DNA 101 & Now What?

Midland Genealogical Society
15 March & 19 April 2023

Direct-to-Consumer DNA Testing Timeline:

1998: Thomas Jefferson Y-DNA study published in *Nature*

2000: *FamilyTreeDNA* launched with Y-DNA testing

2003: Human Genome Project completed

2005: Genographic Project launched by *National Geographic* (discontinued 2019)

2007: *23andMe* atDNA testing offered

2008: GINA – Genetic Information Nondiscrimination Act passed in U.S.

2010: Family Finder atDNA test offered by *FamilyTreeDNA*

2010: *GEDmatch* founded

2012: *AncestryDNA* launched

2016: *MyHeritage DNA* launched

2016: *Living DNA* launched

2018: Golden State Killer identified with genetic genealogy

2019: *GEDmatch* acquired by *Verogen*

2020: *Ancestry* acquired by The Blackstone Group

2021: *FamilyTreeDNA* acquired by *MyDNA* (Australia); *MyHeritage* acquired by Francisco Partners

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When ordering a DNA test:

- Consider creating a separate email address just for DNA matches.
- Consider having an ID name which does not easily identify you.
- Create a very simple pedigree chart/GEDCOM for sharing with matches.
- Write down your Log in and password information in a safe place.
- Have a plan for keeping track of your matches.
- Seriously consider how you will respond if you receive surprising results.

DNA Basics:

1. There are three kinds of tests: **Y-DNA**, **mtDNA** (mitochondrial), and **atDNA** (autosomal).

2. Most companies focus on autosomal testing, providing admixture (origins) reports and cousin matches. Some provide health information. Some offer basic maternal and paternal haplogroup information (this is not the same as Y-DNA or mtDNA testing).

   - Admixture results offer clues to early origins but are variable and subject to change.

   - Shared segments of autosomal DNA provide the basis of cousin matches and are measured in **centimorgans (cM)**. Results are dependable down to about 12 cM.

3. You must "triangulate" with other matches to prove your genetic connection. Remember you can be related to someone through multiple lines.

Steps to Take After DNA Testing:

1. If you haven't already, create a very simple pedigree chart/GEDCOM file for sharing with matches and connect it to your DNA results.

2. Your traditional paper trail is still very important. Work on maternal lines, female siblings, and descendants of other marriages for "tree completeness."

3. Check for messages! Contact your matches and view information they've shared online.

4. Download your raw data from the site you tested at. Go directly to the site, or search "download raw data" and "[name of the company you used]" for detailed instructions.

5. Use the amazing tools at your testing site! Access SideView™ & ThruLines at *Ancestry.com* or the Family Tree feature at *23andMe*. Utilize mapping tools and chromosome browsers. *MyHeritage* has Theory of Family Relativity and AutoClustering. Additional fees may apply.

6. Get a free *DNA Painter* account - Shared cM Project Tool/DNA Painter/What Are the Odds: https://dnapainter.com/tools

   - Other third party tools: *Genetic Affairs* (AutoClustering) https://www.geneticaffairs.com *DNA GEDcom Client* https://www.dnagedcom.com/ and *GEDmatch* https://gedmatch.com

7. Create a spreadsheet for keeping track of your matches – copy/paste or transcribe.

Name	Email	# cM	Segments	Relationship (Predicted/Actual)	Shared Matches	Notes

8. Be aware of endogamy or pedigree collapse (duplicate ancestors in your own tree). Learn more from Paul Woodbury here: https://blog.kittycooper.com/2017/02/endogamy-and-dna/

9. **Start with a question!**

   - Use predicted relationships information and the Shared cM Project Tool together. Remember that genetic heritage can be different than genealogical heritage.

   - Narrow down your possible matches: $4^{th} – 5^{th}$ cousins (share 3x-great-grandparents) 25-30 cM cut off.

   - Sort matches – begin by labeling your known matches. Use search and filter tools for finding possible descendants of known ancestors. Then use "Shared Matches" or "In Common With" tools for identifying people who are related to both you and your known match. One approach is the Leeds Method https://www.danaleeds.com/the-leeds-method/, or you can use an AutoClustering tool.

   - Use the results of this process to begin identifying genetic networks, or groups of people with shared DNA. Label them.

   - Here is one strategy for color grouping at *Ancestry.com*: https://tinyurl.com/ty7x6du

   - Narrow in on shared DNA shown on chromosome browsers, using tools available at DNA Painter. Remember that half-sibling relationships can be very helpful.

   - Repeat as necessary, verifying through contact with your matches and paper trail.

   - Share your findings with family members!

Resources for Next Steps:

Legacy Family Tree Webinars: https://familytreewebinars.com/DNA

DNA Research Flow, Family Locket blog post: https://familylocket.com/dna-research-flow/

Genetic Genealogy Resources:

ISOGG – International Society of Genetic Genealogy Wiki page: https://isogg.org/wiki/Wiki_Welcome_Page

DNAeXplained – Genetic Genealogy (Roberta Estes): https://dna-explained.com/

The Genetic Genealogist (Blaine Bettinger): https://thegeneticgenealogist.com/

Genetic Genealogy Tips & Techniques Facebook Group:
https://www.facebook.com/groups/geneticgenealogytipsandtechniques/

DNA Detectives Facebook Group: https://www.facebook.com/groups/DNADetectives/

Diahan Southard (Your DNA Guide): https://www.yourdnaguide.com/ydgblog

Through the Trees (Shannon Christmas): https://throughthetreesblog.tumblr.com/

The DNA Geek Blog (Leah Larkin, PhD) https://thednageek.com/blog/

DNA Testing Adviser (Richard Hill): https://dnafavorites.com/

Kitty Cooper's Blog: https://blog.kittycooper.com/

Segment-ology (Jim Bartlett): https://segmentology.org/

There are also many helpful videos on *YouTube* – keep learning!