# HOW TO WRITE A CASE STUDY
## THAT MEETS THE NEW STANDARDS FOR DNA:
as Codified by the
Board for Certification
of Genealogists

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Since direct-to-consumer DNA tests have become more popular and affordable, questions have arisen about how to incorporate DNA data into case studies. The analysis and correlation of DNA results is a numerical and scientific process based on concepts unfamiliar to some genealogists. The use of DNA in solving some genealogical questions is increasing, and for that reason, the Board for Certification of Genealogists (BCG) codified new standards specific for this use. The new standards, published in March 2019, give guidance to genealogists who wish to meld the use of genealogical evidence with evidence obtained from DNA.[1] Does a genealogist have to use DNA when dealing with questions of identity or relationship? No, using DNA as an evidence source is up to the genealogist and is dependent on the genealogical question and other variables. In some cases, DNA will be essential and without it a conclusion will be impossible.

The foundation of all genealogical work is the Genealogical Proof Standard (GPS). All five components of the GPS remain the same. All of the underlying standards, with the exception of a slight modification of four standards, remain the same. The application of the standards remains the same.

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The image of the quill pen can be found at: BWCNY, "Image:Quill pen.PNG;" digital image, *Wikimedia* (http://commons.wikimedia.org/wiki/File:Quill_pen.PNG).

1 Board for Certification of Genealogists, *Genealogy Standards*, 2nd ed. (Nashville: Ancestry.com, 2019).

The case study presented today is "A Family for Mary (Jones) Hobbs Clark of Carroll County, Arkansas." It was published in the *National Genealogical Society Quarterly* (*NGSQ*) in March 2019. This case study demonstrates one way to combine documentary evidence with DNA evidence. There are many options for merging the two and some of these options will be described in the lecture.

## What Are the New Standards for Guiding the Use of DNA?

The new standards for using DNA in our genealogical research are in a section titled "Using DNA Evidence." The preface to the new DNA-specific standards states, "Like other types of evidence, DNA evidence is not always available, relevant, or usable for a specific problem, [and it] is not used alone." The other caveat is that DNA evidence comes from living people, differing from other types of evidence genealogists use.[2] These seven standards apply *only* when we choose to use DNA evidence in our case study.

- Standard 51, "Planning DNA tests," points out that DNA testing companies, test takers, and DNA tests are chosen to aid in answering a genealogical question. There are choices about who to target as test takers. 1) The test takers may be chosen to distinguish one hypothesized common ancestor from another. 2) The test takers may share a segment or marker that might have been inherited from a common ancestor. 3) The test takers may all share a common ancestor or ancestral couple through different children of the ancestor or ancestral couple. This ancestor or ancestral couple may be hypothesized through some of the children and documented through other children.[3]

- Standard 52, "Analyzing DNA test results," identifies eight elements that may influence supporting a relationship using DNA results. Because DNA results are numerical, conclusions need to be compared to valid statistical tools created from credible investigations. The eight elements are below.
    1. The family trees for each test taker are extended from the test taker to the generational level of the documented ancestor or ancestral couple. The trees may extend one or two generations beyond that generation. These trees will vary in how complete they are and how accurately each ancestor is placed in the tree. The degree of accuracy used to place each ancestor in the tree should be defined in the narrative. This is also known as "tree completeness."
    2. The family trees that were created to comply with the first bullet need to be compared between testing groups. The pedigrees in one testing group need to be examined for evidence of multiple common ancestors—other than the common ancestor or ancestral couple already identified or hypothesized—in the pedigrees of the other testing groups. This important exercise lessens the possibility that the DNA shared with a match comes from an unrecognized ancestor or ancestral couple, not the one hypothesized.
    3. The amount of DNA that is shared with a match is evaluated for compatibility with the hypothesized relationship between the two test takers. If the amount of shared DNA is more or less than expected for the relationship, it affects conclusions about the relationship.

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2 Ibid., 29–32, particularly 29.

3 Ibid., 29–30.

4. The location and the size of matching chromosome segments are reported and considered when determining relationships.
5. Tested regions, mutations, and markers are reported and considered when determining relationships.
6. The number of test takers and their genetic relationships are reported and considered when determining relationships.
7. The composition of triangulated groups along with other genetic groups are reported and considered when determining relationships.
8. Research must be reasonably exhaustive and relevant to the genealogical question.[4]

- Standard 53, "Extent of DNA evidence," reminds us to use the DNA results of enough test takers in the following cases:
    1. to hypothesize a genetic relationship.
    2. to compare with documentary research.
    3. to decide between two or more hypotheses.
    4. to resolve a conflict with other evidence.[5]

  The question is, how many test takers are enough in any of these four situations? You likely would need more test takers in scenarios three and four than you would need in scenarios one and two. In all the above situations, you likely need more than three, but the number depends on many variables.

- Standard 54, "Sufficient verifiable data," directs us to provide the reader with details about DNA test results. With these details the reader can then check for themselves whether or not the conclusion is supported by the data. In cases involving privacy concerns, an editor of the case study may verify that the conclusion is supported by the data.[6] DNA test results—Y-DNA, mitochondrial DNA, and autosomal DNA—are hidden behind kit numbers and passwords at the testing companies. Providing test company kit numbers in a case study does not reveal verifiable data. The test results cannot be accessed without a password and providing either the kit number or the password or both is not advisable for privacy reasons. The alternative is to provide the data in the narrative, a figure, or a table and to transfer the DNA to a site accessible to the reader such as GEDmatch.

- Standard 55, "Integrating DNA and documentary evidence," prompts us to meld the documentary evidence with the DNA evidence. Evidence which agrees and that which conflicts is discussed.[7] This integration can occur in the conclusion.

- Standard 56, "Conclusions about genetic relationships," stipulates that if we conclude a relationship is "genetic," then we must use documentary as well as DNA evidence. If newly discovered DNA evidence—in addition to the DNA evidence used to conclude the relationship is genetic—could invalidate the conclusion of a genetic relationship, a genealogist should explain that as a limitation to the conclusion.[8] Standard 56, under the heading "Using DNA Evidence," applies only when DNA evidence is used. Overarching all the numbered

4 Ibid., 30–31.
5 Ibid., 31.
6 Ibid., 31.
7 Ibid., 32.
8 Ibid., 32.

standards is the Genealogical Proof Standard. "Meeting the GPS neither requires nor ensures perfect certainty. Genealogical proofs—like accepted conclusions in any research field—never are final. Previously unknown evidence may arise, causing the genealogist to reassess and reassemble the evidence, which may change the outcome."[9] New evidence may overturn any previous genealogical conclusion. We do not need to list every source type—including DNA—as a possible limitation of our case study.

- Standard 57, "Respect for privacy rights," instructs us to obtain written consent from test takers to share their DNA data. This consent should include the following points.
    1. What data is planned to be shared
    2. How the data will be shared
    3. Where the data will be shared
    4. What the benefits will be for the test taker
    5. What the risks are for the test taker
    6. What the various privacy levels are and a choice for the test taker as to which privacy level they want
    7. The written work acknowledges that the living test takers gave written consent for the data that will be shared[10]

    Although not in the standard, the written consent must be provided voluntarily by the test taker. The test taker should be informed of the purpose of the study and what their rights are. Most importantly, the test taker must be offered the choice of withdrawing their consent to participate in the study at any time without the fear of consequences or reprisals. Informed consents are required for scientific studies using living individuals. Genealogists using DNA are no exception. These elements are covered more completely in an addition to the Genealogist's Code. See below for this addition.

## What Are the Newly Revised Standards?

Four standards have been revised to provide clarity. These revisions to the standards are not specifically about DNA but they may provide guidance when melding DNA evidence into a case study. The four revised standards are below.

- Standard 2, "Specificity," is under the heading "Standards for Documenting." The preface and the first three bullets remind us that each statement we make or each image we use that is not ours must have a citation that connects it to a source or sources. Facts that are not widely known also need a citation. The revision expands Standard 2's fourth bullet to remind us that "each parent-child link" is among conclusions for which we must provide documentation.[11] In writing a case study that includes DNA, we may state that a test taker is a descendant of a particular ancestor or ancestral couple. We then need to show the reader that the test taker is a child of the parent in the direct line of ascent… and that *that* parent is the child of his parent in the direct line of ascent… until we get to the particular ancestor or ancestral couple. What about the wife or husband of the parent in the direct line of ascent? They do not need to be

[9] Ibid., 1, 3.
[10] Ibid., 32.
[11] Ibid., 6.

named or documented unless this evidence is needed in a proof summary or a proof argument that documents the direct line parent.

- Standard 50, "Assembling conclusions from evidence," is under the heading "Reasoning from Evidence." This standard has been expanded to say, "Where appropriate, genealogists distinguish among adoptive, foster, genetic, step, and other kinds of familial relationships."[12] Genealogists have long determined relationships. In genealogical writing, these familial placements infer a bloodline relationship. These bloodline relationships do not need to be labeled. The addition to the standard reminds us that *if* we find evidence that a relationship is not in the bloodline, *then* we should say so.

- Standard 65, "Content," was formerly standard 58. It is found under the heading "Assembled Research Results." Genealogists have many ways to explain to the reader how evidence is relevant to the genealogical question and how reliable that evidence is. To add clarity, four new bullets describe formats that can be used to present results. The first bullet is labeled "Discussions." The interpretation and correlation of the DNA evidence—and if that evidence conflicts with other evidence—is particularly important when writing a case study using DNA results. DNA results are numerically and scientifically based making them difficult for some readers to understand. The second bullet is labeled "Genealogical charts and diagrams." When writing a case study using DNA as one type of evidence, a diagram or chart will often make it easier for the reader to see how the family might fit together. The third bullet is labeled "Lists and tables." Lists and tables are particularly useful for presenting numerical data as is found in DNA results. The fourth bullet is labeled "Maps, plats, and other illustrations."[13]

- Standard 74, "Reports," was formerly Standard 67. It is found under the heading "Special-Use Genealogical Products." An additional bullet was added to this standard. The standard applies to research reports, not case studies.[14]

- The Genealogist's Code has two new additions. The first is under the heading "To protect the public." A sixth bullet has been added. It reminds us that we do not divulge any information given to us—genealogical or personal—unless we have acquired consent to provide it to others. The second addition is a new section under the heading "To protect people who provide DNA samples." This addition to the code provides guidance for us in using the results of test takers' DNA tests. There are five bullets. 1) When requesting data from a test taker, we explain how we will use and share the data and the benefits to the test taker. 2) The risks and possible repercussions of DNA testing are explained to the test taker. The risks may include unanticipated medical possibilities, previously unknown relatives, and unforeseen ethnicity. 3) Possibilities for levels of privacy and access to data by other researchers is explained. 4) There are no guarantees of privacy and anonymity and this is made clear to the test taker. 5) Consent is only requested after the above information is provided. Consent, if given, must be given voluntarily by the test taker or his legal representative. We must abide by the level of consent given.[15] Although it is not spelled out in the Genealogist's Code or in Standard 57, the test taker should be informed of the purpose of the study and what their rights are. Most

12 Ibid., 28.
13 Ibid., 37.
14 Ibid., 40–42.
15 Ibid., 52–53.

importantly, the test taker must be offered the choice of withdrawing their consent to participate in the study at any time and without the fear of consequences or reprisals. Informed consents are required for scientific studies using living individuals. Genealogists using DNA are no exception.

## What Should the Case Study Look Like in Written Form?

A case study addresses completed research. It begins by identifying an individual that lived in the past in a specific place and at a specific time. A specific question is stated or implied that concerns an event he was involved in, a relationship he had with other individuals, or his identity. A complex genealogical problem is presented. Usually the problem cannot be resolved using only non-conflicting direct evidence. The presented evidence, gathered to answer the genealogical question, is a result of reasonably exhaustive research. The lack of any single type of source does not keep the research from being reasonably exhaustive. The case study should meet the Genealogical Proof Standard.[16]

Many factors and sources are considered and used in writing a case study. They may include genetics and DNA if they are necessary or desirable in answering the genealogical question.[17] A case study can be a proof argument or it may contain a number of proof summaries or proof arguments. Writers of case studies should avoid a travelogue or diary style of writing such as, "First I did this and then I did that." A travelogue or diary style of writing places the emphasis on the author instead of on the evidence and its logical progression. Standard 61, "Logical organization," calls for case studies and proof arguments to present evidence; discuss the reasoning that accompanies evidence analysis, correlation, and conflict resolution; and describe, defend, or justify conclusions in a logical sequence. "A logical sequence often is not the order in which the genealogist collected evidence or reached subsidiary conclusions."[18]

## Where can I see genealogical case studies that have added DNA evidence?

The National Genealogical Society has produced the journal the *National Genealogical Society Quarterly* (*NGSQ*) for many years. The *NGSQ* publishes many types of genealogical writing, but each issue usually has three or four scholarly genealogical case studies. Each proposed case study is reviewed by two or three genealogical experts. The reviewers do not know the identity of the author and the author does not know the identity of the reviewers. This is known as double-blind peer review. If the case study contains DNA evidence, then the reviewers are likely expert in genealogy and in the use of DNA as a source of information. The following references are of case studies in the *NGSQ*, published in the past five years, that contain DNA evidence. Review these studies with the knowledge that there were no standards guiding the use of DNA in genealogical work products until 2019. The case study listings are annotated with the types of DNA evidence included in the article.

16 Ibid., 1–3.

17 Ibid., see page 12 for "Broad context" and page 13 for "Topical breadth."

18 Ibid., 35.

## Genealogical Evidence Plus DNA Evidence Case Studies in the *NGSQ* – March 2014 to June 2019 in Chronological Order and Annotated as to Type of DNA

**2014**

Mills, Elizabeth Shown. "Testing the FAN Principle Against DNA: Zilphy (Watts) Price Cooksey Cooksey of Georgia and Mississippi." *National Genealogical Society Quarterly* 102 (June 2014): 129–152. This case study uses mitochondrial DNA and autosomal DNA evidence.

Hollister, Morna Lahnice. "Goggins and Goggans of South Carolina: DNA Helps Document the Basis of an Emancipated Family's Surname." *National Genealogical Society Quarterly* 102 (September 2014): 165–176. This case study uses Y-DNA and autosomal DNA evidence.

**2015**

Jones, Thomas W. "Too Few Sources to Solve a Family Mystery? Some Greenfields in Central and Western New York." *National Genealogical Society Quarterly* 103 (June 2015): 85–103. This case study uses autosomal DNA evidence.

**2016**

Stanbary, Karen. "Rafael Arriaga, a Mexican Father in Michigan: Autosomal DNA Helps Identify Paternity." *National Genealogical Society Quarterly* 104 (June 2016): 85–98. This case study uses autosomal DNA and X-DNA evidence.

Fein, Mara. "A Family for Melville Adolphus Fawcett." *National Genealogical Society Quarterly* 104 (June 2016): 107–124. This case study uses autosomal DNA evidence.

**2017**

Dunn, Victor S. "Determining Origin with Negative and Indirect Evidence: Cylus H. Feagans of Virginia and West Virginia." *National Genealogical Society Quarterly* 105 (March 2017): 5–18. This case study uses autosomal DNA evidence.

Hobbs, Patricia Lee. "DNA Identifies a Father for Rachel, Wife of James Lee of Huntingdon County, Pennsylvania." *National Genealogical Society Quarterly* 105 (March 2017): 43–56. This case study uses autosomal DNA evidence.

Wehner, Nancy Niles. "Parents for Richard M. Vaughan (1844–1921) of Howell County, Missouri." *National Genealogical Society Quarterly* 105 (June 2017): 139–148. This case study uses Y-DNA and autosomal DNA evidence.

**2018**

Anderson, Worth Shipley. "John Stanfield 'as he is cald in this country': An Illegitimate Descent in Eastern Tennessee." *National Genealogical Society Quarterly* 106 (June 2018): 85–101. This case study uses Y-DNA evidence.

Morelli, Jill. "DNA Helps Identify 'Molly' (Frisch/Lancour) Morelli's Father." *National Genealogical Society Quarterly* 106 (December 2018): 293–306. This case study uses autosomal DNA and X-DNA evidence.

**2019**

Henningfield, Melinda Daffin. "A Family for Mary (Jones) Hobbs Clark of Carroll County, Arkansas." *National Genealogical Society Quarterly* 107 (March 2019): 5–30. This case study uses mitochondrial DNA and autosomal DNA evidence.

## Selected Reference – Scientific DNA Study

King, Turi E., et al. "Identification of the Remains of King Richard III." *Nature Communications* 5 (December 2014); online archives, *Nature Communications* (https://www.nature.com/articles/ncomms6631), article number 5631 (2014), doi: 10.1038. This scientific study uses Y-DNA and mitochondrial DNA.