no standard rules across groups for genealogical requirements. But for those with no other proof, there is hope that they can also celebrate their ancestry with others with the same background.

On the other hand, what if DNA shows you are not a descendant of the person you thought you were? These organizations have long taken the policy that once a member, always a member. Meaning your line might be closed, but they will not take you off of the member rolls. This happens frequently when new documentation comes to light. Often, the lines in question are closed for further use unless someone can correct the lineage. However, there are times that lines do become permanently closed due to mistaken identity or now due to DNA results.

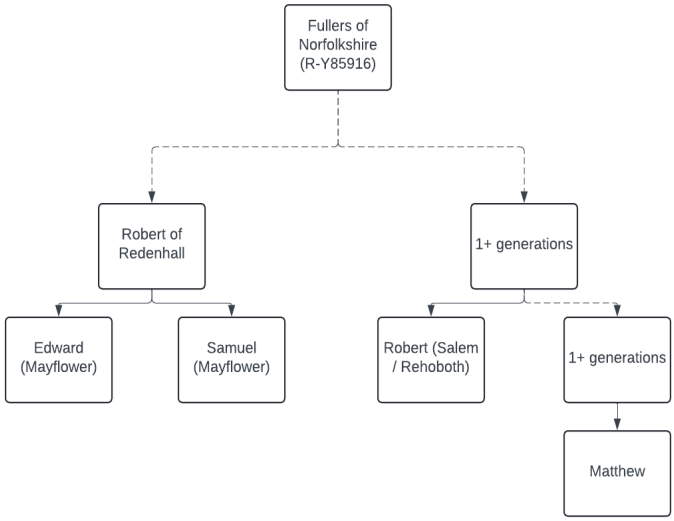


Figure 4: New Fuller lineage from the General Society of Mayflower Descendants DNA project.

In November of 2023 the General Society of Mayflower Descendants closed one of two lineages for the Pilgrim Edward Fuller.[12] He and his brother Samuel were passengers on the Mayflower. Edward was with his wife and son Samuel. His brother Samuel traveled with a servant, leaving his wife and child behind to make the voyage later. Edward and his wife died the first winter in the colony, leaving their son Samuel to be raised by his uncle.

Until this ruling, the GSMD accepted that Edward Fuller had two sons, Samuel and Matthew. Several Fuller relatives migrated to the colony after the Mayflower but cannot apply for membership to the GSMD as they are not direct descendants of Edward the Pilgrim. Which is where the mistaken identity seems to have occurred. (Figure 5)

[12] The Mayflower Society. (2023, November). The Edward Fuller Family. https://themayflowersociety.org/passenger-profile/passenger-profiles/the-edward-fuller-family

Using Next Generation Sequencing (NGS), a study of the male Fuller descendant began.[13] The Fuller haplogroup is quite common in Northwestern Europe (R1b-U106), but with the NGS testing, the project administrators could begin to distinguish the Colonial Mayflower lineages. Through the testing of 16 individuals, it was determined that the presumed son, Matthew, was more closely related to another Fuller relative, Robert Fuller of Salem and Rehoboth, Massachusetts, whose exact relationship to Edward is unknown.

Views on DNA Usage for Lineage by Members and Non-members – Survey Results

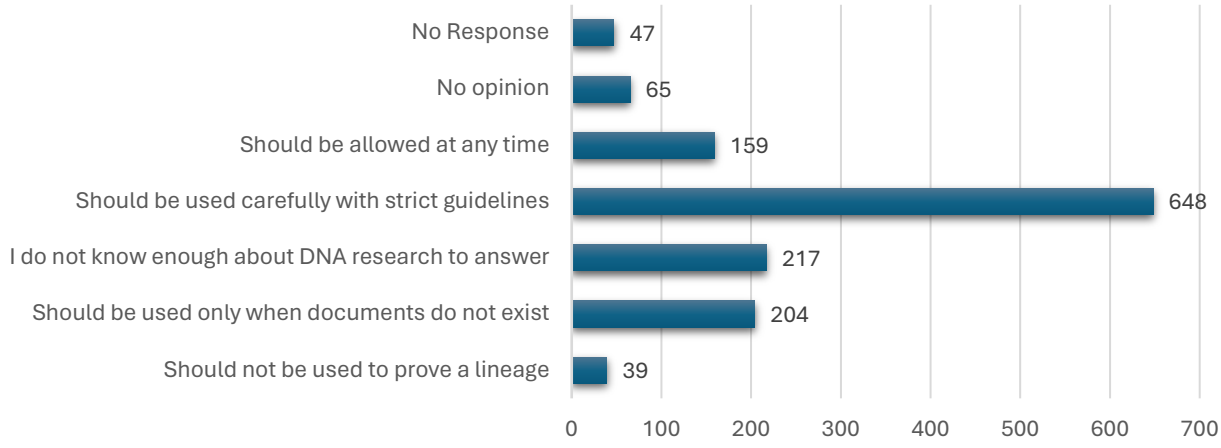
Through my PhD project, I am studying the public perceptions of lineage societies, how they have shaped the field of genealogy in the United States, and their impact on American society and genealogy in the period 1970-2020. Data for this project was collected in two phases. First, an online survey was conducted and second, interviews with volunteers from the survey and others associated with the lineage society community occurred. The survey covered many topics in addition to respondents' thoughts on the use of genetics in genealogy and on lineage society applications.

In total, 1164 people participated in the survey. Of those participants, 86.6% stated they were female, and 95% identified as Caucasian. While those results could skew the answers, I do feel they are representative of the segment of the population that is interested in lineage societies since the stereotype is that these organizations are the bastions of white women.

All respondents were asked their opinions on using DNA to prove lineage for applications to these organizations. When asked how and where DNA should be used for applications, 12% felt DNA should be allowed for any reason on an application, while 49% stated they felt DNA should be used with strict guidelines from the organization. On the other hand, 3% felt that DNA results should not be used to prove lineage, and 15% should not be allowed at any time. Finally, 16% of the respondents admitted they did not know enough to answer any questions about DNA.

[13] Mayflower DNA. (2024, March 3). Fuller (Y-DNA). https://mayflowerdna.org/wiki/index.php/Fuller_(Y-DNA)

Figure 6: In your opinion, do you feel the use of DNA evidence for a heritage organization or lineage society application



Those who added commentary to their answers helped explain these choices further. As with any controversial subject, there was a wide range of written commentary from "I think this is dangerous ground" to "should be mandatory." However, the overwhelming comments felt that they should be admitted with guidelines and in conjunction with genealogical information.

One respondent expressed DNA being "used especially when it contravenes a documented connection (e.g., when a document records a different paternity than is reflected in the DNA)" which has been expressed in other parts of this paper. Most surprising was the opinion one respondent had. They felt the conversation on DNA would "eventually be dropped from use as it begins to DISPROVE old applications and members." My interpretation of this comment is that they feel that if enough feathers were ruffled, rules would be put into place to stop the use of DNA evidence.

Several comments stood out, demonstrating the confusion about testing and how taking a DNA test can be an extremely personal choice:

> *"Strong feelings here. This is debatable based in what do we consider family? Is family simply blood? Or is it customs, traditions, and love? My history is well documented and we could prove with DNA. Would I do that? Absolutely not. There are many people with whom DNA would disqualify. Think of the earlier decades, in Tennessee for example, where wealthy families secretly bought children. This was not uncommon, or was it to have other skeletons in the closet. And in our current day and age, I have seen debates over surrogates, IVF, and other fertility treatments. Should we disqualify those who do not share the blood or who share it by assistance, or honor that they are part of the family by name, customs, and love?"*

Adoption was also frequently commented on. In paticular, how the use of DNA can help those adopted in closed records states. But adoption can also close lineage doors if you have no desire to connect with your birth families. One respondent wrote she was "the daughter of an adopted person who loves their adopted family history. I don't think that genetic proof should be required." Some organizations do allow adopted lineages to be associate members of an organization, but few allow them to be full members.

Conclusion

Genetics is not only challenging genealogy but the world as we know it. Advertisements bombard us for testing, crimes are solved with it, brick walls caused by documentation loss are crumbling, and people have up-ended their family lines because of it. I feel this is just the beginning from my research and the literature on the topic.

While people and the countries they live in try to navigate the uses of genetics ethically and legally, the science will continue to grow.[14] I feel that any organization that wishes to use DNA testing as a part of its familial verification processes must not only set realistic standards for use but also be flexible enough to realize that those guidelines cannot be set in stone. As discoveries about using this science are made, the guidelines must leave room for change and updating. We as a society have discovered a tool that can not only inform us about who we are but redefine us as well.

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