The Complexity of DNA Relationship Matches

My Premise

This paper is documenting my DNA search for my great grandfather’s known relationships.

Ever since my Aunt Salley and Aunt Pat told me that my great grandfather was given up at an early age; telling me that the family thought William was given up by his family at a young age to another family, saying William wasn’t wanted by his Graham family, or that the family was too large, or poor, and couldn’t keep William. [[1]](#endnote-1) They told me this before any such thing as DNA testing in genealogy.

Since about 2013, I started using DNA to help me verify my genealogical research. I began with two DNA testing and analysis web sites. The first one was with a DNA “Y” [[2]](#footnote-1) chromosome [[3]](#footnote-2) with Family Tree DNA, [[4]](#footnote-3) and then I did a DNA autosomal chromosome test [[5]](#footnote-4) with Ancestry. [[6]](#footnote-5) DNA is literally validating all of my genealogical work on my entire family tree. At least for the first to third generation maternal and paternal family lineage. After that it gets really sketchy.

Understanding how this shit works makes me dizzy, but the whole DNA is very cool. I can see relationship to at least my 1st, 2nd, 3rd, and 4th cousins, where we have a common set of grandparents. That is until I couldn’t link to any Graham cousins, outside my own 1st cousins. Weird. So, it began, a DNA search for my Great grandfather’s, William Graham, family. Here’s how it works.

I know all of my grandparent’s surnames, and their children’s names, wives, and their children. They are my aunts, uncles, and 1st cousins. I also know all my great-grandparent’s surnames, and their children’s names, wives, and their children. They are my great aunts, uncles, and 2nd cousins.

What I don’t know for certain are many of my great-grandparents, and my great-great aunts, uncles and 3rd cousins. Particularly my Graham lineage. And, I especially don’t know many of my great-great-great-grandparents, and my great-great-great aunts, uncles, and 4th cousins. This goes on until you don’t know anymore. Knowing all of my grandparent’s surnames is only part of the research. I also needed to know where they lived, and when they lived there.

Knowing who, where, and when are the critical identifiers when trying to understand my match with DNA members listed on the genealogy and DNA web sites. However, like me, most members don’t know their family lineage beyond their great-grandparent. Much less all of the identifiers.

* Depending on how intermarried my lineage is, I may be seeing individuals in my match with others that genetically look like my fourth cousin, but they could be genealogically my sixth cousin.

After I find a match to a distant cousin, say my 4th cousin, I then count back five generations to my great-great-great-grandparents. That means that I, and another DNA member, share one of thirty-two great-great-great grandparents (that’s 16 couples). [[7]](#footnote-6) Count yourself and cousin as one generation, your parents as the second generation, and so on.

* + 1st Cousin – 2nd Generation: Grandparent

* + 2nd Cousin – 3rd Generation - Great-Grandparents.
  + 3rd Cousin – 4th Generation - Great-Great-Grandparents.
  + 4th Cousin – 5th Generation – 3rd Great Grandparents.
  + 5th Cousin – 6th Generation – 4th Great Grandparents, and so one.

In order to find out which specific couple my DNA match, and I, have in common, we have to know precisely their common genealogical identifiers; surnames, locations, and time period. All three of these identifiers are often, most of the time, omitted by Ancestry and DNA members.

Because most of genealogical and DNA members, including me, do not know all 16 of those couples, we’re going to have some holes. Filling in those holes is the first thing I started to do; make a list of their surnames for thirty-two of my paternal and maternal 3rd great grandparents; that is 16 couples, and their surnames, locations, and time periods.

Anyway, I was in the process of doing this with my Graham surname, when I learned I couldn’t get past my grandfather, Calvin Graham. Calvin is the only surviving adult member, three sisters died early in life, of William Graham and Sadie Greenawalt. It turns out I have no DNA matched connection to any Graham line, past my grandfather. So, I went looking into my genealogical and DNA sites for DNA matches with other members. I didn’t realize how unbelievably difficult this was going to be.

My DNA matches are identified as 1st, 2nd, 3rd, 4th, 5th, or 6th cousins. In both of my DNA and genealogical web sites they are listed in a range of possible cousins matches; 1st - 2nd cousin, 3rd – 4th cousin, 4th – 6th cousin.

If I’m trying to locate great-great grandparents, what time period am I looking for, and how does that correlate to the DNA matched cousin? It’s at this point I had to translate the cousin and generation into a time period. Remember, I’m looking for the biological parents of my great-gradfather William, who was born in 1873 in Cumberland County, Pennsylvania.

Remembering how cousins and counting generations work. I want to locate my great grandfather’s parents, my great-great grandparents. These people may or may not be a married couple. I might be looking for two different individual people, who are not married.

I’m looking for someone who is my 3rd – 4th cousin, which is my 4th – 5th generation. I had to convert the number of generations into a time period.

* One generation represents the number of years between the birth of a parent, and the birth of its offspring. According to Ancestry every generation, on average, is about 24 years.
* Recent studies recommend using an average of 30 years for the female-line interval, and an average of 35 years for the male interval. Other studies suggest between 22 and 33 years for both sexes. Generally, three or four generations span about 100 years, but depending on a number of factors, that same amount of time could produce as little as two generations or as many as five generations.
* My average interval generation time is as calculated: my great-grandfather is (William born 1873), and his son (Calvin born 1905); 32-year interval. Calvin was born 1905 and my father Robert was born 1928; 23-year interval. Robert was born in 1928, and his son, me, was born in 1952; 24-year interval. That’s 26.3 average years per generation.
* If William (1873) was born to William (1833); 40-year intervals. Then my average generation would be 29.7-year intervals. However, William (1873) was born to someone we don’t know, and they could have been 15 to 40 years old. Meaning, William’s parent, or parents, could have been born between 1833 to 1858, which affects my average generation interval to about 25 years.

I am the 3rd generation of William Graham (1873-1948), who was born in Shippensburg, Cumberland County, Pennsylvania. My average generational interval is about 25 years. I’m looking for anyone who are related to me as a 2nd to 4th cousin.

* 2nd cousin - 3rd generation (1880) - will be their great-grandfather
* 3rd cousin - 4th generation (1856) - will be their great-great-grandparents
* 4th cousin - 5th generation (1832) – will be their 3rd great-grandparents.
* 5th cousin - 6th generation (1802) – will be their 4th great-grandparents.
* 6th cousin - 7th generation (1777) – will be their 5th great-grandparents.

Man! Is this right?

Boog Graham

August 30th 2020

William Graham (1873-1948)

DNA Match to His Known Relationships

I thought my great grandfather was the son of William Graham (1833-1908) and Mary Oliver (1842-1874), and that his grandparents were John Graham (1810-1883) and Lydia Devor. I also thought my great grandfather was 1st married to Dellia Killinger, and that they had a son, Norman Graham (1896-1948).

As of this writing, I am not a DNA match to direct descendants of William Graham (1833-1908), or to John Graham (1810-1883) and Lydia Devor. However, my great grandfather was married to Dellia Killinger, but he was not the father of Norman Graham (1896-1948).

However, I still may be related to an entirely different Graham family line. I may also still be related to Mary Oliver (1842-1874) family. It has been suggested by a DNA analyst, that the Graham name may have been adopted. So now, the search is on for who were my great grandfather’s father and mother.

I am the 3rd generation of William Graham (1873-1948) and his wife Sarah Greenawalt. William was born in Shippensburg, Cumberland County, Pennsylvania. My average generational interval is about 25 years. I’m looking for anyone who are related to me as a 3rd cousin-4th generation-1856 great-great grandparent(s) to a 4th cousin-5th generation-1832 great-great-great grandparent(s).

I’m certain that I am DNA related to William (1873-1948), but that he is the son of William Graham (1833-1908). I’m also certain that my great grandfather was the, and if he is the husband of Dellia Killinger (1873-1963), but that he was not the father Norman Graham (1896-1948).

I located direct decedents, DNA members, from both company’s databases who are definitively DNA related to the William Graham (1833-1908) and Mary Oliver (1842-1974), John Graham (1810-1883) family, and Norman Graham (1896-1948) family.

This possess a unique and complicated process for me to develop and follow. My first step was to validate and clarify all the Graham maternal and paternal names and relationships. All my research papers are reflecting my progress, and this paper is intended to track and log my DNA findings.

Boog Graham

August 30th 2020

Norman Wesley Graham (1896-1948)

I have no doubt that Norman Graham, [[8]](#endnote-2) who married Hilda Wilhelmina Pigorsch on January 10th 1920 in Abilene, Kansas, [[9]](#endnote-3) was born to Dellia Catherine Killinger in Franklin County, Pennsylvania. [[10]](#endnote-4)

However, I am not a DNA match to Norman’s great granddaughter, and that she is not a match to any other Graham line. Suggesting that Norman is not the son of my great grandfather, William Graham, but of another person.

I also know that Dellia was four months pregnant when she married William Graham of Shippensburg on February 6th 1896 at her parent’s farm in Upper Strasburg, Franklin County. [[11]](#endnote-5)

* While living at the Killinger farm, Deilla had a son, Norman Wesley Graham, who was born July 4th 1896 at the home of his grandparents in Upper Strasburg, Franklin County, Pennsylvania. [[12]](#endnote-6)
* One month before the birth of Norman, in June 1896, four months after Willaim and Dellia married, William left Dellia for the Maryland-Pennsylvania state line to work in lumbering, and later would go back and live in Shippensburg. [[13]](#endnote-7)
* Dellia divorced William of Shippensburg, which was finalized and decreed on July 11th 1902. [[14]](#endnote-8)

Norman Graham Descendant

One of Norman’s son is William Franklin Graham, who had a son William A. Graham. I am working with William’s daughter, Ashley Graham, who is the great granddaughter of Norman. [formykids2415@yahoo.com](mailto:formykids2415@yahoo.com)

8/31/20

Hi Ashley, I hope it’s okay to continue the DNA research into the Graham lineage. You are certainly the key to the start of this effort. I’m working with other DNA Graham members, who are not a match to me, but a match to the supposed Norman Graham line.

Here’s what I know: Please confirm or correct any thing.

* Your great grandparents were Norman Graham and Hilda Pigorsch.
* Norman was born to Dellia Killinger.
* Dellia married William Graham.
* My great grandfather was William Graham.
* You and I are not DNA related.

For now, here’s what I’m trying to determine. Did my William marry Dellia Kilinger? Is my William Graham the father of Norman? Is my William the son of William Graham and Mary Oliver?

To Ashley: Would you answer some basic questions?

1. Are you related to any 3rd or 4th Graham cousins, 1850 to 1880 time period, outside of the Norman Graham Family? If so, who?
2. Are you an Ancetry DNA match to: Sonia Lee, Faith Snoke, or Jean Marshall?

From Ashley: I am not related to any other Graham line, other than my 1st cousins.

More Verification:

1. Ancestry should be contacted to ensure the DNA analysis, and matched relationships.
2. Determine if Norman, and his descendants, are related to another William Graham, other than my great grandfather. If another William Graham is the father of Norman. Who is this William Graham and his family?
3. Determine if Norman is related to any 19th century Graham family, particularly William Graham (1833-1908) and John Graham (1810-1883).

John Graham and Lydia Devor Family Members

I located four people who are reported to be sons of John and Lydia Graham; William Graham (1833-1908) and David Graham (1842-1902). I am not a DNA match to any of the four people I contacted, or to any of the other direct descendant and DNA match to John and Lydia Graham.

1. From Ancestry, David Graham family member, Jean Marshall, is jeanrmarshall@gmail.com. Jean indicated that her daughter did take a DNA test, and David is in her ThruLines with 11 other DNA matches. David is her ggg-grandfather, hrough his daughter Grace Ella, and her daughter Sarah McElhaney.
2. From Ancestry, William Graham family member, Faith Snoke, who is the great-great- granddaughter of William’s daughter, Annie Catherine Agle.
3. From Ancestry, William Graham family member, Stephen Graham, who was the great- grandson of William’s son, Harry Graham (1866-1897).

* Stephen died September 28th 2019. He was the son of Donald A. Graham and Virginia Steck. Stephen lived his early life in the Waynesboro area of Franklin County, Pennsylvania.
* I worked with Stephen and his genealogist, Marsha Fuller, [mfuller@fred.net](mailto:mfuller@fred.net), on his connection with William Graham (1833-1908) and Mary Oliver (1842-1974).

1. From Ancestry, Sonia Lee, John Graham (1810-1883) family; James Graham (1835-1911) son, Frank Elmer Graham (1874-1928)

* Sonia Lee’s mother is Thelma Graham, who is the oldest daughter of Aaron & Vada Graham. Aaron H. Graham was born June 20th 1912 to Frank Graham and Aliza Hall in Shippensburg Franklin County Pennsylvania. [[15]](#endnote-9) He 1st married Vada Katereine Bistline and 2nd to Mazzie Clark Ingram.

End Notes

1. Pat Napoli Family Memory of William Graham: The information came from the William Graham Family Memories paper, Taylor-Graham Library, c/o Bob Graham, 479 County Line Road, York Springs, Pennsylvania, 17372. [↑](#endnote-ref-1)
2. The Y chromosome is one of the two sex chromosomes in humans, and the other is the X chromosome. [↑](#footnote-ref-1)
3. In the nucleus of each cell, the DNA molecule is packaged into thread-like structures called chromosomes. Each chromosome is made up of DNA tightly coiled many times around proteins called histones that support its structure. [↑](#footnote-ref-2)
4. Family Tree DNA is one of the largest companies that extensively studies the male “Y” Chromosome, and contains a very sophisticated database, while matching people to my specific DNA segments. [https://www.familytreedna.com](https://www.familytreedna.com/) [↑](#footnote-ref-3)
5. The autosomal chromosome is inherited, and comes from any of the numbered chromosomes, as opposed to the sex chromosomes. Humans have 22 pairs of autosomes and one pair of sex chromosomes (the X chromosome and the Y chromosome). [↑](#footnote-ref-4)
6. Ancestry is a popular research tool that contains millions of original Federal, State, and County records, Member Family Trees, and a DNA tool, which is not as sophisticated as Family Tree. They ssurvey a person's entire genome, at over 700,000 locations from more than 3 billion DNA base pairs. It covers both the maternal and paternal sides of the family tree, so it covers all lineages.[https://www.ancestry.com](https://www.ancestry.com/) [↑](#footnote-ref-5)
7. <https://lisalouisecooke.com/2015/01/17/dna-matches-genetic-4th-cousins/> [↑](#footnote-ref-6)
8. Norman Graham (1896-1948) Research Paper, Taylor-Graham Library, c/o Bob Graham, 479 County Line Road, York Springs, Pennsylvania, 17372. [↑](#endnote-ref-2)
9. Norman Graham Marriage: The information came from the 1920 marriages, B No.: 58162, P. J. No.: 562, Page #21-868, Central Division of Vital Statistics, Office of Vital Statistics, 1000 SW Jackson, Suite 120, Topeka, Kansas 66612-2221. [↑](#endnote-ref-3)
10. Dellia Killinger (1873-1963) Research Paper, Taylor-Graham Library, c/o Bob Graham, 479 County Line Road, York Springs, Pennsylvania, 17372. [↑](#endnote-ref-4)
11. William Graham and Dellia Killinger Marriage: The information came from the Marriage Licenses Docket, Volume 9, 1895-1897, License # 61, Page 61, Clerk of Courts, 157 Lincoln Way East, Chambersburg, Pennsylvania, 17201. [↑](#endnote-ref-5)
12. Norman Wesley Graham Name, Date of Birth, and Place of Birth: The information came from his WWI draft registration card, WWI Draft Registration Card, Kansas; Dickinson County; United States Selective Service System; World War I Selective Service System Draft Registration Cards, 1917-1918, M1509, 4,582 rolls; National Archives and Records Administration, 700 Pennsylvania Avenue, NW. Washington, DC 20408-0001. [↑](#endnote-ref-6)
13. Dellia Graham Divorce: The information came from the Dellia Graham Divorce Papers and Affidavits, Court Docket Index, 1902, Page 119, Divorce Case #20 dated April 1902, Reason- Desertion, Decreed July 11, 1902. Clerk of Courts, 157 Lincoln Way East, Chambersburg, Pennsylvania, 17201. [↑](#endnote-ref-7)
14. Dellia Graham Divorce: The information came from the Court Docket Index, 1902, Page 119, Divorce Case #20 dated April 1902, Reason- Desertion, Decreed July 11, 1902. Clerk of Courts, 157 Lincoln Way East, Chambersburg, Pennsylvania, 17201. [↑](#endnote-ref-8)
15. Franklin County Clerk’s Office Birth Records, Courthouse Annex, 157 East Lincoln Way Chambersburg Pennsylvania, 17201. [↑](#endnote-ref-9)