# Navigating DNA Testing in Immigration Cases

**by Kayla M. Sheets, Meaghan Hall, Michael L. Baird, and Dan H. Berger**

DNA testing has become the gold standard for immigration cases based on genetic family relationships much as it has for other areas of law such as family or criminal justice. Yet, guidance is surprisingly vague and the science is not always understood by lawyers or by government officials. This article discusses the role of DNA testing in U.S. immigration law, the utility of DNA tests, and emerging evidence about the validity of these tests.

A very unusual series of cases handled by the firm of the immigration attorney author of this article earlier this year sparked our interest. Five American couples entered contracts with various surrogacy clinics in India for the conception of a baby using the husband's sperm and donor eggs. After the babies were born, the U.S. consulate required DNA testing to issue a Consular Report of Birth Abroad. Each of the DNA tests concluded that the husband was "not the biological father of the child" based on review of 15 "markers." In one case, the clinic claimed the test was erroneous, and cited a rare genetic condition called chimerism. It seemed as if the surrogacy clinic had either made a mistake and was actively trying to cover it up, or the DNA test had failed.

This raised many questions. Could the baby in question actually be our client's biological child? Can a DNA paternity test be wrong? We (the legal authors) looked up 'chimerism' and found it discussed in a New York Times article from 2013;[1] the article defined the term as a condition where individuals have two genomes (two entire sets of DNA) in their bodies. This led to a fascinating discussion among a group of scientists and lawyers, which ultimately led to this article.

## LEGAL BACKGROUND

Despite the importance of DNA testing in an immigration case based on a genetic family relationship, the guidance and laws are relatively vague. In a legacy Immigration and Naturalization Service (INS) memorandum from 2000,[2] DNA is not listed as primary or secondary evidence of a family relationship. Six years later, the ombudsman for U.S. Citizenship and Immigration Services (USCIS) recommended adding DNA testing as primary evidence of a family relationship.[3] The recommendation pointed out that an old immigration regulation still on the books allows USCIS to require ABO blood type testing to establish a family relationship, even though DNA testing is more accurate and easier to pursue (simply requiring a saliva swab instead of a blood draw).[4] The ombudsman concluded that "Family reunification is a pillar of U.S. immigration policy. USCIS must be able to verify, and its customers must be able to establish, that the claimed family relationships that constitute the basis of eligibility for immigration benefits are legitimate."[5]

The current *Adjudicator's Field Manual* (AFM) 21.2(d)(1)(B),[6] last updated regarding DNA testing in 2008, states that field offices must inform petitioners that DNA testing is voluntary, and does not guarantee approval of the petition.[7] This leaves the guidance rather vague; officers can suggest DNA testing, and the petitioner/beneficiary can choose to comply. However, there is no clear guidance on when officers should request DNA tests, whether they can be submitted proactively, and what weight should be given to a person's refusal to submit to a DNA test.

Currently, family-based immigration cases begin

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[1] http://www.nytimes.com/2013/09/17/science/dna-double-take.html?pagewanted=all.

[2] INS Memorandum from Michael Cronin, Acting Exec. Assoc. Comm'r, Programs, HQADN, Guidance on Parentage Testing for Family-Based Immigrant Visa Petitions (July 14, 2000) *published* on AILA InfoNet at Doc. No. 00071803 (*posted* July 18, 2000).

[3] Recommendation from the CIS Ombudsman to the Director, USCIS, Recommendation to accept DNA test results as secondary evidence of family relationship, to grant authority to directors to require DNA testing and to initiate a DNA testing pilot project to study the impact of requiring DNA testing as evidence of family relationship (April 12, 2006), *available at* https://www.dhs.gov/xlibrary/assets/CIS Ombudsman_RR_26_DNA-04-13-06.pdf.

[4] *See* 8 C.F.R. § 204.2(d)(2)(vi).

[5] Recommendation from the CIS Ombudsman to the Director, *supra* note 3, at 3.

[6] The Adjudicator's Field Manual (AFM) is available at www.uscis.gov, through Lexis online research services and in Volume 14 of Gordon et al., Immigration Law and Procedure.

[7] AFM 21.2(d)(1)(B).

with the documents, usually a birth certificate or other secondary evidence. The Department of State (DOS) lists what type of evidence is available and considered reliable in each country.[8] It can take months for USCIS or DOS to evaluate these documents (such as when a Form I-130, Petition for Alien Relative, is pending). If the adjudicating officer is not satisfied that the family relationship exists after reviewing the initial evidence, then he or she can suggest DNA testing and direct applicants to a list of authorized laboratories to use. Chapter 601.11 of Volume 9[9] of DOS's Foreign Affairs Manual (FAM) lays out the process, including the required use of a lab accredited by the American Association of Blood Banks (AABB).[10] Details of how the sample is collected, chain of custody, and the like, are covered at 9 FAM 601.11-1(C) (DNA Testing Procedures at Post ). According to the FAM, a result of 99.5 percent probability or greater is required to accept a DNA test.[11]

Even though DNA testing is now common, the guidance still leaves it as a method of last resort. As the FAM states, "[D]ue to the expense, complexity, and logistical delays inherent in parentage testing, genetic testing should only be used if no other credible proof (documentation, photos, etc.) of the relationship exists."[12] This guidance ignores the fact that many cases can be identified upfront as having poor/unreliable documentation. As of now, a petitioner must wait for a DOS or USCIS request to initiate a DNA test. Despite vague guidance, DNA is de facto the final arbiter of family relationships. A positive test result leads to approval, and a negative test result leads to denial.

If there is any concern about the result of a DNA test, and a non-genetic category is available,[13] it may be prudent to avoid staking the immigration case on a genetic relationship. Consider the following case study. Mohamed is a 22-year-old U.S. citizen from Somalia who requested to sponsor his mother and her second husband for permanent residence. Mohamed entered the United States as a young child and a dependent of his father in refugee status. During the consultation, Mohamed explains that on trips back to Somalia, everyone comments on how much he resembles his mother's husband and Mohamed now assumes that the husband is really his genetic father. DNA testing could settle the issue, but a positive DNA test would call Mohamed's immigration status into question; after all, his refugee entry was based on a genetic relationship with his mother's first husband. Thankfully, Mohamed's mother and second husband were married before Mohamed turned 18. Therefore, Mohamed can sponsor his mother's husband as a step-father, which is a category that does not require a genetic relationship or the risk of an officer ordering DNA testing.

Whenever a case may lead to DNA testing, it is important to tell the client of possible ramifications just in case the result is unexpected. The immigration attorney author of this article has had a number of cases where the DNA test has been negative, excluding a parent from being a biological parent. Recently, a long-time client had finally gotten U.S. citizenship, and wanted to sponsor his son from Bhutan. At the embassy interview, the officer requested DNA paternity testing, and at a significant expense. The child's mother objected, claiming religious grounds. The client was distraught at not being able to have his son live with him in the U.S., and eventually prevailed in getting the DNA testing done. One day, he called in shock because he received the DNA test results in the mail, and there was no match. The child now is being called to the embassy again, presumably to be told that the case is denied because of the DNA test. The client does not want the child to hear this from a stranger, and as of the writing of this article, the attorney is trying to get the embassy to cancel the interview and arrange another way to return the original documents.

The next sections were drafted by the scientific authors to address the mechanism of DNA testing, how to interpret the report, and when to question the results. With the increasing reliance on DNA testing

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[8] *See* Reciprocity and Civil Documents by Country, *available at* https://travel.state.gov/content/visas/en/fees/reciprocity-by-country, and through Lexis online research services and Gordon et al., Immigration Law and Procedure, Volume 19.

[9] Volume 9 of the Foreign Affairs Manual (FAM) is available at https://fam.state.gov/default.aspx#, anf through Lexis online research services and Gordon et al., Immigration Law and Procedure Volume 18.

[10] 9 FAM 601.11-1(A)(b)(1).

[11] *See* 9 FAM 601.11-1(A)(a)(2).

[12] *See* 9 FAM 601.11-1(B)(a)(2).

[13] Certain parent-child relationships are not based on genetics, such as a step-parent relationship (marriage took place before the child was 18), adoption (fitting the strict legal standards summarized by DOS (https://travel.state.gov/content/adoptionsabroad/en.html), or a "gestational mother" (a new concept, and a new term, for a woman who gives birth to a baby that is conceived through in vitro fertilization of a donor egg, http://travel.state.gov/content/travel/english/legal-considerations/us-citizenship-laws-policies/assisted-reproductive-technology.html; the USCIS definition can be found at http://www.uscis.gov/news/uscis-expands-definition-mother-and-parent-include-gestational-mothers-using-assisted-reproductive-technology-art).

by USCIS and DOS, immigration attorneys should understand the basics of these tests, and think strategically about how they may affect the outcome of a case.

## DNA TESTING FOR IMMIGRATION

To establish a biological relationship between a child and an alleged parent, DNA testing is performed. Parental testing involves two stages. First, DNA is obtained from both parties and segments of the DNA are sequenced in a lab. Second, statistical analyses are performed to calculate the probability that the parties are genetically related based on the lengths of these segments.

In the first stage, DNA from the child and alleged parents is obtained and studied in the laboratory. Specific segments of interest are measured. The positions of these segments are called *loci* (*locus* for singular). At any given locus, there are two copies of DNA called *alleles*. One allele was inherited from the mother and the other from the father. Parental testing involves comparison of the lengths alleles. The lengths of the alleles at each locus of the child are measured and compared to the lengths of the corresponding alleles of the parents (or alleged parents).

In the second stage, a formula is used to calculate the probability that the tested parent is indeed the biological one. Paternity Index (PI) values are calculated for each locus. The PI takes into account the likelihood of detecting each allele length within an individual, given their ethnic background. The resulting PIs are combined into one final value, aptly named a Combined Paternity Index (or CPI). The larger the CPI value, the more likely it is that a tested parent is the biological parent.

DNA tests are not foolproof, however, and paternity tests are no exception. As a result, most testing laboratories require three or more alleles to be significantly different between parent and child to *exclude* an alleged parent. Allele mismatches can occur for several reasons, most notably mutations caused by environmental factors, such as UV from sunlight, chemical exposures, or smoking. Mutations can also occur within the laboratory, as artifacts of the technology used to amplify DNA.

Immigration testing requires a chain of custody from the initial collection of the samples through testing and report generation. The AABB has established Standards of Relationship Testing. Laboratories must include photographs taken at the collection facilities, government issued documents, fingerprints and signatures of the people whose samples are being taken to confirm identity.[14] Once samples are collected, they are often sent to the laboratory by overnight courier. Reports generated by the laboratory include the relevant information about the results of the testing (alleles and loci tested) and a conclusion. The signature of the laboratory's medical director that reviewed the case is required. Reports are often notarized. Examples of two reports follow, one confirming the genetic relationship between the parties and the other excluding it (known as inclusionary and exclusionary results).

## INTERPRETING PARENTAL DNA TEST RESULTS

This section describes the typical information included in parental DNA test reports. Here we provide some basic guidance for interpreting the results, which aim to determine whether the alleged parent is *excluded* or *not excluded* from being the biological parent of the child. Parental DNA testing is most frequently utilized to confirm paternity, therefore we will describe the process of interpreting the results of a paternity test.

A typical paternity test contains demographic information as well as genetic information about the tested individuals. The demographic information includes the full names, dates of birth, reported ethnicities and dates and, sometimes, types of the samples collected. The genetic information includes the list of identified loci by their unique alphanumeric names for each individual. At the time of this publication, typical reports reference 15 loci, but that number may be increasing in the near future due to suggested best practices.

Each locus typically has two allele values, one presumably inherited from the mother and the other presumably inherited from the father. The two alleles may be coincidentally the same length, in which case they may appear on the report as one value. The Paternity Index (PI) associated with each locus demonstrates the rarity of the allele size within the ethnic group of the tested individual. The more rare an allele is, the higher its PI value. Rare alleles contribute more weight in the final calculation of the Combined Paternity Index (CPI).

Reports typically contain information about the **tested mother**, which would serve as a control. There is usually an amelogenin[15] test. Amelogenin results

[14] The actual standards are, not surprisingly, quite technical, but are available for purchase at http://marketplace.aabb.org/EbusPPROD/Marketplace.aspx.

[15] The amelogenin test is used to confirm the sex of the tested individual. The amelogenin gene is located on the sex chromosomes, X and Y. The X and Y chromosomes have distinct versions of the gene. Females typically have two X chromosomes, while males typically have one X and one Y chromosome, however, there are exceptions.

should verify that only X chromosome material was detected, confirming that the sample was derived from a female. The accuracy of her name, date of birth, and ethnicity should also be verified. Correct reporting of ethnicity is essential for the accuracy of the result, because ethnicity is used in the calculation of PI values. The mother should ideally match alleles at each locus with the tested child. It should be noted that it is possible to conduct DNA paternity testing without results from the biological mother, but those tests have more room for error.

Reports also contain information about the **alleged father**. Amelogenin results should indicate that an X and Y chromosome were detected, confirming the sample was from a male. The alleged father's demographic information should be carefully confirmed and accurately reported. If each of the tested father's alleles are present, this would indicate he is *not excluded* from being the biological father.

Reports always contain information about the **tested child**. Amelogenin results should confirm the gender. The tested child should have two allele values at any given locus. The child's allele sizes should correspond to the allele sizes of each tested parent. If the mother's DNA results are provided, it is possible to deduce which alleles may have been inherited from the alleged father. If the mother's DNA information is not provided, there is some guesswork involved into identifying the alleged father's alleles. If all corresponding allele sizes match, the alleged father is *not excluded* from being the biological father of the tested child.

The genetic odds of paternity are calculated using Bayesian analysis. Multiplying the alleged father's PI values determines the Combined Paternity Index (CPI). Bayes' Theorem combines the original probability that the alleged father is the biological father (50 percent or 0.5) with the CPI via the equation:

$$\text{Probability of Paternity} = 1 - [1/(\text{CPI} + 1)]$$

When the probability of paternity is zero, the alleged father is *excluded* from being the biological father of the child. When the alleged father is not excluded of being the biological father, the probability of paternity can be over 99% that he is the biological father, assuming no other close relatives are under consideration.

Please note that this probability of paternity only applies when comparing this individual to an unrelated, untested male of the same ethnicity. This figure *does not* apply when the alleged father is compared to a blood relative such as a cousin, brother, or identical twin as we will discuss in the limitations section below. When a report shows many alleles are shared between the tested father and child, but the probability of paternity is 0%, a residual CPI may be warranted. Residual CPI values are calculable and available from most parental DNA testing labs upon request.

**LIMITATIONS TO PARENTAL DNA TESTS**

Parental testing has evolved dramatically with the advent of DNA fingerprinting technology. Prior tests used ABO blood typing, which only had about a 30 percent ability to exclude a genetic relationship. The child's allele lengths are compared to those of the purported parents. The assumption is that no two unrelated individuals should share the same pattern of allele marker lengths. (Although at least one case of two potential fathers coincidentally sharing 15 markers has been reported in the literature.[16]) As with any molecular DNA test, there are limitations of which to be aware.

One limitation is that the results are prone to human error. Demographic data may be intentionally or accidentally provided inaccurately. Also, improper handling of samples can cause cross-contamination. Mislabeled samples or sample mix-ups within the lab can lead to false results.

Misreported ethnicity is an important example of human error that requires special attention. Misreported ethnicity data may yield inaccurate paternity testing results because the PI is calculated based on ethnicity-dependent normative data. An allele may commonly be of particular length in one ethnic group, while the same allele might be of different length in another ethnic group. Unfortunately, data may not yet exist for some ethnic groups. The lab may be required to create a new data set in order to be able to interpret test data accurately. Confirming ethnicity may be critical for the accuracy of the test result.

The alleged parents' ethnic backgrounds are best assessed by taking into account the ethnicities of each grandparent. Carefully note if there was an adoption, or the ethnicity is simply not known. In addition to major ancestries such as "Italian" or "Asian," minority ethno-cultural groups should be carefully noted, as well. Common examples of such groups are: Ashkenazi Jewish, Sephardic, French Canadian, or Cajun. For parents with uncommon ethnicities, the client could inquire with the laboratory about their data source, and to what degree of confidence the CPI can be evaluated. Note that ethnicity means a genetically related group of people. This is not to be

[16] Forensic Science International: Genetics website, http://www.fsigenetics.com/article/S1872-4973(08) 00140-3/abstract (restricted access).

confused with race, which is a term that does not have a clear genetic basis.

Another limitation occurs when testing scenarios involve close blood relatives. If two alleged fathers are closely related such as being (identical) twins, full brothers, or cousins, it may be very difficult to discern which one is the biological father because they may share many alleles. In families involving marriage amongst blood relatives (or "consanguineous" relationships), relatives may share an even greater number of alleles. If needed, the lab may be able to perform additional studies. For example, if the baby is male, the lab can perform Y chromosome analyses on the alleged father and the tested baby. The Y chromosome is passed down from father to son. For babies of any gender, the lab can screen additional loci, which increases the reliability of the test result.

***Genetic Inconsistencies***

Another limitation may occur when one or both tested individuals manifest genetic inconsistencies such as mutations, mosaicism, or chimerism.

**Mutations**

A mutation is a change in the DNA sequence. Mutations may occur while a cell is replicating and dividing. Mutations in sperm occur in higher frequency with older fathers. Mutations in alleles are common events, occurring at a rate of 1/500 - 1/1000 at any given locus, depending on the type of mutation. There is a non-trivial chance for a child to have a unique allele not found in either parent. DNA testing labs typically attribute one or two genetic inconsistencies to mutation events. If there are multiple inconsistencies within tested individuals, it may be necessary to analyze additional loci. Especially in cases where the mother is unknown and therefore not available for testing.

**Mosaicism**

Mosaicism is a condition where an extra cell line exists in some parts of the body.[17] This condition is aptly named because the different cells resemble a mosaic of tiles (Figure 1). Mosaicism arises from an error in cell division early in embryonic development, creating a unique population of cells. In some cases, parents can be mosaic only in their eggs or sperm (gonadal mosaicism), which may contain a different allele than other cells of their bodies. According to one study,[18] 4 percent of parents had gonadal mosaicism, unbeknownst to them, but which lead to their children being affected with a genetic condition. Thus, children may share a unique allele that cannot be detected in either parent via standard testing of blood or saliva.

**Figure 1:** Mosaicism means having cells in a body that are genetically distinct from one another, like the tiles of a mosaic. So-called "Indian corn" is a well-known example.

**Chimerism**

Chimerism is a condition where a person has more than one complete genome in their body. Chimerism can arise when a fraternal twin pregnancy spontaneously reduces to a single pregnancy and the viable embryo incorporates cells from its absorbed twin. A chimeric person may have distinct genomes in different organs or tissues. For example, a chimeric person's blood may have one genome, while a buccal or semen sample might contain the other genome. Chimerism has been featured in TV dramas such as CSI.

Recently, the scientific authors of this publication assisted a father with chimerism whose semen contained two distinct genomes. He had fathered one son from each genome. Standard DNA paternity testing of his buccal samples yielded a false negative result from two separate labs. Had these tests been used to determine paternity rights, the father would have accidentally lost custody of his second son.

Most cases of chimerism remain undetected. Chimeric individuals typically do not manifest physical signs of the condition. On occasion, chimeras may show signs such as having different colored eyes (Figure 3), different colored patches of hair, or different skin tones. Disorders of sexual development (having both male and female genitals) could be signs

[17] For more general information on Mosaicism, see R. Barclay, *Rogue DNA in Parents Can Lead to Genetic Disease in Their Children*, Healthline July 31, 2014, http://www.healthline.com/health-news/mosaicism-leads-to-rare-genetic-disorders-073114#1; We Are All Mosaics! (Mar. 15, 2012), Bioinfoworld – SJ, https://bioinfoworld.wordpress.com/2012/03/15/we-are-all-mosaics/.

[18] http://www.cell.com/ajhg/abstract/S0002-9297%2814%2900312-7.

of chimerism, too, though not all people with these conditions are chimeras. There is currently no public-wide health screening for chimerism, nor is there a need for it.

For these reasons, the prevalence of chimerism is unknown. Well-established research demonstrates one in eight single pregnancies was originally a twin pregnancy that reduced to one embryo.[19] Hence, undetected chimerism may be more common than once believed. It may even be on the rise due to current uptake in assisted reproductive technologies such as in vitro fertilization, which increases the likelihood of twinning by a striking 33-fold (Yunis 2007)[20]. Such procedures often lead to multiple embryos, which theoretically increases the chances for chimerism.

Currently, AABB's Standards for Relationship Testing do not take into consideration chimerism and its ramifications to parental DNA testing. In April 2015, author Sheets co-authored proposed new standards to safeguard against false negative results due to chimerism. These proposed changes to AABB's standards were not added in the new edition.[21] In the meantime, careful consideration of negative parental DNA results is recommended. If the results are in question, consider contacting a genetics expert for advice and follow-up testing options.

**Figure 2:** Chimerism is a condition when a person has more than one complete genome in their body. The term originates from Greek mythology, where Chimera was a creature comprised of a serpent, goat and lion. ("Chimera of Arezzo" by Joe deSousa is licensed by CC BY 2.0)

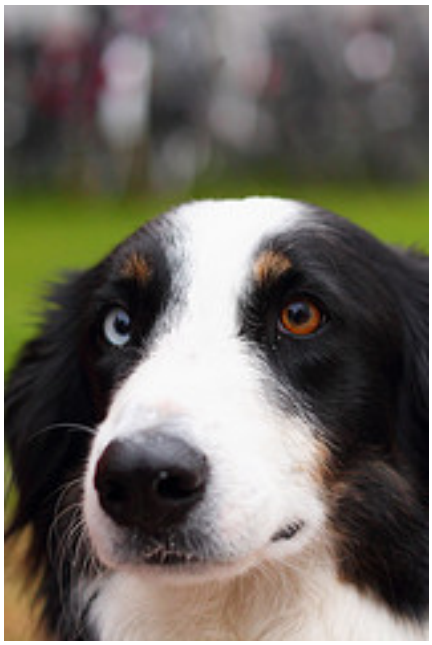

**Figure 3:** Chimeras of various species may show signs such as having eyes that are different colors ("Heterochromia" by fw42 is licensed under CC BY 2.0)

If chimerism is suspected, it may be necessary to repeat the test using different tissue samples. See Figure 4 to determine the most appropriate tissue sample type.

**Figure 4: Benefits and Limitations of Tissue Samples in DNA Testing**

| Tissue Type | Advantages | Disadvantages |
|---|---|---|
| **Buccal/ saliva** | Non-invasive, ships at room temp, stable for | Can contain bacteria; saliva requires no |

[19] http://www.webmd.com/baby/features/11-things-you-didnt-know-about-twin-pregnancies

[20] Edmund J. Yunis et al., *Chimerism and tetragametic chimerism in humans: Implications in autoimmunity, allorecognition and tolerance*, 38 Immunological Research 213–236 (2007), *available at* https://www.researchgate.net/publication/5928050_Chimerism_and_tetragametic_chimerism_in_humans_Implications_in_autoimmunity_allorecognition_and_tolerance.

[21] "The committee … did not feel that an additional standard would be appropriate at this time. … [T]his situation is best addressed as an element of guidance and not a standard." Response to Comments Received to the 12th edition of Standards for Relationship Testing Laboratories, at 3 (Standard 5.3.2.2 *) available at* http://www.aabb.org/sa/standards/Documents/Response-to-Comments-RT-Lab-Standards-12th-ed.pdf.

| | | |
|---|---|---|
| | weeks | eating/drinking for 60 min prior to sampling |
| **Blood** | Ships at room temp, usually bacteria contamination free | Usually not necessary for parental testing; requires trained personnel; no sampling immediately after blood transfusions |
| **Fingernail clippings or hair** | Non-invasive, ships at room temp, stable for years | |
| **Semen/ cervical swab** | Non-invasive, most conclusive in chimerism cases, can elucidate gonadal mosaicism | Ships on dry ice (semen) |

A limitation leading to false results may occur when the tested individuals are recipients of blood transfusion or organ transplant. If the tested blood sample was drawn shortly after the alleged father received a blood transfusion, then there is a possibility of a false result, though it is typically low. Over time, this possibility disappears as the donor's blood cells quickly become outnumbered by the recipient's "normal" blood cells. False results can be avoided by collecting a saliva sample in lieu of a blood sample, or simply by drawing the sample a few days later. Organ transplant recipients may contain low levels of the donor's DNA in their blood. Again, in this case, a saliva sample can help.

## WHEN TO CONSIDER REPEATING A PARENTAL DNA TEST

Incorrect demographic information (especially ethnicity) can lead to inaccurate DNA test results. From an immigration point of view, a client's test result is usually not questioned if it is positive, but if it is negative, consider checking the ethnicity data provided for both parent and child.

Keep in mind that reporting ethnicity accurately is not always easy. For example, consider Thomas Jefferson, who fathered perhaps as many as six children with Sally Hemings, one of his slaves.[22] The children were assigned to Sally Hemings's ethnic group—that is, they were considered to be what we would now call African-American. Many people have an admixture of ethnic backgrounds and are often unaware of their history, similar to the descendants of the Hemings family.

In addition, genetic inconsistencies may warrant re-sampling and re-testing. Mosaicism and chimerism may lead to false results if follow-up testing is not performed. In cases where mosaicism is detected, the lab should report it and may request additional biospecimen samples, typically of a different tissue type. In cases where chimerism is suspected due to physical signs, additional testing is recommended if the alleged father was *excluded*. Ideally, the alleged father could provide a semen sample for further testing. Furthermore, genetic and genomic testing is evolving quite rapidly at the time of this publication. Novel methodologies are emerging to confirm/rule out purported cases of chimerism.

## CONCLUSION

The immigration attorney author of this article has not tried submitting DNA test results proactively in a tough case, such as for a client from a country where birth certificates are notoriously unreliable. Because of cost and the fact that USCIS or DOS may order another test later, DNA tests should only be completed and submitted proactively when the client is willing to pay for an extra test on the chance that it might save time in adjudication.

Despite imperfections, DNA analysis by sequencing short segments remains the gold standard in paternity and other familial confirmation testing. As a practical matter for immigration attorneys, clients will be very happy with a positive DNA test result that confirms the visa category sought. The DNA test result will usually resolve the case. There are times where a DNA test result comes back negative, and the client accepts it, admitting that a child may not actually be genetically related to the petitioning parent. But in cases where the petitioner insists the DNA test is wrong, this article shows some relatively straightforward ways to redo the test and improve accuracy of the results. In the near future AABB may address issues of genetic inconsistencies due to chimerism and amend standards for laboratories accordingly. In the meantime, consulting a genetics expert is highly recommended in those cases, since DNA technology is constantly evolving.

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[22] http://www.monticello.org/site/plantation-and-slavery/thomas-jefferson-and-sally-hemings-brief-account.

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