Using MyHeritage in Your Genealogical DNA Testing Plan

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What should my genealogical DNA testing plan be? It depends.

Maybe you're interested in genealogy, and curious about how DNA can help, but you don't have any specific goals in mind. Maybe you just want your map and pie chart of percentages of how much Irish and Italian your ancestors may have been. Or maybe you want to find and connect with genetic cousins, to share stories, photos, and research. Maybe you want to confirm your genealogical research, either generally or for a specific line. Maybe you're trying to identify unknown ancestors. And, of course, maybe your interests evolve over time.

For some of the more beginning questions, your early (and maybe only) genealogical testing plan is to test yourself. When we take a DNA test at one of the "big 5" testing companies used for genealogy (AncestryDNA, 23andMe, FamilyTreeDNA, MyHeritage, or Living DNA), we receive two things. First, we get biogeographical/"ethnicity" estimates comparing our DNA to that of reference populations to determine where our ancestors likely were long ago. Most useful to genealogists, we also receive a list of matches – people who share at least a minimum amount of DNA with us.

The usefulness of those matches depends on many things. Who else has tested? What puzzle are we trying to solve? What is our relationship to the ancestors we're trying to confirm or identify? Are those ancestors from an area that tends to do DNA testing? What do we want to do with these DNA matches?

DNA Inheritance

The usefulness of our DNA matches can also come down to random DNA inheritance. We inherit half of our autosomal DNA from Mom, and half of our autosomal DNA from Dad. We also inherit a pair of sex chromosomes – one from each parent. Mom always gives us an X chromosome, and Dad gives his daughters an X chromosome and his sons a Y chromosome. Our full siblings also receive half of their autosomal DNA from Mom and half from Dad, but they get a different half – some of which will overlap with ours, and some will not. Just in one generation, we've lost half of our parents' available DNA, and we only get, on average, about 25% of each of our grandparents' DNA.

The randomly inherited (and lost) DNA also means we will not share DNA with all of our cousins. There have been no verifiable cases of second cousins or closer not sharing DNA[1], we will only share DNA with about 90% of our third cousins, about 50% of our fourth cousins, and the probabilities go down from there.[2]

Target Testing

We may want to enlist the help of our relatives (known to us, or perhaps total strangers) to DNA test to help us solve our genealogical problems. We may be interested in the DNA they do share with us, or the DNA they have that we do not… or both! As we work with our DNA results, we'll quickly find we want to "target" other relatives to test for us.

Types of DNA Testing

There are three types of DNA testing used for genealogy:

- Y-DNA (inherited by males from their father)
- Mitochondrial DNA (inherited by everyone from their mother)
- Autosomal DNA (inherited equally from each parent)

Autosomal DNA testing is the most commonly used testing for genealogical questions, but we may wish to use the other types of testing to answer certain questions, or to use a combination of tests.

Confirming a Hypothesis

The simplest use of another person's DNA is to determine whether we match (share DNA with) them, and how close a relationship the DNA suggests we have with them. For example, a tester believes her great-grandparents are a particular couple. Comparing her DNA to a known descendant of that couple can help answer that question.

Providing DNA We Don't Have Ourselves

A genetic female cannot do Y-DNA testing herself because she does not have a Y chromosome. However, if she's interested in her patrilineal line, she can test her father,

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[1] Blaine Bettinger, "Second Cousins (Or Closer) That Don't Share DNA?," *The Genetic Genealogist*, posted 3 October 2016 (https://thegeneticgenealogist.com/2016/10/03/second-cousins-or-closer-that-dont-share-dna/ : accessed 10 April 2021).

[2] *International Society of Genetic Genealogy Wiki*, "Cousin Statistics," (https://isogg.org/wiki/Cousin_statistics : accessed 10 April 2021).

brother (or any of his sons), paternal uncle, or cousins in the same patrilineal line. Similarly, if we're interested in the patrilineal line for other male ancestors, such as a paternal grandmother's father's line, we can ask someone who is in the patrilineal line.

Autosomal DNA testing additional family members can help recapture some of the DNA lost over the generations. If you don't share DNA with a third cousin, you might wonder if there's a problem with one of your trees. But if you've tested additional relatives, you share an appropriate amount of DNA with them for the relationship, and they do share DNA with the cousin, then you know you're just among the 10% of third cousins who don't share DNA.

Helping Us Sort and Identify Our Autosomal DNA Matches

One of the first questions when looking at a new DNA match is whether the match is maternal or paternal (or both), and which maternal or paternal line. From our DNA alone, we can't answer that until we start looking at the shared matches (people who share DNA with you and with the match you're viewing). Having a close maternal relative (mother, maternal aunt or uncle, first or second cousin, etc.) tested can help us identify our maternal matches, just as having a close paternal relative can help with the paternal matches.

Often, it is these shared matches and learning what they have in common that help us break down brick walls.

Whom to Test?

Which relative or relatives you want to target depends on the puzzle(s) you are trying to solve, and, of course, whether the relatives are willing to test.

With no goal in mind, you want to test the oldest generation possible (parents, grandparents, or maybe siblings) first. They have inherited more DNA from the ancestors you share with them than their children or grandchildren. If you're unable to test your grandparents, aunts and uncles can help. If you're unable to test your parents, testing siblings can help.

DNA testing is often accompanied by fishing references – "fish in all ponds" is what we say when we want to test in as many databases as possible to "catch" the match who may have only tested in one database. And here, we often want to cast a net to increase our chances of "catching" matches who will help us solve our puzzle. We often need to test multiple people in multiple locations to achieve reasonably exhaustive research.

One reason we may want to test someone is if we're interested in chromosome mapping. That is assigning segments of our DNA to the ancestors from whom we've inherited that DNA. If this is our goal, full siblings are not helpful choices – the DNA we share with them can come from either parent. Shared DNA with a first cousin could come from either grandparent. Shared DNA with a second cousin comes from only one grandparent, so their DNA will be more helpful for this task. Second cousins can be very helpful to test, as can half-cousins.

If we have a specific research question, then we want to look at our tree for relatives who can help us with that puzzle. In trying to solve multiple mysteries regarding my great-grandfather's family, I wanted to test descendants of his half-siblings. Looking at shared matches with them helped solve one mystery and looking at people who did not share matches with them helped solve another.

Reasonably exhaustive research may also have us wanting to test multiple descendants of a given ancestor to achieve the greatest possible coverage of the ancestor's DNA. We'll want to test the oldest generations possible and try to represent as many of that ancestor's branches as possible.

MyHeritage's Cousin Finder tool can be an excellent resource for finding cousins to test. The tool compares your tree with the trees of other MyHeritage members – whether or not they have taken a DNA test – and provides a list of MyHeritage members who, according to trees, share one or more ancestors with you. Not only does this save you some of that descendancy research (though you should of course verify the paths shown from the found cousins to your shared ancestors), but the benefit is these are people who have joined MyHeritage and have taken the time to build trees, so there is at least some interest in genealogy. This, of course, does require us to have a tree on MyHeritage as well, which can be done using MyHeritage's own tree building tools or by uploading a GEDCOM.

Why Test at MyHeritage?

There's no one-size-fits-all answer to the question of where to test – the answer depends on the puzzle you're trying to solve, the type of DNA testing you want to use, and where other family members may have already tested.

If you want to use Y-DNA or mitochondrial DNA testing, you'll want to use FamilyTreeDNA. At this time, they have the largest Y-DNA and mtDNA databases for matching.

For autosomal DNA testing, consider:

- Where other family members have tested
- Database size (Ancestry has the largest database, with MyHeritage in third place, rapidly gaining on 23andMe's #2 spot especially after the latter's issues in 2025)
- Where does the company market? MyHeritage is marketed more in Europe than other testing companies and you may find more European matches there
- Does the tester have issues generating enough saliva for a sample at Ancestry or 23andMe – MyHeritage uses a cheek swab which can be easier for some people
- What tools might we want to use? MyHeritage offers the ability to group our matches using labels, its Auto Clustering tool, and other helpful tools for analyzing our matches and results
- Do you need segment information? MyHeritage does provide this information and a chromosome browser as well as identifying triangulated segments
- The Autosomal DNA Testing Comparison Chart at the ISOGG Wiki provides some information to help with these decisions
- Even if MyHeritage is not your first choice, it should absolutely be an additional choice. Our matches typically test at only one company, and, for many, that company is MyHeritage
- MyHeritage (along with Ancestry) offers the ability to collaborate with other genealogists, allowing you to share your DNA results with another MyHeritage member or have them share their results with you.
- In late 2025, MyHeritage switched its DNA processing from chip testing to Whole Genome Testing. This means that instead of testing several hundred thousand selected locations in our DNA most likely to change, which does work well for finding close family, they're now testing (almost all of) our entire genome. This has amazing potential for future uses of our DNA including health and the newly introduced traits, but also for matching and ethnicity estimates.

BE PREPARED!

DNA tests can reveal surprises. Your relative may learn something about themselves they did not know and may not want to know, such as the existence of a close family member they didn't know existed, or that their biological father is someone other than the man they thought, or their ethnicity results may not be what they expect. These situations can result in great joy and tearful reunions, but they can also cause family and emotional turmoil. Advise your testers that surprises can and do happen. Sometimes people want to test but remain anonymous. Though there are ways to slow

your matches from identifying you, there's **no guarantee of full privacy**. Ask the important question: if there's a surprise, how do you want me to handle it? Do you want to know?

A consent form, while seeming a bit formal for family members, is a good way to address all kinds of concerns up front before they become issues. Who manages and can access the DNA results? Do they want their name and contact information used? Do you have permission to upload their DNA to other companies? Which ones? At FamilyTreeDNA or GEDmatch, do they want their DNA used for law enforcement investigations, and do they understand both what that means and what that doesn't mean? Do they want to manage their results or do they just want a report from you? Understand that it is **their DNA**, so it is **their choice** what is done with it, whether we want it that way or not. See Judy Russell's "Forming Consent" blog post, listed in the "Selected Resources" list in his handout.

Also, be prepared to do at least some basic research on their lines that they do not share with you. All too often, genealogists only focus on the shared lines and therefore cannot be confident that the shared DNA or appearance on a shared matches list is not due to some other connection you've ignored.

DNA testing our relatives can help us understand our own results and can help with our genealogical mysteries. Be strategic in deciding whom to test, where to test them, and ask those important questions up front.

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