

Using DNA Test Results to Confirm a Pedigree



A Legacy Family Tree Webinar Sponsored by the Board for Certification of Genealogists
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DNA provides the genealogist the ability to confirm the biological relationships of a documented ancestral line. This webinar demonstrates the methodology. William White and Ann Thomas are one set of my maternal second great-grandparents. The objective of this case study is to use genetic evidence to confirm the biological parent-child relationship at each generation of the ancestral line. The correlation of documentary and genetic evidence is emphasized. The details provide a practical illustration of strategies to meet the DNA-related standards in *Genealogy Standards*.¹



Privacy note:

All identified living individuals mentioned in this presentation provided permission to detail their DNA data and pedigrees. This information is for educational purposes only and may not be re-distributed.

Color coding:

In this handout a **blue font** indicates step-by-step methodology searching for relevant DNA matches, identifying the most recent common ancestor with the subject, and correlating documents and genetic evidence to test the hypothesized relationship. Details in **green font** highlight the strategies to meet each of the DNA-related standards.

¹ Board for Certification of Genealogists (BCG), *Genealogy Standards*, 2nd edition (Nashville, Tenn.: Ancestry Imprint, Turner Publishing, 2019).

Step 1 – Analyze the Starting Point

Genealogical research always begins with an analysis of the starting point information.²

My White-Thomas ancestral line is:

Angela Packer McGhie < Jenive LeeAnn Wilsted < Emma Gertrude Neal < Myra Matilda White < William White and Ann Thomas

Reasonably exhaustive research in genealogical documents provides direct evidence of each parent-child relationship on the ancestral line with no conflicts.

Step 2 – Identify Significant DNA Matches

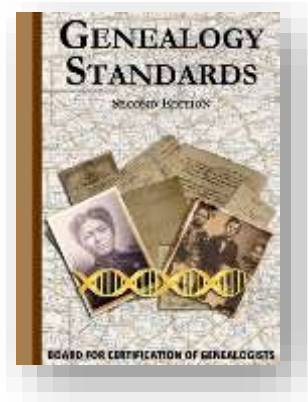
Identify key matches who likely descend from the person or couple you are trying to verify. In this case, I selected different matches to confirm my relationship at each generation. For example, I selected a second cousin and a 1st cousin once removed to provide genetic evidence that we all descend from my great-grandmother Myra Matilda White. Using the “Shared Matches” tool on *Ancestry*, I then identify additional likely White-Thomas cousins for analysis.

Once this list is established, conduct documentary research to verify each parent-child relationship back to the hypothesized common ancestral couple. Begin with any linked or unlinked tree for the match. Use the match trees as clues and verify the relationships using documentary sources such as census records, vital records, obituaries, cemetery records, marriage records, wills, and other genealogical records.

This study includes more than two dozen genetic matches who claim descent from William White and Ann Thomas. Three of my 3rd cousin matches in the provided permission to use their names, relationships, pedigrees, and amount of shared atDNA and are named in this project. These named DNA matches and I descend from four different children of William White and Ann Thomas.

Respect for privacy rights -- Standard 57

It is important for genealogists to obtain permission from living people before sharing any information about their shared DNA, relationships, and ancestral lines. My three 3rd cousin matches provided written consent to share their names, amount of DNA they share with me, and their ancestral line to William White and Ann Thomas. I conducted additional research only on the deceased ancestors in each ancestral line to William White, and not on the living individuals.



² BCG, *Genealogy Standards*, 2nd ed., 12, Standard 11, “Sound basis.”

Step 3 -- How are we related?

Use the tools and information on the testing company website to hypothesize your relationship to the selected DNA matches. This is easiest if the DNA match has a family tree on the website. If not, you might send the match a message to ask for more information and offer to share your information on the family. Alternatively, you might conduct your own research on their pedigree based on any clues provided.

Step 4 – Mine the Match Page for Data

Extract the amount of shared DNA and any segment information from the testing company website. Search through the linked or unlinked trees seeking the information on common ancestors.

Standard 54 – Sufficient verifiable data

While mining the match page for evidence, take a screen shot of the details of the match including number of shared centimorgans to add to your research notes. If you are having your work reviewed by others they will not be able to look at the information in your account, so providing a screenshot permits them to verify or dispute your results.

Standard 55 – Integrating DNA and documentary evidence

This standard emphasizes the importance of integrating evidence mined from both documentary and genetic sources and then correlate evidence to identify conflicts. DNA analysis correlates pedigree information (documentary sources) and the inferred relationship with the actual amount of shared autosomal DNA.

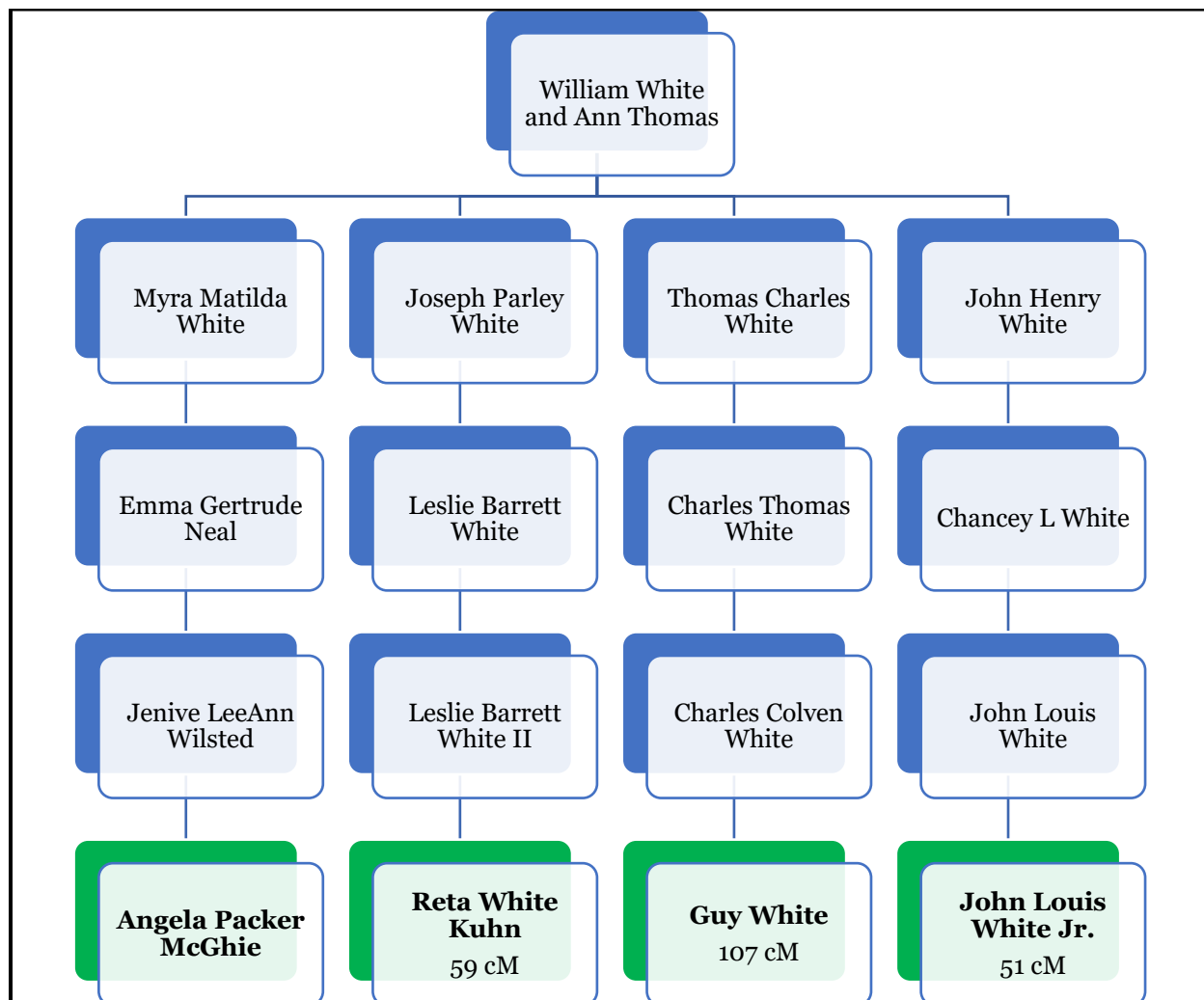
The correlation of evidence in this case supports the conclusion that William White and Ann Thomas are the biological parents of Myra Matilda White, Joseph Parley White, Thomas Charles White, and John Henry White. Documentary records document the parent-child relationships and include evidence mined from civil registration birth records, death certificates, census records, passenger lists, obituaries, and church records.

Superintendent Registrar's District <u>Pembroke</u>										
Registrar's District <u>Roose</u>										
1873 BIRTHS in the District of <u>Roose</u> in the County of <u>Pembroke</u>										
No.	Where and When Born.	Sex, if any.	Sex.	Name and Surname of Father.	Name and Maiden Surname of Mother.	Rank or Profession of Father.	Signature, Description, and Residence of Informant.	When Registered.	Signature of Registrar.	Registered Name if added after Registration of Birth.
222	<u>Twenty sixth February 1873 Neyland Winstedon</u>	<u>Mira Matilda</u>	<u>Girl</u>	<u>William White</u>	<u>Ann Thomas formerly Thomas</u>	<u>Butcher</u>	<u>William White Father Neyland Winstedon</u>	<u>Eighteenth March 1873</u>	<u>E. D. Griffiths Registrar</u>	

Roose registration district, Pembroke county, Wales, birth entry for Mira Matilda White, born 26 February 1873, certified copy, issued 14 February 2019; General Register Office, Southport, England.

Step 5 – Charting your relationship with each DNA match

Figure 1 -- This figure depicts the direct descent line from William White and Ann Thomas to each of the four selected genetic matches.



The figure reports the amount of shared centimorgans (cM) with me. See note 3 for source citations.³

³ “Angela McGhie’s Shared Matches,” *AncestryDNA* (<https://www.ancestry.com/> : created 2 October 2019), “You and Reta Kuhn,” 59 shared centimorgans of DNA, 6 segments, predicted relationship: 4th cousins.

“DNA Matches,” *MyHeritage* (<https://www.myheritage.com/dna/match/> : created 2 October 2019), “Review DNA Matches: Angela McGhie and Guy White,” 52.2 shared cM, 2 segments, predicted relationship: 3rd to 5th cousins.

“Angela McGhie’s Shared Matches,” *AncestryDNA* (<https://www.ancestry.com/discoveryui-matches/match-list/> : created 2 October 2019), “You and johnlouiswhite,” 51 shared cM, 4 segments, predicted relationship: 4th cousins.

Standard 52 – Analyzing DNA test results

Several of the eight bullet points in Standard 52 are relevant to this project and will be addressed one at a time.

- ***Accuracy, completeness, and depth of each pedigree included in the analysis***

William White and Ann Thomas are the second-great grandparents of each of the four DNA test takers, who are third cousins to each other. To meet Standard 52, each match pedigree needs to be evaluated (or accommodated for) to at least the second great-grandparent level (depth). Each match provided a pedigree through the testing company. However, some pedigrees were incomplete and undocumented. I conducted additional research to complete the pedigree and documented each parent-child relationship source.

Match Pedigree Analysis—Depth and Completeness

Test Taker	Number of possible ancestors in five generations	Initial number of ancestors in test taker's pedigree	Number of new ancestors identified by author	Current percentage of known ancestors
Angela McGhie	30	30	--	100%
Reta Kuhn	30	9	21	100%
Guy White	30	29	--	93%
John White	30	3	27	100%

- ***The possibility of more than one common ancestor for each pair of DNA test takers***

Comparison of the four pedigrees reveals the matches do not share multiple common ancestors with each other up to their second-great grandparents. This shows the depth of the pedigree. Therefore, the shared atDNA between the four matches is likely inherited through the common ancestral couple of William White and Ann Thomas. Given the pedigree research and evaluation, we can assign a high degree of confidence to this conclusion.

Family of William White and Ann Thomas, about 1924



- **Reported and typical amounts of shared DNA**

	Reta	Guy	John	Average amount of shared atDNA between third cousins
Traced relationship to Angela	3 rd cousin	3 rd cousin	3 rd cousin	74 cM Range = 0 to 217 ⁴
Centimorgans of DNA shared with Angela	59 cM	107 cM	51 cM	

Each match shares autosomal DNA within the expected range for third cousins.

- **Thoroughness of relevant documentary research**

Thorough research is achieved by both the number and quality of documents linking Myra Matilda White to her parents William White and Ann Thomas. There are no conflicts among the sources used in this case. Each parent-child link between the test takers and the most recent common ancestor (MRCA) is documented.

Standard 51 – Planning DNA tests

The selected matches each “descend from a hypothesized common ancestor through different lines.” This case incorporates data from descendants of four **different** children of William White and Ann Thomas. Different children are the equivalent of independent evidence.

Standard 53 – Extent of DNA evidence

Genealogists examine the DNA test results of a sufficient number of matches to propose a genetic relationship and correlate with documentary evidence. While I name and provide information on only four matches in this case, there are about two dozen confirmed descendants who share DNA. However, only four provided permission to use their identifying details for this webinar.

Another strategy to meet the standard for extent of the evidence (test takers) is through cluster analysis. A cluster report from Genetic Affairs for Angela McGhie shows that Cluster 1 includes three of the matches for this project among the 41 matches listed. Several of these other matches are documented descendants of William White as well. A cluster analysis report from MyHeritageDNA shows Angela and another one of the named matches for this project in cluster 11 with three other matches.⁵ Several of the members of this cluster are a documented descendants of William White.

⁴ Blaine Bettinger, “The Shared cM Project. Version 4 (March 2020)” *The Genetic Genealogist*. <https://thegeneticgenealogist.com/2020/03/27/version-4-0-march-2020-update-to-the-shared-cm-project/>).

⁵ “AutoCluster for Angela McGhie—Kit MH-4DQ89X, report, *MyHeritage* (<https://myheritage.com/> : created 28 October 2019), placing Guy White in cluster 11, proven descendant of William White and Ann Thomas.

Standard 56 – Conclusions about genetic relationships

While the information from documentary sources provides direct evidence about the parentage of the four children of William White and Ann Thomas, evidence from genetic sources is necessary to conclude the children are **biological** children.

Conclusion -- Integration and Correlation of Genetic Evidence

Correlation of evidence mined from documentary sources identifies Myra Matilda White as the daughter of William White and Ann Thomas. Genetic evidence mined from DNA test results of descendents of Myra's siblings confirm the relationship. My conclusion is that Myra Matilda White Neal is the **biological** daughter of William White and Ann Thomas.

Selected Resources

1. Bettinger, Blaine T. *The FamilyTree Guide to DNA Testing and Genetic Genealogy*. Second edition. Cincinnati, Ohio: Family Tree Books, 2019.
2. Bettinger, Blaine T. and Debbie Parker Wayne. *Genetic Genealogy in Practice*. Arlington, Virginia: The National Genealogical Society, 2016.
3. Bettinger, Blaine T. "The Shared cM Project, version 4.0." *The Genetic Genealogist*. March 2020. <https://thegeneticgenealogist.com/wp-content/uploads/2020/03/Shared-cM-Project-Version-4.pdf> : 2020.
4. Board for Certification of Genealogists. "Frequently Asked Questions." DNA Resources. <https://bcgcertification.org/learning/dna-resources/> : 2020.
5. Board for Certification of Genealogists. *Genealogy Standards*, 2nd edition. Nashville, Tenn.: Ancestry Imprint, Turner, 2019. Also available as a Kindle e-book.
6. Leeds, Dana. "The Leeds Method." *DanaLeeds.com*. <https://www.danaleeds.com/the-leeds-method/> : 2020.
7. Stanbary, Karen. "Can a Genetic Relationship be Proved by DNA Alone?" Blog post, 17 January 2018. *Board for Certification of Genealogists SpringBoard* <https://bcgcertification.org/can-a-genetic-relationship-be-proved-by-dna-alone/> : 2019.
8. Wayne, Debbie Parker, editor. *Advanced Genetic Genealogy: Techniques and Case Studies*. Cushing, Texas: Wayne Research, 2019.