

DNA Beyond the Basics – Adding to Your Solid Foundation

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<p>Matches</p> <ul style="list-style-type: none">• What is a Match?<ul style="list-style-type: none">○ A match is someone who has tested their DNA who shares a segment(s) of DNA with you○ The sequence of that portion of their DNA, exactly matches your sequencing, in the same place on the same chromosome○ DNA segments are measured in centimorgans (cMs)• Key Principles of Matches<ul style="list-style-type: none">○ The more centimorgans you share, the closer the relationship. Matches show up on your match list in descending order of cMs shared○ The companies provide ranges of possible relationships – these do NOT tell you how you are related (except for parent-child – which is never wrong)○ If a person appears on your match list with more than 10 cMs they ARE related to you○ Matches below 10 cMs could be false matches, and should be used carefully or not at all.○ Testing databases are skewed. They have more testers with Western European ancestry, and more testers with immigrant ancestors who arrived in the US very early DNA comes in pairs. For every match you have on one side of your chromosome, you could also have a match on the other side of the pair.	<p>Match Analysis – Ten Steps to Analyze a Match on Ancestry</p> <ol style="list-style-type: none">1. Extract the basic facts – match name, administrator2. Centimorgans – what are the shared cMs? suggested relationship? Number of segments? Longest segment?3. Trees – Is there a tree attached to this DNA match?4. Common Ancestor - does Ancestry suggest a Common Ancestor? Or more than one?5. Shared Surnames – scroll down – what does Ancestry show for surnames in common?6. Surnames on the Trees - <i>Make a list of surnames on the match's tree</i>7. Maps – Compare the geographic locations on the Maps8. Ethnicity – Compare Ethnicity Profiles9. Profiles – Review their Profile - What is approximate age/generation of the match? (helps eliminate options)10. Shared Matches - What Matches do You SHARE? Do you recognize any of the shared matches?
<p>Where to Start? Setting Priorities</p> <ul style="list-style-type: none">• Four Rules to Follow<ol style="list-style-type: none">1. Matches that Answer YOUR Research Questions2. Top Matches3. Matches you CAN Pursue4. Matches you know HOW you match• Matches that Answer YOUR Research Question<ul style="list-style-type: none">○ Like ALL good genealogy you should start with a research question - EX: Who are the parents of Nicholas Powers born in 1852 in North River, Newfoundland?○ Know what you need to find out○ Where are your brick walls? What locations are you researching? What timeframes? What surnames?• Understand what Info you already have that you can leverage<ul style="list-style-type: none">○ What family members have tested, where you know the connection? 2nd cousins are gold	<ul style="list-style-type: none">• Top Matches<ul style="list-style-type: none">○ It is all about cM's (Centimorgans.) Start from the top (largest number of cMs) and work your way down○ Don't bother with small matches!• Matches you CAN pursue<ul style="list-style-type: none">○ Do they have any public information?○ Are they on GEDMatch?○ Do they have a tree posted? Anywhere?○ How long since they last signed on?○ Anticipating Responses - Approx 20% of your matches will respond – don't dwell on those who don't!
<p>Resources for DNA Basics</p> <ul style="list-style-type: none">• Diahn Southard, "3 Steps for Prioritizing Which DNA Matches to Research First," <i>Family Tree Magazine</i>, 12 June 2020.• Blaine Bettinger, An in-depth analysis of the use of small segments as genealogical evidence. <i>The Genetic Genealogist</i>, blog, 7 August 2022.• Working with your DNA Matches - https://www.legacytree.com/blog/understanding-ancestrydna-matches• ISOGG Wiki - International Society of Genetic Genealogy https://isogg.org/wiki/Wiki_Welcome_Page - great reference info	

Special Circumstances that Impact DNA Matches

- **Multiple Relationships**
 - You can be related to a match in more than one way.
 - The most common multiple relationship is when siblings marry siblings. Ex: Your grandfather's sister marries your grandmother's brother
 - This is not pedigree collapse or endogamy – it is simply a double relationship – in this case double 1st cousins.
 - It DOES impact how much DNA you share, because you are related more than once and in the above example, they share DNA with you from both your maternal and your paternal side.
- **Pedigree Collapse**
 - Pedigree collapse is when you have a set of ancestors appearing in **your** tree more than once – or multiple times. This refers to the ancestral tree of an individual “collapsing” or not having a full complement of 32 or 64 or 128 unique ancestors.
 - Instead of thirty-two unique 3rd-great grandparents you have thirty or twenty eight.
 - This happens when cousins marry. The offspring of this couple would then show the mutual ancestor twice in their trees.
- **Endogamy**
 - Endogamy is when a population marries exclusively within a confined group over and over across multiple generations. No new DNA is introduced and over time everyone in the population has segments of DNA in common with the entire population.
 - Groups can be confined by religion, geography or social/societal norms. Examples often cited are: Ashkenazi Jews, Acadians, Polynesians, and similar populations.
 - Endogamy is a long term issue – not just a few generations.
 - The result for a modern DNA tester with ancestors from an endogamous population is a very large number of matches with numerous small segments. These segments add up and it looks like a match is a closer match than they really are.
 - The rule of thumb for those with endogamy in their pedigree is to look for matches with large individual segments (at least over 10 cMs) and use non-endogamous matches to tease out relationships.
- **Consanguinity**
 - Historic religious and social constraints on marriage based on the number of degrees of separation between two individuals. Ex: 1st cousins are 4 degrees of separation.

Resources for Pedigree Collapse, Endogamy and Consanguinity

- Roberta Estes, [DNA: In Search of...Signs of Endogamy](#), *DNA Explained, blog*, 11 August 2022
- Nichole Dyer, [“The Effect of Pedigree Collapse on DNA Matching: A Case Study,”](#) *FamilyLocket.com*, blog, 6 November 2022.
- Nichole Dyer, [“Strategies for Overcoming Endogamy.”](#) *Family Locket.com*, blog, 5 January 2023.
- Legacy Tree Genealogists, [“Endogamy Part 1: Exploring Shared DNA”](#), *LegacyTree.com*, blog, 13 October 2016.
- Lara Diamond, [“Lara’s Jewnealogy: How Endogamy Looks in Practice.”](#) *Lara’s Jewnealogy larasgenealogy.blogspot.com*, 10 April 2016.

Tools

DNA Painter – [dnainter.com](#)

- **Shared cM Project** – relationship identifier
- **Chromosome Painter** – allows for the “painting” of matches by individual chromosomal segments
- **WATO** – What Are the Odds – Calculates the odds someone is related to you in a specific way

Clustering is a technique used to compare your DNA matches to each other. This method groups your matches into clusters based on *shared DNA segments*.

- The groups or clusters assist in identifying individual ancestors or ancestor pairs. Can help focus your research.
- Especially helpful for Ancestry where there is no chromosome browser and for matches who don't answer and don't have trees

Three Levels of Clustering:

- **Basic Clustering** – Shared Matches tools from the testing companies - <https://www.legacytree.com/blog/understanding-ancestrydna-matches>
- **Manual – Leeds Method** - <https://www.danaleeds.com/the-leeds-method/>
- **Automated** – Genetic Affairs, MyHeritage, GEDMatch, DNAGEDCom, Gephi