

Family History research can be challenging because we have gaps in records (ie: 1890 census, emigration records, etc). One of the most promising tools is DNA. There are three types of DNA testing that comprise the majority of the testing for genealogical purposes.

1. Y-DNA—provides clues to the paternal lines in a pedigree
2. Mitochondrial DNA—provides clues to the maternal lines in a pedigree
3. Autosomal DNA - matches potentially to every line in a pedigree

Collaborating will be the key to finding additional clues to your genetic family. The three major companies offering DNA tests are Family Tree DNA, Ancestry and 23andMe. MyHeritage and National Geographic also offers tests that are performed at the Family Tree DNA lab. Tests done at any of the companies can be uploaded to [www.Gedmatch.com](http://www.Gedmatch.com) and then compared to others who have tests. Additionally, as more of the tested relatives add their line and test to [www.wikitree.com](http://www.wikitree.com) the DNA tools on that site are becoming more useful. If you have a genealogy program, locate the report option for an ahnentafel report and utilize that for collaboration as the ahnentafel includes places as well as dates and names for your further back ancestor branches and that is often the level you are looking towards when you collaborate on your DNA puzzles.

Each of the websites and companies have Pro's and Con's and some researchers are testing at each so their data appears in each of the 'ponds' for 'fishing for matches' to use in putting together the DNA puzzle. Each DNA puzzle is unique as each individual has a unique combination of 50% of their DNA from their father and the other 50% of their DNA contributed by their mother. This means that testing siblings or first cousins will definitely add to the information one has to work with, as the family puzzle is put together. While the Autosomal DNA test is the most useful for researching all of your lines, Family Tree DNA is the only company currently doing the Y-DNA and mitochondrial DNA tests. The Y-DNA is typically done at 37 markers, 67 markers or 111 markers, depending on the specificity desired and the frequency of the surname. If you are researching an uncommon surname from Germany you might not find many matches compared to researching SMITH or JONES. Beginning at 37 markers is a good start and once you see how many matches appear, you can determine if you want to upgrade the test for further specificity. There is also a Big-Y test that is more useful for the ancient origins rather than the genealogy of your family in the last 12 generations.

The ethnicity estimates will vary from company to company. Each company employs experts who feel their research and algorithm is most accurate. Gedmatch has additional tools that give admixture details. DNA tests are one type of record. Collaborating with your DNA matches may provide clues of locality or they may have records needed to break through a brick wall. Unless you find a close relative in the match list, the DNA alone will not answer questions. It is most ideally applied with other research documents and information to support or disprove a hypothesis on your family origins.

Some additional resources to learn about DNA

1. The introductory articles by Steve Morse about DNA
  - a. [From DNA to Genetic Genealogy](http://stevemorse.org/genetealogy/dna.htm) <http://stevemorse.org/genetealogy/dna.htm>

- b. [Genealogy Beyond the Y-Chromosome](http://stevemorse.org/genetealogy/beyond.htm) <http://stevemorse.org/genetealogy/beyond.htm>
2. A book, The Family Tree [Guide to DNA Testing and Genetic Genealogy](#) by Blaine Bettinger; he also has a workbook, [Genetic Genealogy in Practice](#)
3. A book, Genetic Genealogy, is another alternate on the basics; available from Oregon Author Emily's blog page <http://genealem-geneticgenealogy.blogspot.com/>
4. [A Beginner's Guide to Genetic Genealogy](#) by K Wheaton  
<https://sites.google.com/site/wheatonsurname/beginners-guide-to-genetic-genealogy>
5. Articles about [X Chromosome patterns](#)
  - a. <http://linearboretum.blogspot.ca/2012/11/phasing-x-chromosome.html>
  - b. <http://smithplanet.com/stuff/x-chromosome.htm>
6. Explanation of relationship expectations for cM
  - a. <http://thegeneticgenealogist.com/2015/05/29/visualizing-data-from-the-shared-cm-project/>
  - b. <https://thegeneticgenealogist.com/2016/06/26/update-to-the-shared-cm-project/>
7. How many ancestors are expected when you look back X number of generations?  
<https://blogs.ancestry.com/ancestry/2012/08/16/family-history-all-done-whats-your-number/>
8. Ahnentafel's <http://freepages.genealogy.rootsweb.ancestry.com/~jcat2/ahnentafel.html>
9. Blogs that focus on DNA
  - a. <https://segmentology.org/>
  - b. <http://thegeneticgenealogist.com/>
  - c. <https://dna-explained.com/>
  - d. <http://blog.kittycooper.com/>
  - e. [https://isogg.org/wiki/Genetic\\_genealogy\\_blogs](https://isogg.org/wiki/Genetic_genealogy_blogs)
10. You Tube has several videos
  - a. Gedmatch Basics <https://www.youtube.com/watch?v=acGJmLlsWg4>
  - b. Step by Step <https://www.youtube.com/watch?t=1055&v=Jtpe6u2J5ps>
  - c. Finding Sue <https://www.youtube.com/watch?v=G9m4ABvOYvo>
11. Charting Methods and tools
  - a. <http://debsdelvings.blogspot.com/2017/03/wanted-genetic-genealogy-analysis-tools.html> includes Lauren McGuire's method
  - b. <https://dnagedcom.com/>
  - c. Chrome App - Ancestry DNA Helper
  - d. Chrome App – [DNArboretum](#)
  - e. Promethease for learning about basic health markers - <https://promethease.com/>

The best way to learn this new tool is to do a test and begin putting your DNA puzzle together, piece by piece. Start with an autosomal test and upload your test to [www.Gedmatch.com](http://www.Gedmatch.com). Even if you feel you are a beginner, your cousin matches can reach out to you. As you work with the DNA you will find yourself at the intermediate level and some may enjoy moving into the advanced tools. Even if you remain a beginner, you can benefit from this new technology and the clues it provides for your family genealogy research.

Denise Sproed

<http://freepages.genealogy.rootsweb.ancestry.com/~sproed/>

Books on this topic written through the years:

Aulicino, Emily D., **Genetic Genealogy – The Basics and Beyond**, AuthorHouse LLC (Bloomington, Indiana, 2013, 2014).

Bettinger, Blaine T., **The Family Tree Guide to DNA Testing and Genetic Genealogy**, Family Tree Books (Cincinnati, Ohio, 2016).

Fitzpatrick, Colleen and Yeiser, Andrew, **DNA & Genealogy**, Rice Book Press (United States of America, 2005).

Hill, Richard, **Finding Family – My Search for Roots and the Secrets in My DNA**, (United States of America, 2012).

Smolenyak, Megan Smolenyak and Turner, Ann, **Trace Your Roots with DNA – Using Genetic Tests to Explore Your Family Tree**, Rodale Inc. (United States of America, 2004).