# Better Together: Making Your Case with Documents and DNA

BCG-sponsored Webinar (https://bcgcertification.org)
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## Limitations & Benefits of DNA Testing

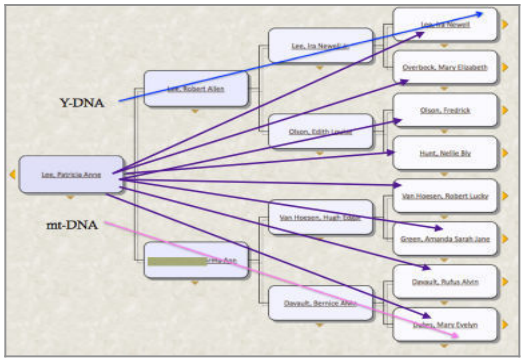
- DNA test results do not solve genealogical questions by themselves. DNA tests do not identify a particular ancestor.
- DNA test results have to be used in conjunction with documentary evidence.
- DNA evidence may prove or disprove a hypothesis. Hypotheses are based on evidence already collected.
- DNA evidence may give direction to research.
    - DNA evidence may reveal a new surname or location to research.
    - Y-DNA evidence may eliminate some family groups with the same surname.

Because DNA evidence cannot answer a research question by itself and must be used with documentary evidence, it is indirect evidence.[1]

An indirect evidence solution to a research question requires at least a proof summary and perhaps a proof argument.

- A proof summary is a documented narrative or list stating facts that support or lead to an acceptable conclusion.
- A proof argument is a documented narrative that explains the genealogist's answer to a complex genealogical problem.[2]

In order to intelligently integrate DNA evidence and traditional genealogical research into a written conclusion, we must understand DNA testing: what is tested, how DNA is inherited, the limitations of the test, inheritance patterns, and how DNA testing companies identify matches.




Three DNA Tests:

**Y DNA** tests only the patrilineal line.

**Mitochondrial DNA** tests only the matrilineal line.

**Autosomal DNA** tests all your genealogical lines.

1. Thomas W. Jones, *Mastering Genealogical Proof* (Arlington, VA: National Genealogical Society, 2013), 14-15.
2 Board for Certification of Genealogists, *Genealogy Standards*, 50th Anniversary Edition (Nashville, TN: Ancestry.com, 2014), Glossary entries for "proof summary" and "proof argument."

One test may be better than another for a particular research question. However, some cases for proving relationships have been built on using more than one type of DNA testing.

## DNA Evidence Qualities

**Mitochondrial DNA** testing is very stable and mutates rarely. Therefore common ancestors with even perfect matches (genetic distance = 0) may be back hundreds if not over a thousand years. The mitochondrial inheritance path along the matrilineal line is more difficult to track because of the cultural pattern of changing surnames upon marriage. Mitochondrial DNA testing is most useful for solving particular research questions, and not for blindly trying to identify a distant ancestor.

**Y DNA** markers are evaluated and compared with other testers. At 37 markers, up to a genetic distance of 4 is considered a "match." At 67 markers a genetic distance up to 7 is considered a match. The thresholds are somewhat arbitrary, and relationships may still be established even if they are outside these values. Generally a smaller genetic distance is indicative of a closer relationship, but specific numbers of generations to a common ancestor cannot be identified based solely on the genetic distance. Combining the DNA data with documentary evidence is the key to identifying the common ancestor.

**Autosomal DNA** evidence is most commonly established in three ways or a combination of these three ways.

- **Amounts of shared DNA**
  Closer relationships up to about five generations will share predictable ranges of shared autosomal DNA. Therefore some relationships can be identified with matches sharing amounts consistent with these predictable quantities. See "Autosomal DNA Statistics," https://isogg.org/wiki/Autosomal_DNA_statistics.

- **Multiple matching segments or "genetic networks."**
  This entails identifying shared segments of autosomal DNA among various descendants of a common ancestral couple. Much data is compiled, but it is more likely to occur than triangulation. The more segments that are pursued, the more likely triangulated segments will be identified.

- **Triangulation**
  It is more likely that descendants of a common ancestral couple will inherit different segments of DNA than the same. Therefore descendants may share no DNA with other descendants, or they may share segments with only one other descendant, or they may share segments with more than one other descendant. Sharing a segment with at least two other descendants from independent lines is triangulation. Because of holes in our trees, if we share a segment with only one other person, identifying the wrong common ancestor is a risk. Triangulation reduces that risk.

POSSIBLE SCENARIOS FOR "FROM RESEARCH QUESTION TO SOLUTION WHEN USING DNA EVIDENCE":

1. Extensive documentary research > **solution** > DNA confirms

2. Extensive documentary research > **tentative solution** > DNA evidence adds additional support to tentative conclusion to reach a more certain conclusion

3. Extensive documentary research > **no solution** > DNA indicates an unknown relationship > **more extensive documentary research** > found direct evidence provides the solution

4. Extensive documentary research > **no solution** > DNA indicates an unknown relationship > **more extensive documentary research** > indirect evidence supports the DNA-indicated relationship

This documentary research and "reasonably exhaustive research" done either before or after the DNA testing reveals a connection requires more than just searching in vital records, censuses, and *Find A Grave*. Understand and access the more substantive "meat and potatoes" of genealogy records.

Cases of adoption don't fit neatly into these categories. As DNA identifies the relationship, more DNA testing is usually performed to further narrow the specific family group. Documentary evidence is also continued to establish at least proximity in the right time period as the particular individuals involved are identified.

More subsequent documentary research is required when DNA identifies a previously unknown relationship than if the DNA testing is being used to confirm a hypothesized indirect evidence case.

EXAMPLES

For examples of combining DNA evidence with documentary evidence, see the articles from peer-reviewed journals listed here: https://tinyurl.com/y72lg5jh

Karen Stanbary's article on the Arriega family uses shared quantities of autosomal DNA as evidence. The research question involves an adoption and therefore is an example of a case that does not fit neatly into the categories listed above.

Tom Jones's article on the Greenfield family uses shared amounts of autosomal DNA and multiple matching segments ("genetic networks") to establish his case. His case fits into Scenario #2.

The example given in the presentation on the Goodman family uses triangulation. The subsequent research pointed to a new location for research, which uncovered direct evidence proving the relationship. Scenario #3.

Judy Keller Fox's article on the "Little-Known Lee Family in Virginia," uses Y-DNA. The type of scenario depends on the descendant with the research question. If John or Jesse Lee were the descendant's ancestor, the Y-DNA evidence confirms the relationship to the father Charles (Scenario #1). If William Lee was the descendant's ancestor, the Y-DNA added evidence to the indirect evidence case for the relationship to the father Charles. (Scenario #2) However since the

DNA shows a connection to more distant shared ancestry, more research was required in the newly identified location. The research conducted added indirect evidence that when coupled with the DNA evidence identified the father of Charles. Scenario #4.

Patti Hobbs's article "DNA Identifies a Father for Rachel, the Wife of James Lee of Huntingdon County," uses triangulation. Scanty evidence showed associations in the same sparsely populated location. Subsequent documentary research after DNA identification added additional evidence. Although the documentary evidence was weak, the DNA evidence was very strong with many triangulated segments. Scenario #4

Various combinations of possibilities exist when proving a relationship through indirect evidence which incorporates DNA test results. It is unlikely that the case will be proved if the DNA evidence is weak and the documentary evidence is weak. Strong documentary evidence with weak DNA evidence or weak documentary evidence with strong DNA evidence may create a compelling case.

GENEALOGY STANDARDS

- Not all genealogical questions require DNA evidence.
- Although a persuasive case might be derived without DNA testing, if the case is built on indirect evidence, DNA testing may be necessary in order to perform reasonably exhaustive research.[3]
- Reasonably exhaustive research definitely is not done if DNA evidence is used to substitute for thorough research in the documents.
- The lineages of matches must be documented because their shared ancestry is offered as part of the evidence.
- Citations to DNA test results must be provided to enable verification.[4]
- The DNA test(s) selected should have the greatest potential to answer the research question.[5]
- The genealogist must have sufficient knowledge to understand the terminology and principles of DNA inheritance and testing.[6]
- Genealogists must respect the wishes of the test-taker or his legal representative in how the test results will be used and provide enough information that consent is informed.[7]
- Conclusions must be based on sufficient information from DNA test results. This may require targeted testing (searching for descendants specifically to test) or waiting until more DNA evidence becomes available. This may vary depending on the strength of the other evidence.
- Other items are similar to requirements for any source in genealogical research:
  - Conflicting information must be considered and addressed.[8]

3. Board for Certification of Genealogists, *Genealogy Standards*, 50th Anniversary Edition (Nashville, TN: Ancestry.com, 2014), standard 17.

4. *ibid.*, standards 1-3.

5. *ibid.*, standards 15, 42.

6. *ibid.*, Standard 24.

7. *ibid.*, Appendix A, The Genealogists's Code.

8. *ibid.*, Standard 49.

- Combine DNA evidence with documentary evidence in a written conclusion.[9]

### Caveats Particular To DNA Evidence

- Beware of holes in trees. By establishing our ancestry within the timeframe we expect to share DNA, we confirm our ancestral lines. Therefore when relatives with unknown shared ancestry appear on our match lists, we can be more confident in assigning matches to particular branches.
- Identifying DNA matches with our documented lines helps us to know that the biology lines up with the documentary evidence. Look for multiple matches sharing common ancestry to help establish that the genealogy is correct.
- Beware of matches that share more than one genealogical line. The DNA of a person who shares more than one line of ancestry may have to be excluded in proving one of those possible ancestral lines.

Written conclusions will often follow the same logical progression of the "Possible Scenarios" section above:

1. Known information from traditional research.
2. The DNA evidence either confirms the traditional research or identifies a new documentary research path. The use of tables and figures is almost always necessary. The case may be complete at this step.
3. The new research path may lead to
    - documentary evidence proving the relationship, or
    - documentary evidence that complements the original research and the DNA evidence.

- If the new research path leads to documentary evidence proving the relationship, the DNA evidence may not be necessary. Or it may be shifted to the end to provide additional evidence for the relationship established through the documentary evidence.

9. *ibid.*, Standard 50.