

Here at Your DNA Guide we believe your ancestors want to be found, and you are just the person to find them. To give yourself the best chance of success, you need to follow a step-by-step process to maximize the use of the clues in your DNA. So, what are you waiting for? Let's get started!

Are You Ready?

The principles in this guide are meant to be used with test results from a major testing company like AncestryDNA, FamilyTreeDNA, MyHeritage DNA, Living DNA, or 23andMe. There are so many ways to apply your genetics to your genealogy. But before you use this guide, you do need to understand some foundational concepts and have a basic understanding of genetic genealogy. Here is a handy checklist to see if you are ready to move beyond the basics.

Self Evaluation

- I have spent a significant amount of time using my testing company's website.
- I know how to find genealogical information posted by my match.
- I know where to go to see the available genetic details of my match provided by my testing company.

Unknown Parentage?

If you are looking for a very recent ancestor, like a parent or grandparent, you should still use the research methods outlined in this guide. If you don't have any other relatives to test with you, just choose your highest match on your match page and start the process with them, beginning with Step 2 on the next page.

Intermarried Lines?

If researching lines from a small community and/or with frequent intermarriage, you'll need to modify your approach. Please see www.yourDNAGuide.com/endogamy for more instructions.

Identify an Ancestor Using DNA Matches

While every search for a specific "missing" ancestor via DNA testing will be a bit unique, there is a general methodology you will want to follow. We call this process simply The Plan. The beauty of a straight-forward methodology is that once learned, you are never stuck! You just need to identify where you are in The Plan, and then identify the next step. The Plan is summarized below for your quick reference, and is described in detail in this guide.

The Six-Step Plan

STEP 1: Find a Best Known Match (BKM)

STEP 2: Use the Shared Matches tool on that BKM to create a Genetic Network.

STEP 3: Split that network

STEP 4: Identify a group of Leftovers that contains your Best Mystery Matches (BMM).

STEP 5: Find the Generation of Connection for those BMMs.

STEP 6: DO GENEALOGY for these BMMs to try to find out how they are related to each other. Then do more genealogy to figure out how you are related to this related group of matches.



Grouping Your Matches

The foundational principle of genetic genealogy is the fact that your DNA cousins can be divided into groups, depending on which ancestor or ancestral couple they share with you. For example, many testers can divide their entire list into four groups, each group representing a great grandparent couple in their family tree. Learning the techniques that allow you to form these groups will help you identify groups of related people and make it easier to determine how you are related to them, which could lead to important genealogical breakthroughs.

While it is possible to work with one DNA match at a time to discover a common ancestor, the most effective way to use your genetic genealogy results is to work with groups of related people.

STEP 1: Find a Best Known Match

A Best Known Match (BKM) is a DNA match who also descends from the ancestor you are trying to research, based on personal knowledge or genealogical research. Best Known Matches descend through one of that shared ancestor's other children (not the same one you descend through).

This match should be verified, meaning that the amount of shared DNA is consistent with your genealogical relationship. We call this *Checking Genetics vs Genealogy*. To do this:

1. Confirm your match's genealogical relationship to you (Second cousins? One generation removed? Half-cousins?).
2. Next, compare the amount of DNA they are sharing with you to the expected amount for that relationship. You can see the expected number at the Shared Centimorgan Project (ScP), hosted at DNAPainter.com.

At the ScP you will see a table with boxes like the one at the right. In the middle of each box is the average amount of shared DNA for a specific relationship. Ensure the amount of DNA shared with your BKM is close to that number, or at least within the range shown at the bottom of the block.

2C
229
41-492

STEP 2: Create a Genetic Network

A genetic network is a group of DNA matches who all likely share a common ancestor with you and each other. A genetic network is most



efficiently created when you use the Shared Matches tool on a Best Known Match.

You will want to keep track of your networks using a match labeling tool of some kind. These are available at AncestryDNA and MyHeritage DNA, or you can use the Leeds Method with the matches at any of the testing companies. Label your matches consistently with the two surnames of the shared ancestral couple. So if your BKM shares your

Match Labeling Tips

- Label consistently with the two surnames of the shared ancestor.
- Everyone on the shared matches list gets a dot. Everyone. NO EXCEPTIONS.
- Do not remove dots willy-nilly.
- Make a note in the testing company about which matches you used as to make your groups.

ancestors Marcus Stone and Hilda Burnes you would name your network Stone+Burnes.



STEP 3: Split the Genetic Network

Every network represents an ancestral couple and contains three kinds of matches: descendants of that couple, matches descending from the man's ancestors, and matches descending from the woman's

ancestors. That means that every network can be split into two: one representing the man's family, and another representing the woman's family.

If we are researching our female ancestor, we need a way to isolate her DNA matches from her partner's. To do that, we need to use the Shared Matches tool on a Best Known Match, someone who is a descendant of our male ancestor's parents, through one of his siblings.

If you don't have a Best Known Match, you can split the network using the Bottoms Up strategy outlined in *Your DNA Guide—The Book*.

Often, you will need to split your network more than one time. Remember, the goal in splitting your network is to find a group of Leftovers—the matches that relate to the line you want to research. Splitting your networks can take some practice, but once you get the hang of it, you will find it to be a powerful way to find your Best Mystery Matches.



STEP 4: Identify your Best Mystery Matches

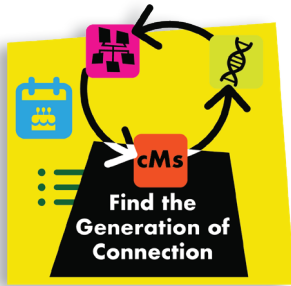
Your Best Mystery Matches (BMM) are the matches who are most likely to help you find your missing ancestor. Your BMMs are the members of your Leftovers group that you identified in the previous step. You will want to focus your attention on those who are sharing the most DNA and those who have a family tree.



STEP 5: Find the Generation of Connection

Your Generation of Connection is the generation in your match's chart where you should start looking for your common ancestor. For each Best Mystery Match in your network, you need to find out how far back in their family tree you need to go before you can hope to find your common ancestor. This will depend three factors: the amount of DNA you share, your age, and the age of your match.

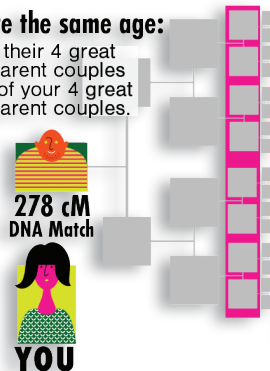
In the three scenarios outlined in the box below, you can see how using birthdays to put yourself on your match's chart can help you determine if you are a generation removed from this DNA match. To be removed just means you are on a different generation.



Once you have decided if you are removed, you can use this information, combined with the total amount of shared DNA with your BMM, to help you determine your likely relationship, and therefore your Generation of Connection.

You are the same age:

One of their 4 great grandparent couples is one of your 4 great grandparent couples.

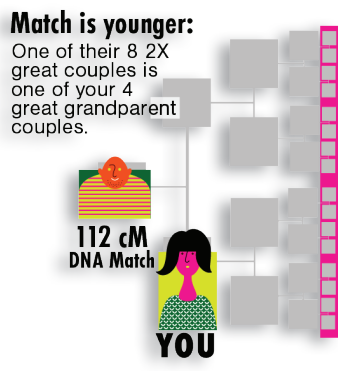


278 cM DNA Match

YOU

Match is younger:

One of their 8 2X great couples is one of your 4 great grandparent couples.

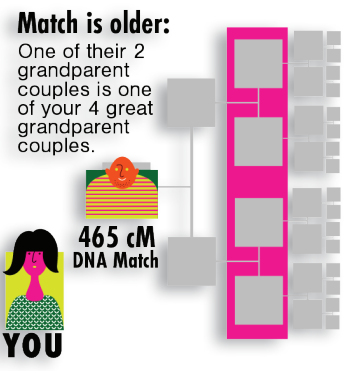


112 cM DNA Match

YOU

Match is older:

One of their 2 grandparent couples is one of your 4 great grandparent couples.



465 cM DNA Match

YOU

For every shared amount of DNA there are a handful of possible relationships that you could have with your match. To find them, take the total amount of DNA you share (measured in cMs) and enter it into the Shared cM Project tool at DNAPainter.com. This tool provides several possible genealogical relationships that fit your shared genetics, as show in the image at the right. You can see that for 235 shared cMs there is a 57% chance you have one of those listed relationships. (If you have tested at AncestryDNA, or MyHeritage DNA, similar information is available on their sites.) If you decided you have a removed relationship, then you will prioritize those relationships, such as half 1C1R, as you explore your connection.

If this all seems like too much work for you, the testing company does provide you with a range of relationship (e.g., 3rd-4th cousins). You can use this information to decide how far back in their tree you need to go (e.g. to their 2X or 3X great grandparents).

Either way, after you identify the Generation of Connection for each of your BMMs, you will have to DO GENEALOGY. So let's get started on that!

Enter the total number of cM for your match here:

235

Or enter %

Then any relationships that fit will stand out below

[Click here for a shareable link to the cM amount above](#)

Most distant common ancestors

Assuming no pedigree collapse or endogamy, and that you're related in just one way, the "furthest" back you might need to go to find common ancestors for a match of 235cM is 3rd-Great-Grandparent or generation 6 on your pedigree chart.

The connection could be closer.

Relationship probabilities (based on stats from [The DNA Geek](#))

[Click on any relationship to view a histogram](#)

[New: View these relationships in a tree](#)

57% Half GG-Aunt / Uncle 2C Half 1C1R 1C2R
Half GG-Niece / Nephew

32% Half 2C 2C1R Half 1C2R 1C3R

10% Great-Great-Aunt / Uncle
Half Great-Aunt / Uncle Half 1C 1C1R
Half Great-Niece / Nephew
Great-Great-Niece / Nephew

2% 3C † Half 1C3R † Half 2C1R † 2C2R

† this relationship has a non-zero probability for 235cM in theDNAgeek's table of probabilities, but is outside the bounds of the shared cM project (99th percentile)

STEP 6: DO GENEALOGY

Once you have identified the Generation of Connection for your Best Mystery Matches, it is time to DO GENEALOGY to push their trees back to that generation so you can find your common ancestor. Remember that your goal is to identify a common ancestor for your BMMs. Once you figure out how they are related to each other, then you know that shared ancestor factors into your own tree as well.



If you see that your matches don't have ancestors listed in the Generation of Connection you identified, then do their genealogy for them to get their lines back far enough for you to see the common ancestor. We call this *building quick and simple trees*. Start by searching for a listed ancestor from your match's tree in online public family trees found at Ancestry, MyHeritage, or FamilySearch (understanding that others' trees may not be entirely accurate). If your match does not have a tree, contact them, keeping it short and asking them to write back even if they don't know the answers to your questions (for tips check out the Your DNA Guide blog).

Focusing on the Leftovers in your genetic network and their Generation of Connection, use your genealogy skills to look for connections between the surnames and locations of these matches. Remember, you don't know which surnames you are looking for, so you are looking for patterns in the genealogical elements of your network's family trees.

If you see a handful of matches who all descend from a common ancestor, you will want to use the What Are the Odds tool (below) to help you figure out how you fit in.

Shared Matches of Matches

Another powerful tool in the DO GENEALOGY step is the Shared Matches of Matches tool available at 23andMe, as well as at MyHeritage and AncestryDNA with a paid membership.

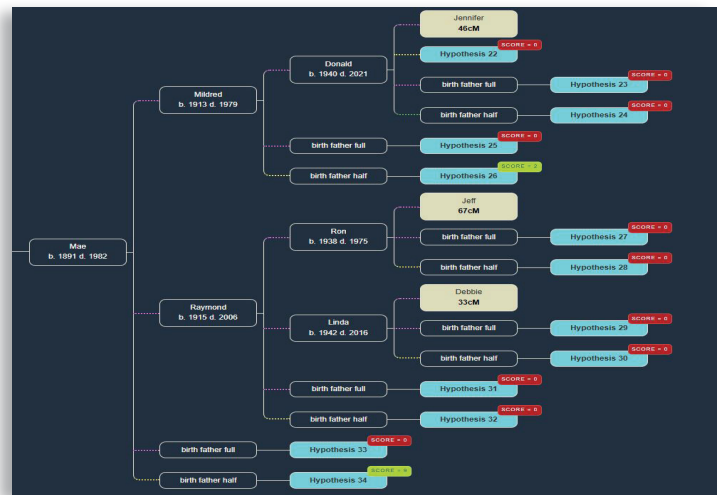
This SMOmS tool allows you to see the amount of DNA your matches are sharing with each other. Use the SMOmS tool to identify close family groups. That way if one of them has a tree, you have a tree that can represent the entire group.

What Are the Odds

Once you have discovered how a handful of your Best Mystery Matches are related to each other, it's time to use What Are the Odds to help you figure out where you fit into the tree. This free tool lets you draw a pedigree chart for your related DNA matches, including the amount of DNA they share with you. You can then add hypothetical locations where you might connect in the tree. The tool will tell you if your hypothesis is genetically possible and how likely it is that one of your hypothetical relationships is a better fit than another.

Pro Tip: The scores shown are relative to one another. So adding more hypotheses will change the numbers but not the overall probability score.

If we add extra hypotheses, the numbers may seem to change dramatically, but the ratios between preexisting hypotheses do not change. The numbers just look bigger and more impressive.



These strategies and more are laid out in detail in Your DNA Guide - the Book. Consult the Book for further explanations, visual aids, and additional resources that will help you understand when you're ready for each strategy and how to use it. Most of all, just remember that this methodology takes practice! So, drum up all the tenacity you can muster and dive in! Your ancestors need you. They want to be found.

