

What will I learn in this guide?

The Autosomal DNA (atDNA) test is the core test (and sometimes the only test) offered by all the genetic genealogy testing companies. atDNA is received from both biological parents and can help you trace both sides of your family tree. This guide will help you compare the DNA testing companies and their offerings, and answer the key questions about the results you will receive.

You Will Find Relatives

Autosomal DNA is very good at finding relationships. Even if you don't have any interest in connecting with living relatives, your autosomal DNA is going to show your connection to any relative who has tested. So before you test, be sure you understand that others will be able to see you and your connection to them unless you opt out of matching.

Opting Out

Don't want to discover new relatives? Opt out of matching at your testing company by adjusting your preferences in your account when you register.

All testing companies are also evaluating your DNA for health-related markers, even if they aren't reporting them. This means that the generated data file does contain information about your health.

What atDNA CAN'T DO

Due to the nature of genetic recombination, autosomal DNA testing cannot reliably connect you to ancestors more than 6 generations back or provide exact confirmation of relationships outside of your immediate family. A DNA test can tell you it is very likely that you and a match are second cousins, but you might actually 2nd cousins once removed, etc.

Is atDNA testing for me?

If you can answer yes to any of these questions, autosomal DNA testing is for you


- I am interested in my ethnic origins
- I have a brick wall ancestor born after 1750
- I want to verify my connection to an ancestor
- I am interested in connecting with living relatives
- I am the oldest living generation in my family
- I want to document my family history
- I am old enough to decide for myself about all this


Which Company Should I Choose?

This guide compares the five main genetic genealogy testing companies. Other companies claim to offer similar services, but the DNA tests listed here will be your best options for using your results for genealogy research.


Listed below are some of the primary pros and cons of each company to help you decide which company (or companies) might best fit your needs. You can compare several common features across testing companies. All of this information is accurate as of the publication date.


AncestryDNA

 **Pros:** With the largest database, this is the top place to find DNA matches. Their ethnicity results point you to specific populations you may connect to recently. Their ThruLines tool helps integrate genealogy and DNA matches; their DNA match tagging system is a powerful way to sort and group matches for research; and their new Enhanced Shared Matching offering, available with a Pro Tools subscription, allows you to see the amount of DNA allow you to more easily determine the relationships between members of a genetic network..

 **Cons:** To access the trees of other members, use certain tools, and access historical records for genealogy research, an Ancestry subscription is required.

FamilyTreeDNA (FTDNA)

 **Pros:** In addition to the autosomal DNA test they offer the full mtDNA (direct maternal line) and full YDNA (direct male line) tests which can be valuable if you or your relative can only submit one DNA sample for analysis. FamilyTreeDNA also stores excess saliva samples for up to 25 years, allowing the opportunity for additional testing from the original samples if enough viable DNA remains.

 **Cons:** Their website can be a bit difficult to navigate, with lots of information presented on one page.

Agree Before You Click

Resist the urge to automatically agree to the Terms and Conditions when activating a DNA kit; you have options.

1. You must click to agree to have your DNA tested.
2. You have the option to participate in research. That research could be about health, but it could be about building a better test. Before you agree, make sure you understand the terms.

MyHeritage DNA

✔ *Pros:* They have excellent tools for performing match analysis and finding connections, including a sophisticated DNA and genealogy record hinting system called the Theory of Family Relativity.

✘ *Cons:* You need to have a paid subscription to view the family tree information for your matches.

Living DNA

✔ *Pros:* They can break down the UK into very small categories, almost by county. In addition to autosomal, general mtDNA information is included for all test-takers, and YDNA is included for men.

✘ *Cons:* Their database is the smallest, and most people do not yet see many matches. No integration of traditional genealogy research tools.

23andMe

✔ *Pros:* Their ethnicity tool currently offers the best breakdown of eastern Europe. They also break out French and German into separate categories. They have a very large database.

✘ *Cons:* Following the data breach in 2023, access to some of the most powerful genetic tools has been removed. In addition, the company's long-term financial stability has come into question. Limited family tree tools. Your matches likely have not posted family history data and may not be interested in understanding your exact relationship.

Consider Transferring Results

The laboratory process for DNA testing is generally the same for each company, making your data transferable. You can save money by physically testing with only one company, and then transferring. To transfer means you are taking the data file and giving it to another company to analyze. When you do that, you get a second opinion on your ethnicity estimates, as well as the opportunity to find new matches.

FamilyTreeDNA, MyHeritage DNA, and Living DNA allow you to transfer DNA test results from some other databases. With this transfer you receive access to the match list at each company. You can add the ethnicity report at MyHeritage and FamilyTreeDNA for a fee. At Living DNA, the free transfer includes limited access to their ethnicity report. To receive the full ethnicity report, which includes the YDNA and mtDNA report, you would need to physically test with them. For more information about transferring see www.yourDNAguide.com/transferring.

Currently it makes the most economical sense to purchase a test from AncestryDNA, then transfer into MyHeritage DNA, Living DNA, and FamilyTreeDNA for free, and if you are interested, pay the extra fee for the ethnicity report and access to matching and analysis tools, where applicable.

Autosomal DNA Testing Company Comparison

Listed are the top features of the 5 major genetic genealogy testing companies as of November 2024.

	AncestryDNA	FamilyTreeDNA	MyHeritage DNA	Living DNA	23andMe
Price	Starting at \$99	\$79	\$89	Starting at \$124	\$119
Database size	Over 25 million	Over 2 million	Over 7.2 million	Unknown	Over 15 million
Subscription required	For some features	No	For some features	For some features	For some features
Shared Matches tool	Yes	Yes	Yes	Yes	Yes
Records integration	Yes	No	Yes	No	No
Collection method	Saliva	Cheek swab	Cheek swab	Cheek swab	Saliva
Emailing matches	Brokered	Direct	Brokered	Brokered	Brokered
Accepts transfers	No	Yes	Yes	Yes	No
Family tree integration	Excellent	In collaboration with MyHeritage	Excellent	No	No
High-level mtDNA and YDNA included	No	YDNA only	No	Yes with test (not transfer)	Yes
Chromosome browser	No	Yes	Yes	No	Yes
Ethnicity/population groups	3000+	90+	2100+	150	2500+

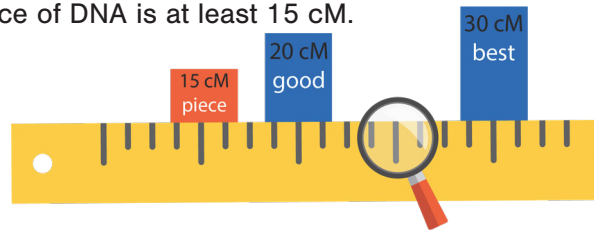
For the most complete coverage, you will want to physically test at each company to avoid imputation. Imputation is the fancy math companies have to perform to make your results from another company compatible with their own test. While accurate, it can still produce small errors that can be avoided with the physical test.

Downloading Your Raw Data

Once you receive your results, it's important to download your raw data file to your own computer for safekeeping. Raw data is just a big list of numbers that reveals your genetic information in a way that can be read by other companies. You will also need this data if you wish to transfer to another company. For full instructions on how to download your raw data from your testing company, visit www.yourDNAguide.com/rawdata.

Using cMs

To be confident in a recent shared ancestor, you need to share at least 20 cM (a unit of measure for DNA) with your match. If you want to be extra sure, stay above 30. In either case, make sure your biggest piece of DNA is at least 15 cM.



Your DNA Results Checklist

Use the following checklist to familiarize yourself with your testing company, your results, and how to use the information for genealogy research.

I can see the two parts of my test results

Your test results have two parts: a DNA match list, and an ethnicity report. Both are important.

My ethnicity shows places I recognize

Noticing that you are 32% Irish and knowing that you have ancestors from Ireland can help verify that your documented family history is correct.

My ethnicity shows places I don't recognize

The ethnicity results are often representing a time frame before genealogical records. When you see places that aren't yet in your family history, that doesn't mean you should be looking for an ancestor from that place. It could just mean that your family has an ancient tie to that area that you may never be able to document.

My ethnicity has missing places

It's possible that you will have locations documented in your family history that do not appear in your DNA test results. This can happen for a variety of reasons, but most often it has to do with the way these estimates are made.

One of the biggest factors in these calculations are the reference populations used by the testing companies.

In short, if a testing company doesn't have a good representation of the location you are trying to find, it is not going to show up in your DNA.

Additionally, because there is so much genetic overlap between neighboring countries, sometimes your German DNA gets sucked into your British Isles category, or your British ancestry gets siphoned off to your Scandinavian category.

My results vary between companies

There are 3 main reasons you will see differences

between the ethnicity results of the various DNA testing companies.

1. They all use different reference populations (see the table on page 2).
2. They break up the world differently. For example, they may separate Ireland from the rest of the UK, or differentiate French and German.
3. The algorithms used to perform the calculations differ slightly among each testing company.

I see someone I know on my match list

While seeing your sister listed as your sibling on your match list might seem a little obvious, don't forget that it was your DNA that told the company of this relationship. Just seeing her there is evidence that this DNA stuff really works!

I see strangers in my match list

You won't be able to find a common ancestor with every person on your match page. You will want to investigate individuals who appear on your first few pages of matches as they are likely to actually share a single recent common ancestor with you.

My cousin who tested isn't on my list

A cousin may not show up on your match list because you don't share enough DNA. As you can see in the table (on the following page), you will share DNA with a third cousin 90% of the time, and with a fourth cousin only 46% of the time. On the other side of this chart you can see how often you will actually have DNA from a particular grandparent.

If the missing cousin is a close cousin, like a first or second cousin, and they aren't matching, this may indicate a disconnect between your genetic and your genealogical relationships. You need to decide how to proceed with this potentially disruptive information.

I have accessed the Shared Matches tool

Usually called *Shared Matches (In Common With)* at FamilyTreeDNA) this tool allows you to find groups

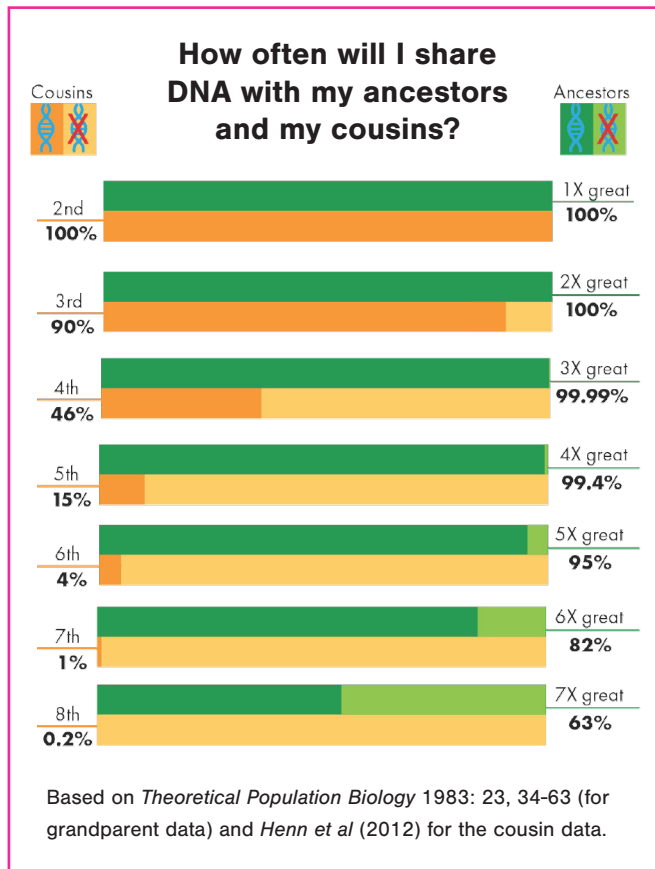
of people who likely all share a common ancestor with each other. If you can look at the trees of two or more of the people in the group and discover how they are related to each other, you should be able to find your ancestor within their shared ancestral line. This process is explained in detail in our Finding Your Ancestor quick guide.

I have used the search box

Every company has a search box at the top of the match page. Try entering surnames or locations you are researching to see which of your DNA matches also list that surname or location in their genealogy. Locations can be especially valuable as surnames can often change or are misspelled. Some companies also provide a list of surnames and locations that are shared between the family trees you have entered and the tree of your match.

I know how to send and receive messages

You will often want to correspond with your matches to learn more about your connection. FamilyTreeDNA lets you email your matches directly, but all other companies use an email brokering service, which means that you will have to use their website to talk to your match, giving you an extra layer of privacy. Make sure you know where to look on the site to see that you have a new message.



Using Ethnicity Results in Genealogy Research

If you are looking for a missing close relative, your ethnicity results offer excellent clues. For example, if you are looking for your grandfather, and your ethnicity

report says you are 22% Italian, and you don't have any other Italian ancestors, it is very likely that your missing person was Italian.

Similarly, if you know the line you are researching is from Ireland, you can look for other matches who have Irish heritage, or who live in Ireland.

Native American and African Heritage

The first challenge in using DNA to investigate Native American or African Heritage is that if your proposed full-blooded ancestor is farther back than a 2X great grandparent, you may not have enough of their DNA for it to register on the test.

Reference populations, or the populations the company is comparing you against, can also be an issue. With Native Americans reference populations are small. African heritage is so deep that there is quite a bit of diversity among different African groups, so again, more reference populations are needed.

If you did in fact have Native American or African DNA (or any DNA not represented in a reference population) that did not coincide with an identified reference population, the company will either force that DNA to a genetically similar category, or categorize it as Unassigned.

Tell The Story Written In Your DNA

Remember that your autosomal DNA test results represent real people who have passed their DNA down to you for safekeeping and documenting. DNA offers you an exciting and unique opportunity to tell their story, which is now your story. Just like any new skill, it will take time to fully understand how to use your DNA results in your family history research, but keep in mind, you don't have to be an expert to find this experience rewarding. The very best way to use this DNA data is to just get started!

Read inspiring stories about DNA discoveries.