

DNA Boot Camp: Getting Started with DNA and Genealogy

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Talk 2: Using Autosomal DNA for Genealogy Research

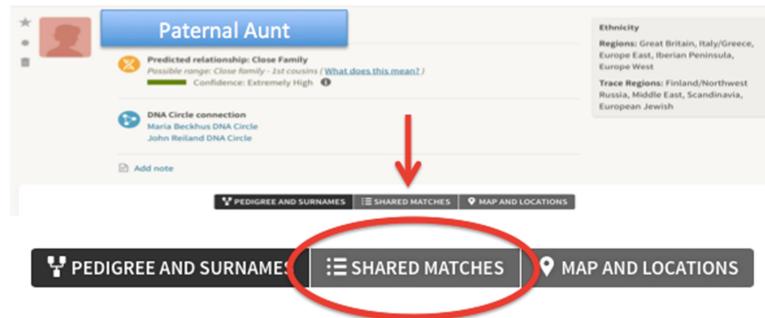
1. Big Three DNA Testing Companies & Tests
 - a. Ancestry (only 1 test)
 - b. FTDNA (FamilyFinder test)
 - c. 23andMe (only 1 test)
2. Genealogical Uses
 - a. Who are my relatives?
 - b. Who's my birth father/mother?
 - c. Who's behind my brick wall?
 - d. Did my mom's family really come from Russia?
 - e. Finding cousins who are genealogists
3. Background
 - a. 22 pairs of atDNA chromosomes
 - b. $\frac{1}{2}$ from mom & $\frac{1}{2}$ from dad
 - c. 700,000 places (or SNPs) are tested on atDNA
 - d. atDNA recombines: <http://learn.genetics.utah.edu/content/basics/molgen/>
 - e. Recombination results in loss of some ancestors' DNA
 - i. So more distant cousins don't always match
4. Ethnicity Estimates—from atDNA
 - a. Compared to that company's **reference panel**
 - b. Are Ethnicity Estimates Reliable?
 - i. Inaccurate, wrong
 - ii. Only good to entice people to test
 1. *Enticement is good!*
 - iii. Least solid part of DNA testing
 - iv. Many reasons
 - c. Accuracy verses Specificity
 - i. Very accurate at a broad levels
 - ii. Accuracy decreases as specificity increases
 - d. Some Categories Are Hard to Assign, like Great Britain and Western Europe
 - e. Labels are Misleading—read what the company means by their labels
 - f. All companies' results are **estimates**
 - g. Recombination (gene shuffling) results in differences between sibs
 - h. Each company has a different time frame:
 - i. Ancestry's estimates reflect your ancestors 2,000+ years ago
 - ii. 23andMe's estimates best reflect paper trails
 - iii. FamilyTreeDNA (FTDNA) is in between
 1. This results in differences between companies
 - i. Use ethnicities to sort your matches. Is there a unique ethnicity on
 - i. One side of your family?
 - ii. One branch of your family?

5. Matches—from atDNA—how much DNA is shared?
 - a. Step 1: On Ancestry, attach your DNA results to you in your tree. This isn't a feature on FTDNA or 23andMe.
 - b. Step 2: Look at testing companies predicted relationship
 - i. But not always correct
 - c. Step 3: Examine how much DNA you share with a match
 - i. Measured in cMs or %s
 1. cM (centimorgan) I think of it as a modified length.
 - ii. Reporting of cM or %s - Depends on testing company
 1. Ancestry: click on little "i" to show how much DNA is shared
 2. FamilyTreeDNA: *need to subtract segments under 7 cM*
 - a. Steps:
 - i. Click on box next to a match
 - ii. Then click on Chromosome Browser (CB) button
 - iii. If there are few segments, just count them in the CB.
 - iv. If there are many segments, click on Download to Excel (csv Format) button to download to a spreadsheet
 - b. Segments that are identical by descent (IBD; these are larger and helpful) verses identical by state (IBS; these are smaller and not helpful)
 - i. *I subtract segments under 7 cM to get IBD segments.*
 3. 23andMe uses % and not cM (very accurate)
 - iii. Look at average cMs or %s & ranges shared between various relationships at one of the following:
 1. Table on ISOGG:
http://www.isogg.org/wiki/Autosomal_DNA_statistics
 2. Table from DNA Detectives (another handout)
 3. Website with Probabilities [*my favorite!*]:
<https://dnainter.com/tools/sharedcmv4>
 4. Remember: Averages of shared amount of DNA varies. The smaller the number, the higher the variation.
 5. Also, there are a lot of ways that two people can share the same amount of DNA. This is where trees are so important! Need paper documentation to confirm your DNA findings
 - d. Step 4: Who are your matches?
 - i. Look at their trees for shared
 1. Locations
 2. Surnames
 3. Ethnicities
 - e. Step 5: Use known matches to sort your other matches
 - i. Ancestry (Shared Matches)
 - ii. FT-DNA (In Common With or ICW)
 - iii. Look at those matches' trees.
 - iv. Cousin Clusters

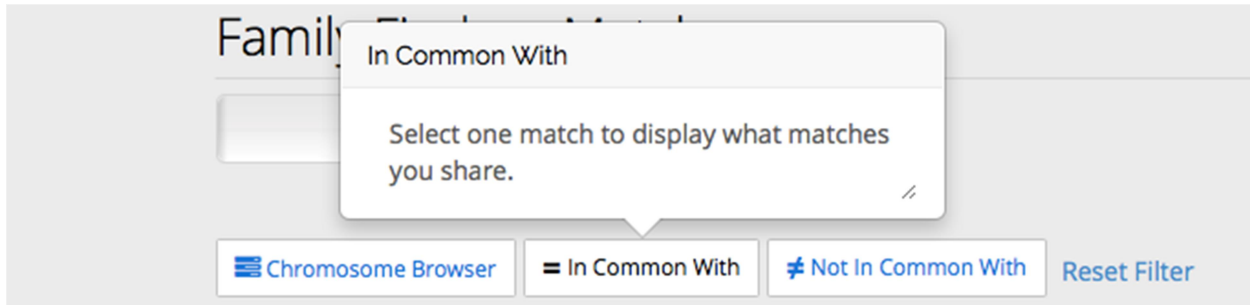
1. Related matches
 2. Should have common ancestral line(s)
 3. Study the trees
 - f. Step 6: Organize Matches
 - i. Notes on Ancestry & FTDNA
 - ii. Spreadsheets
 1. DNA Client from **DNAGedcom.com**
 - a. Ancestry and 23andMe (for PC)
 2. **DNAGedcom.com's** Autosomal DNA Segment Analyzer
 - a. FTDNA results
 - iii. MedBetterDNA (new version)
 1. A Chrome extension for custom notes
 2. Use hashtags to filter matches, e.g., #maternal grandfather
 3. <https://devoresoftware.blogspot.com/2018/01/medbetterdna-custom-note-filters.html>
 - g. Step 7: Communicate with matches
 - i. Personalize your message
 1. How much DNA is shared
 2. Who your parents & grandparents are
 3. If you know, where you think you connect
 - ii. Be selective in who you contact
 1. Not all 1,000 of your matches
 - iii. Be helpful
 1. Share resources
6. Conclusions/Recommendations
- a. Start at DNA testing at Ancestry
 - b. Transfer to FTDNA & other sites
 - c. Test relatives
 - i. Test the oldest first
 - d. Build your family tree
 - e. Communicate with your matches

Ancestry's Shared Matches—click on the Shared Matches button after you click on 1 match:

Shared Matches & ICW



FT-DNA's In Common with Tool—click on one person, then on the “In Common With” button



Resources:

- International Society of Genetic Genealogy – isogg.org
- Facebook Groups
 - DNA Detectives (mostly unknown parentage) - <https://www.facebook.com/groups/DNADetectives/>
 - DNA Tips and Techniques (more science based)
 - DNA Do-Over (run by Thomas MacEntee; with Mary Eberle)
- Books
 - “23 Best Tips for DNA Testing and Family History” by Mary Eberle
 - “The Family Tree Guide to DNA Testing and Genetic Genealogy” by Blaine Bettinger
- Short videos on genetic genealogy – including recombination <http://learn.genetics.utah.edu/content/basics/molgen/>
- Types of cousins explanation - <https://en.wikipedia.org/wiki/Cousin>