

A Methodology: Identifying your Relatives through your atDNA Results

By Mesa Foard with thanks to Diane Harman-Hoog, the original author of this methodology

Family Tree DNA's test results are used in our examples, but the methodology works similarly for 23andme.

Also see Jim Bartlett's [Successfully Identifying your atDNA Relatives](#)

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The results of your autosomal DNA (atDNA) test are in, and you've got matches!

To determine your exact relationship with a match, you have to identify the common ancestor you share. If you know your family tree, great! You can contact your match and compare trees.

If you're an adoptee or have unknowns in your family tree, there's a clever workaround. You can still learn the names of your ancestors using a process often called "triangulation."

The goal is to figure out who your ancestors are by identifying the ancestors of your matches. This is done by comparing the family trees of two or more matches who are also related to each other.

These matches are "in common with" (ICW) each other as well as you, meaning you are all related on the same side of your tree. So when you figure out who their common ancestors are, you are also identifying your own.

As you discover ancestors through your ICW matches, you can successfully grow your own family tree.

Cutting-edge DNA technology, traditional genealogy and a good tool box can help you find relatives you never even knew existed.

Summary of Methodology

1. Identify matches who are related to each other (ICW)
 - View matches in a chromosome browser
 - Sort matches into sets who share overlapping segments of DNA

- Determine if set members are ICW
 - Identify the ICW matches who share the longest segments of DNA (your closest matches)
2. Build Family Trees
 - Determine if your closest ICW matches have family trees or GEDCOMs
 - Research and expand their family trees
 - Identify their common ancestors
 - Begin building your family tree with the ancestors and relatives you identify
 3. Check for new matches on a regular basis and update trees, chromosome browsers and ICW match lists

Recommended Tools and Resources

- Spreadsheet software to sort and analyze matches. Microsoft Excel 2010 is used in Option 2.
- Jworks – for those using Excel spreadsheets <http://dnagedcom.com/Auto/JWorks.aspx>
- And/Or Kworks <http://dnagedcom.com/Auto/KWorks.aspx>
- Genealogy software to build trees.
 - Ancestry.com is recommended so you can utilize their “hint” system. As you build trees, Ancestry automatically searches its numerous databases to provide information for the people in those trees. This system can help you expand trees by finding more relatives through census records, other family trees, city directories, obituaries, etc. It’s well worth the subscription price.
- Family trees or GEDCOMs of your matches
 - A GEDCOM (pronounced JED-com), or **GE**nealogical **Data COM**munication, is a computer file format for family trees that can be used by most genealogy programs, including Ancestry.com.
- A free account on www.dnagedcom.com
 - This awesome suite of tools created by Rob Warthen and other volunteers automates many processes to make it easier to identify relationships with your matches. Features are always being updated and added.
- A free account on www.gedmatch.com.
 - Another great set of free tools to analyze your test results, as well as discover new matches. It’s like taking another DNA test for free and having another pond to fish in.
- Subscriptions to the DNAAdoption and AdoptionDNA_Tools newsgroups on Yahoo!
 - In these robust newsgroups, many dedicated experts, including search angels, genetic genealogists, birth families who have successfully discovered bio family members through DNA and IT gurus answer questions, share information, and provide updates on new ways to identify your DNA relatives.
- A **Cousin Chart** to understand relationships within families
- A Master File or Spreadsheet to track your matches.

I. Identifying your ICW Matches

Many tools are available for you to figure out how you are related to a match. Here, we're covering two: Family Tree DNA's site tools, and DNAGedcom.com tools for those already comfortable using spreadsheets.

Option 1: Using FTDNA's Tools

Log on to your FamilyTreeDNA.com account and click "Matches" on the MyFTDNA page to review your results.

Tip: You can also download your match list into a text file or spreadsheet by clicking the appropriate icon at the bottom of the web page.

Character Cards

Your closest matches are automatically listed first and displayed in "character cards" (Figure 1). A character card provides details about your match. You can also email your match, save comments, view a family tree (if provided), determine when the match was made, get an idea of how you might be related, see the total **shared cMs** (a genetic unit of measurement to define the length of a shared segment of DNA) and review the surnames of their ancestors (if provided).

Tip: Click or hover over an element in a character card to use it or learn more about what it does. You can also click "Page Tour" on the top right of the screen for a brief tutorial.

Two helpful tools are also available in your character cards to determine relatedness among your matches: "**Common Matches**" and "**Compare in Chromosome Browser.**"

Click "Show Full View" above the first character card on the page to expand the cards for all matches, or click the arrow below a profile picture to expand an individual card.

More information may be available in this expanded view, such as other tests the match has taken, their Y- DNA and mtDNA test results (if available), the longest shared block of DNA you share and if you match on the X-chromosome.

Tip: The Comment and Tree icons below a match's name are green when they contain information. On Marion's card (Figure 1), the Comment and Tree icons are green, which means there is a saved note and a family tree available.

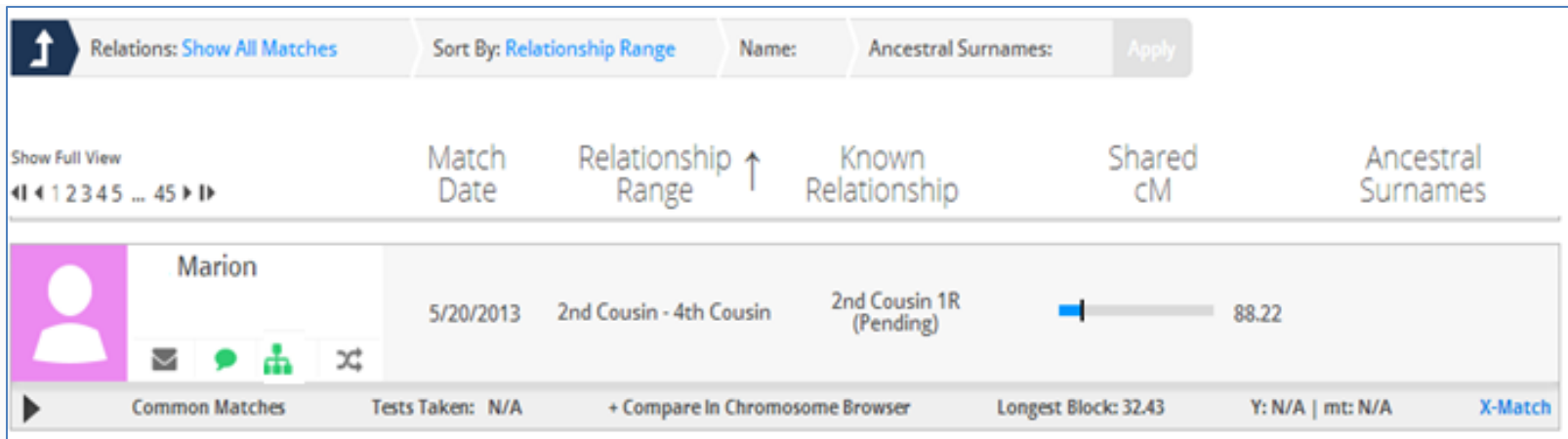


Figure 1: Family Finder Character Card

Filtering and Sorting Matches

You can filter matches by selecting different options in the gray rectangle at the top of the match list (Figure 2). Click on the appropriate title to narrow your matches by relations, relationship range, search for a specific match by name, and search for matches who have a specific ancestral surname. To turn off filters, click the navy blue box with the arrow.

Matches can be sorted in ascending or descending order by clicking “Match Date,” “Relationship Range” and “Shared cM.”

Tip: If you hover over any of these titles for about a second, a short definition will pop up.

To find new matches, click the Relations box and select the “New Since” from the drop down list and enter a date.

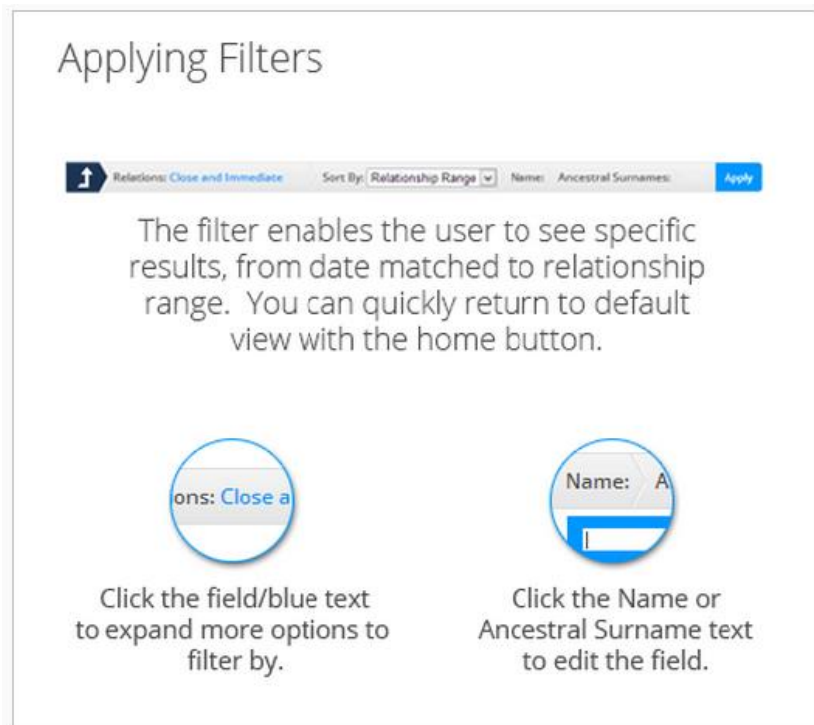


Figure 2 Applying Filters from FTDNA's Tutorial

Viewing Matches in Family Finder's Chromosome Browser (CB)

Family Finder's Chromosome Browser is a cool visual representation of the DNA you have in common with your matches. The CB will display color-coded segments where you and your matches' DNA overlap on certain chromosomes, how long these segments are and how many there are (Figure 3). The longer the segments, and the more segments there are, the more closely you are related.

You can also see if any of your matches share overlapping segments with each other on the same chromosomes. This could indicate that your matches are related to each other, as well, and may be good candidates to research for shared ancestors.

Access the CB in one of two ways:

1. On FTDNA's main menu, click "Family Finder" and select "Chromosome Browser." Choose up to five matches from the list on the bottom left of the screen to compare. FTDNA has an excellent step-by-step tutorial for using the Chromosome Browser. Click the "Chromosome Browser Tutorial" button on the left side of the screen to see this short demonstration.

2. From individual character cards, you can select to view a match in the CB by expanding the card and selecting “Compare in Chromosome Browser.” The selected match will appear at the top of the page. Choose up to five matches and click the “Compare” arrow.

In Figure 3, Lynn has selected Arthur, Marion, Kathryn, Elisabeth and Bonnie to view in the CB.

You can see that there is overlap on Chromosomes 9, 10 and 11 below. On Chromosome 11 in particular, four of the five selections overlap, indicating that they could all be related to each other.

It’s important to remember that atDNA is randomly inherited from your ancestors. So even though there are overlapping segments on these chromosomes, a match could be related to your maternal line, or a match could be related to your paternal line.

The ICW tool determines if overlapping matches are really related to each other. If they are ICW, then you and your matches are most likely related on the same side of your tree.



Figure 3 Lynn's Chromosome Browser

Determining if Overlapping Matches are Related to Each Other

FTDNA Common Matches Tool

The Common Matches tool provides a quick way to determine if your matches are related to each other. Expand a character card or click the Double Arrow shortcut icon to use FTDNA's Common Matches tool (Figure 4).

Select "In Common With" to see a list of the matches of your match. You can also download this list into a text file or spreadsheet by clicking the appropriate icon at the bottom of the page.

Tip: Running the Common Matches tool is also quick way to see which ICW matches have shared their family trees.

Select "Not In Common With" to place a match on one side of your tree or the other. In most cases, if they don't share any DNA with each other, they are not related. This indicates that one match is from the maternal side and one from the paternal side (but not which).

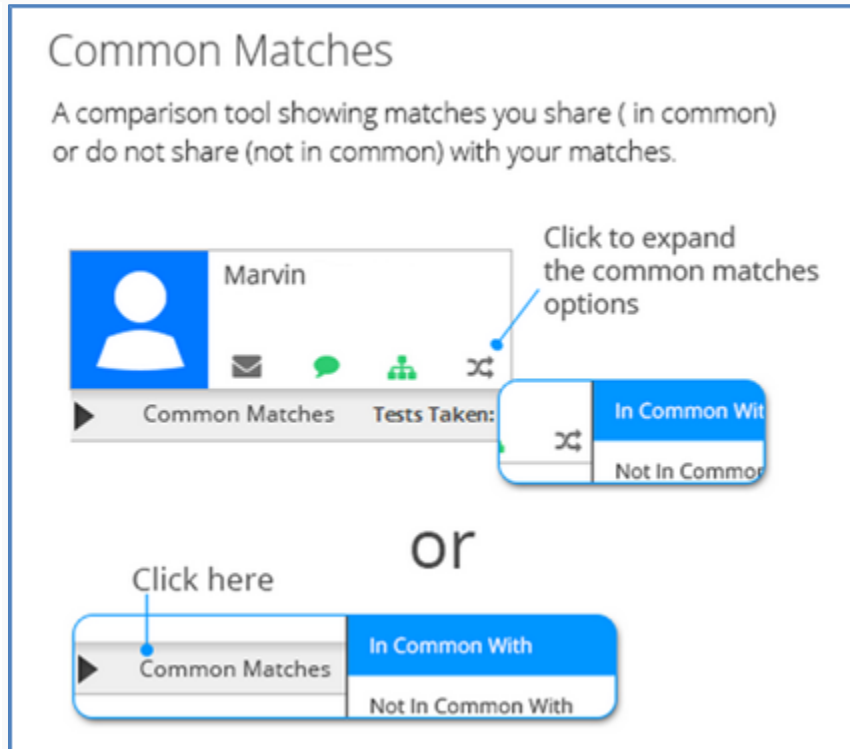


Figure 4 Common Matches from FTDNA's Tutorial

We know that Marion, Kathryn, Elisabeth and Bonnie share overlapping segments of DNA (Figure 3). But to see if they are actually related on the same side of her tree, Lynn runs the Common Matches tool.

She opens Marion's character card and clicks the double arrow icon under her name. She then selects "In Common With." Marion's name appears at the top of the page and her related matches are listed below (Figure 5).

Both Kathryn and Elisabeth are in list, so they are related to each other as well as to Marion on one side of her family tree. However, Bonnie is not in the list so she is not related to Marion.

Common Matches > In Common With > Marion		Match Date	Relationship Range ↑	Known Relationship	Shared cM	Ancestral Surnames
	Kathryn 	5/20/2013		2nd Cousin 1R	116.71	Jarrell (North Carolina)...
	Rodney 	5/20/2013	2nd Cousin - 4th Cousin	Distant Cousin (Pending)	50.39	Braswell (North Carolina, Virginia, UK)...
	Chris 	11/1/2013	3rd Cousin - 5th Cousin	Distant Cousin (Pending)	52.87	evans (alabama)
	Elisabeth 	5/20/2013	3rd Cousin - 5th Cousin	Distant Cousin (Pending)	44.80	jarrell (north carolina, us)...
	Ray 	1/5/2014	3rd Cousin - 5th Cousin		40.73	

Figure 5 Common Matches for Marion

FTDNA Matrix

Another visual way to determine if any of your matches are ICW each other is run the Matrix tool. Matches will display in an easy-to-read grid (Figure 6).

From FTDNA's main menu, click "Family Finder" and then scroll down to "Matrix." Add up to ten matches at a time to the matrix by selecting a name from the Matches list on the left and then clicking the Add button. Your selections will display on the right.

Remove matches from the matrix by clicking a name in the Selected Matches list and then clicking the Remove button.

The matrix displays under the list of selections entered.

If any of the selected matches are ICW, they are marked with blue checkboxes.

Just like in the Common Matches list, you can see that Marion, Kathryn and Elisabeth are related and Bonnie and Arthur are not.

Matches

- Gina
- John
- Brian
- Vickie
- Donna
- Randolph
- Eddie
- Gail
- Noel
- Connor

Selected Matches

- Arthur
- Marion
- Kathryn
- Elisabeth
- Bonnie

Matrix Matches					
	Arthur	Marion	Kathryn	Elisabeth	Bonnie
Arthur					
Marion			✓	✓	
Kathryn		✓		✓	
Elisabeth		✓	✓		
Bonnie					

✓ - This person is identified as a match.

Figure 6 FTDNA Match Matrix

Option 2: DNAGedcom Tools: Crunching the Numbers

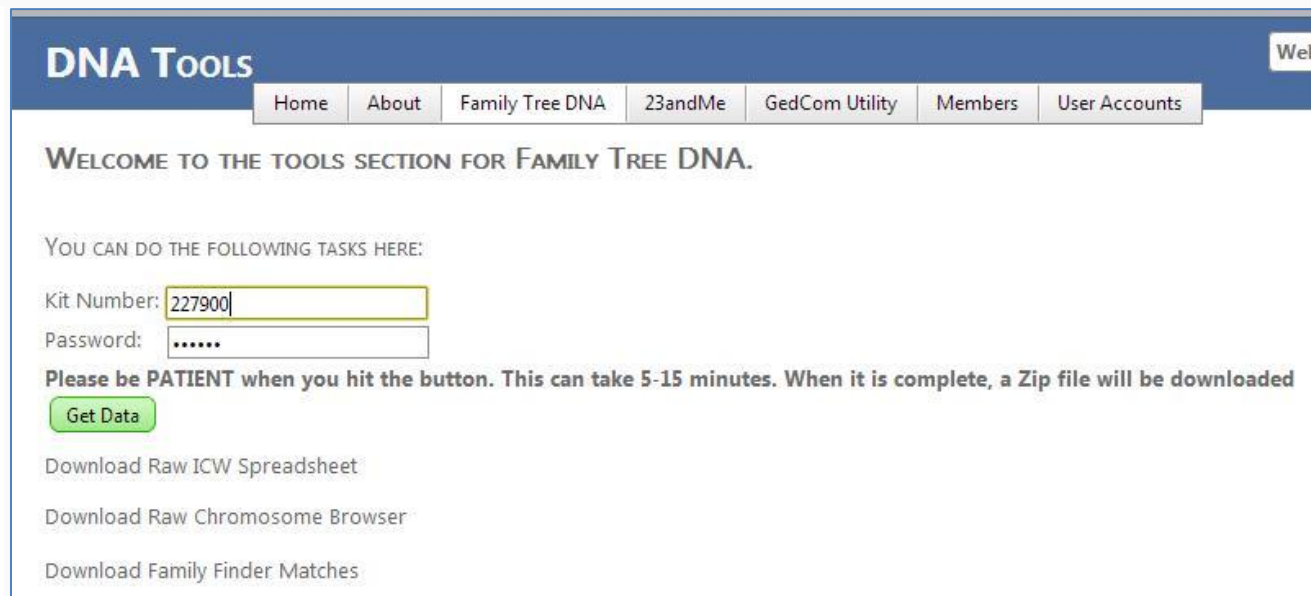
But what if you have hundreds of matches (gulp) to sort through? Isn't there a better way than working with only a handful at a time?

Yes, there is, thanks to DNAGedcom.com. Rob Warthen and many other generous volunteers have created a suite of tools that can save you hours of time, as well as find relatives you may have otherwise missed. If you haven't done so already, [register](#) for your free account. DNAGedcom.com will automatically generate files with ALL of the data for ALL of your matches.

Note: Please consider making a donation if these tools save you elbow grease and grief by clicking the Donation button on DBAGedcom.com. All donations are used to offset the costs of web hosting, server storage and development of new tools.

Download your Data Files

1. Log on to DNAGedcom.com.
2. Select the Family Tree DNA link and enter your FTDNA kit number and password (the same kit number and password you enter at FTDNA) as shown in Figure 7. **Note:** Your FTDNA password is not stored or shared.
3. You can also check the box on this page to get the gedcoms in a bulk download. Directions for this are [here](#).



The screenshot shows the 'DNA TOOLS' section of the DNAGedcom.com website. The page has a blue header with the title 'DNA TOOLS' and a 'Welcome' button. Below the header is a navigation menu with links for 'Home', 'About', 'Family Tree DNA', '23andMe', 'GedCom Utility', 'Members', and 'User Accounts'. The main content area is titled 'WELCOME TO THE TOOLS SECTION FOR FAMILY TREE DNA.' and lists the following tasks: 'YOU CAN DO THE FOLLOWING TASKS HERE:'. There are two input fields: 'Kit Number:' with the value '227900' and 'Password:' with six dots. Below these fields is a green button labeled 'Get Data'. Underneath the button are three links: 'Download Raw ICW Spreadsheet', 'Download Raw Chromosome Browser', and 'Download Family Finder Matches'. A note below the input fields reads: 'Please be PATIENT when you hit the button. This can take 5-15 minutes. When it is complete, a Zip file will be downloaded'.

Figure 7 DNAGedcom.com Family Tree DNA Page

4. FTDNA will automatically download a compressed file to your computer. This “zipped” file actually contains three files: your complete Chromosome Browser, your Family Finder matches and your ICW file.
5. **Tip:** A *.zip file temporarily shrinks large files so that they can be transmitted faster. These compressed files have to be “unzipped” to open them.
6. Unzip this file to the directory of your choice (right-click on the .zip file and select “Extract All”). All three files will have the *.csv extension and begin with your FTDNA kit number (Figure 8).

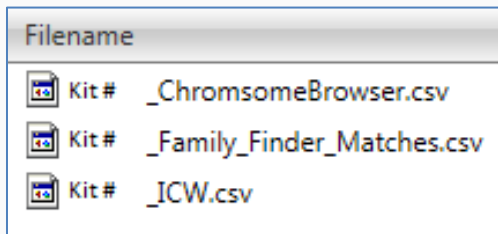


Figure 8 DNAGedcom Files

Tip: A .csv file is a text file of data that can be formatted and analyzed in a spreadsheet. If you’re unfamiliar with spreadsheets, Microsoft offers [free Excel 2010 training](#) courses online. Search YouTube and the web to locate videos and tutorials for older versions of Excel.

If you prefer not to use the zipped file, then after your files are generated you can ignore the downloaded zip file and go to the members tab. Select your user name on the left screen and your file list will open on the right screen. Click on the files to download to your download folder.

Now you’re ready for some serious crunching!

Expand the Family Finder Match List (File 1)

This is the list of all of your matches from Family Finder. It also contains match names, your suggested relationship, amount of shared DNA and email addresses (Figure 9).

Open the file and click the gray arrow (circled in orange) on the left side at the top of the spreadsheet. This highlights all of the data. Then hover over the right border at the top of Column A. When the cursor turns into a cross shape, double-click. Each column will automatically expand to display its contents.

Save the file.

	A	B	C	D	E	F	G	
1	Full Name	Match Date	Relationship Range	Suggested Relationship	Shared cM	Longest Block	Known Relationship	E-mail
2	Mary	12/4/2013	2nd Cousin - 4th Cousin	3rd Cousin	80.34	36.55		
3	Richard	1/5/2014	3rd Cousin - 5th Cousin	4th Cousin	38.78	35.25		
4	Jim	12/4/2013	2nd Cousin - 4th Cousin	3rd Cousin	65.82	34.63		
5	Marion	5/20/2013	2nd Cousin - 4th Cousin	3rd Cousin	88.22	32.43	2nd Cousin 1R(Pending)	
6	Lewis	5/20/2013	2nd Cousin - 4th Cousin	3rd Cousin	55.69	30.44	Distant Cousin(Pending)	
7	Allie	1/5/2014	3rd Cousin - 5th Cousin	4th Cousin	40.73	29.61		
8	Julie	5/20/2013	2nd Cousin - 4th Cousin	3rd Cousin	56.76	29.48	Distant Cousin(Pending)	
9	Ben	7/25/2013	2nd Cousin - 4th Cousin	3rd Cousin	45.43	27.56	Distant Cousin(Pending)	
10	Tina	5/20/2013	2nd Cousin - 4th Cousin	3rd Cousin	53	27.41	Distant Cousin(Pending)	
11	Randy	5/20/2013	3rd Cousin - 5th Cousin	4th Cousin	39.88	27.27	Distant Cousin(Pending)	
12	George	5/20/2013	3rd Cousin - 5th Cousin	4th Cousin	38.68	27.11	Distant Cousin(Pending)	

Figure 9 Sorted Family Finder Matches

Organize the Chromosome Browser Spreadsheet (File 2)

In order to find common ancestors, you must identify overlapping DNA segments, then determine which ones are ICW with each other. You then need tree or gedcom information to find out where their trees overlap.

Create Overlapping Sets for Each Chromosome

In the past, this next process took hours, but the team has just announced some new tools to do this process for you.

If you have Excel you can go to [Jworks](#). You start the Excel program and enter your kit #. The kit # is the part of the file name before the underline. You may have to set your Excel to run macros (see the link on the tool for directions. Be sure to read the [directions](#) and to use this file for troubleshooting if you have any problems. After you supply the kit #. The program will process the chromosomebrowser.csv file and the ICW.csv file and produce your grouped sets of overlapping DNA Segments. At the right side, is a matrix which shows you which pairs or groups have ICW with each other. The input files must be in the same folder with the Jworks spreadsheet and the output file will be written there

No matter what spreadsheet program you have you can go to [Kworks](#). This is a server based program. You run the program and select the files that you want to use. Please be sure to read the [directions](#) on the link. This program downloads the result to your download folder on your computer. The input files must be in csv format.

Identify the Most Promising Matches in the Chromosome Sets

As mentioned, there are three criteria to identify the common ancestor of your matches:

1. They have to share overlapping DNA segments.
2. At least two members in a set have to have ICW status.
3. Those ICW members have to have a family tree or GEDCOM available.

Start with the sets that have the longest segments and meet all three conditions. In general, the longer the segment, the closer the relationship. It is much easier to work with a 2nd cousin than a 5th.

II. Build out the Family Trees of the Promising Matches

Now you can research the common ancestor your ICW matches share using traditional genealogy and some extra tools in your tool box.

After you've chosen the sets with the longest segments to investigate, now consider the people with the most intersections, such as Marion, Elisabeth and Kathryn on Chromosome 11.

Try to find their ancestor first by comparing GEDCOMs using the [GCU utility](#) or the GEDCOM utility on [Gedmatch.com](#). You might get lucky and the common ancestor is immediately obvious.

If not, you will need to research their trees to add more relatives for each match. This is where an Ancestry.com account will be very helpful (you can get it by the month).

Find your Common Ancestor

Your common ancestor is likely a generation or two farther back than the predicted relationship. For instance, if the prediction is for 2nd cousins, you share great-grandparents, but you'll most likely find the relationship at the great-great or 3rd great grandparent level.

- Create (if necessary) and upload the [GEDCOMs](#) of your ICW matches in the Trees section on Ancestry.com.

- Use Ancestry's hints to discover new people in the family and build the trees up, down, and sideways. Expand them up to the last non-US generation, i.e., if the family came on the Mayflower, a tree should include the last generation living in England, if possible. Expand them down to living relatives, if possible.
 - **Tip:** The identities of living people are usually private in family trees. To identify living family members, check the obituaries of their parents or contact your match for the information.
- Make a list of all surnames in each match's tree.
- Find matching surnames among the GEDCOMs.
- Also look for birth places, death places, places of residence, etc., in each GEDCOM which may point you to the common ancestor.

Here is a little table (Figure 15) for your reference to help you concentrate on a particular generation when searching for your common ancestor. The dates will vary depending on actual ages.

Cousin	Common grandparents	Born 1890s
2 nd cousins	Common great grandparents	Born mid 1800s
3 rd cousins	Common 2 nd great grandparents	Born early 1800s
4 th cousins	Common 3 rd great grandparents	Born mid to late 1700s
5 th cousins	Common 4 th great grandparents	Born mid 1700s
6 th cousins	Common 5 th great grandparents	Born early 1700s

Figure 10 Shared Ancestor Ranges to Search

Note: Due to the randomness of DNA, not all relationships are precise. So when you have predicted 2nd or 3rd cousins, you may want to check for common ancestors even though they are not ICW. Do the ICW first and revisit the calculations after you have done them. Relationships have been found using this method.

Ancestor Found!

You're very close to finding that elusive name! Perhaps it's the first biological family name you've seen, and it will be an exciting discovery.

If you haven't yet identified the common ancestor you share with your best matches, download GEDCOMs of the expanded trees you've built and compare these again using GCU or Gedmatch. You will probably find the ancestor now.

Lynn, Marion, Kathryn and Elizabeth are predicted to be between second and third cousins. Lynn expanded Marion's tree on Ancestry.com, as well as Elisabeth's and Kathryn's, from their GEDCOMs and the Ancestry's hint system.

Since they were all predicted to be related in the second-third cousin range, Lynn built the three trees out to the 4rd great grandparent level for each ICW match (and actually tried to go back as far as she could to find more surnames, particularly on maternal lines).

Then she compared the trees again using the GCU utility. This time, a match was found.

Now Lynn can add this common ancestor to her own tree. She also has three newly-confirmed relatives and their lines to add, as well. These are Lynn's confirmed biological relatives.

Lynn's tree is finally growing branches!

Tip: Family Finder is constantly adding new matches to their database, so check often for new matches. Lynn started with one GEDCOM and a few names. Now the family tree of one of her bio parents has over 1,500 people!

Figure 16 maps out the relationships with Lynn's cousins in Ancestry's Relationship Finder (in the Profile view) and shows how these cousins are actually related through their common ancestor.

Family Tree DNA's estimated relationship range was accurate. Marion, Elisabeth and Catherine are 2nd cousins and 2nd cousins once removed.

Lynn's next goal is to identify as many descendants of her newly-identified ancestor as she can. She knows one of her parents descends from this ancestor.

Can you spot their common ancestor in Figure 16 below?

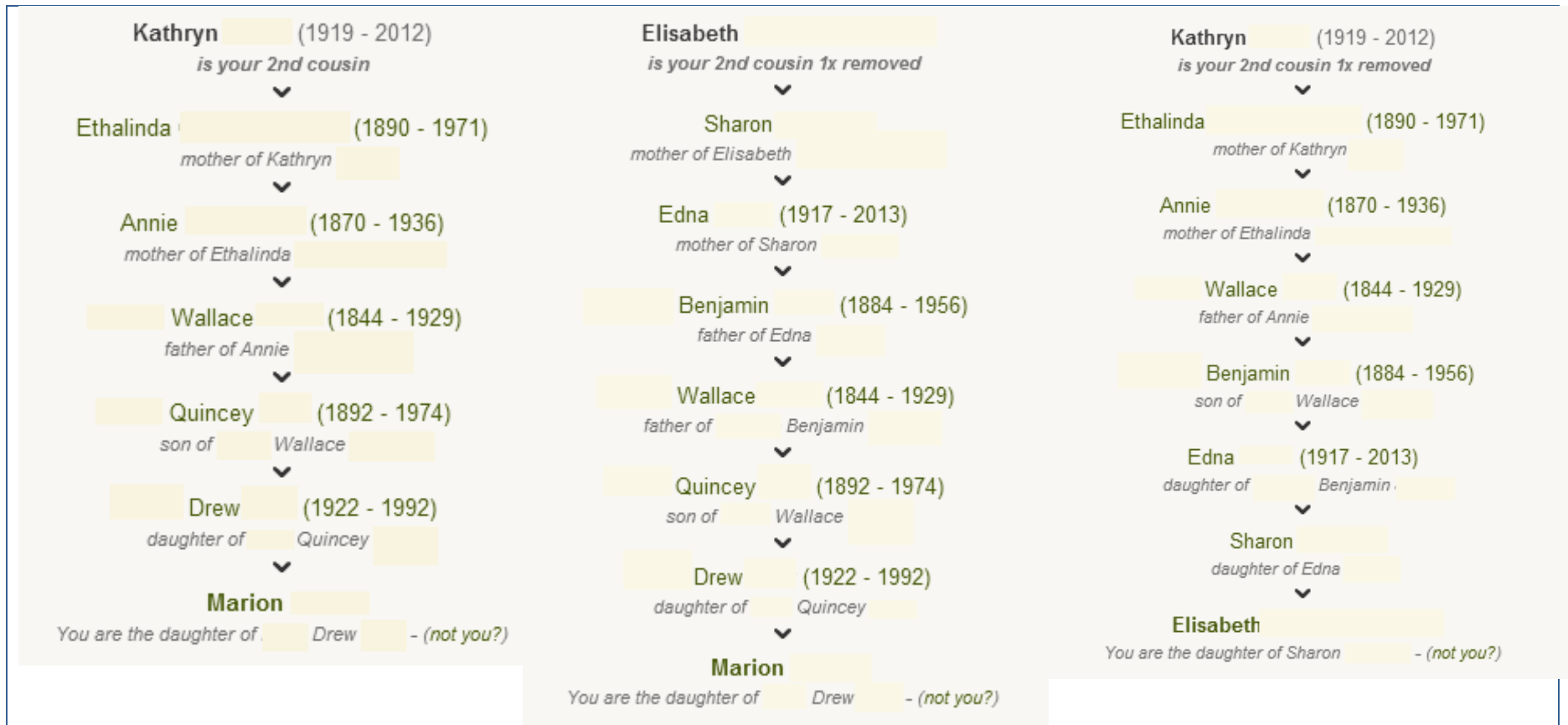


Figure 11 Lynn's Confirmed Relatives

The common ancestor is Wallace.

Good luck to you and may your persistence and patience pay off!

For further, more detailed training see the [Online Classes](#) available on DNAAdoption.com. These classes are moderated by experts who have successfully used DNA many times to identify relatives.

Credits: This methodology was developed by Diane Harman-Hoog and Gaye Tannenbaum with programming help from Robert Warthen. There were many others on the DNAadoption and DNA-Newbie yahoo groups who provided answers. Unfortunately this probably will not work with Ashkenazi lines or may be too difficult to work with them, due to the nature of Ashkenazi DNA. But we are working on methods to work with Ashkenazi DNA as well.