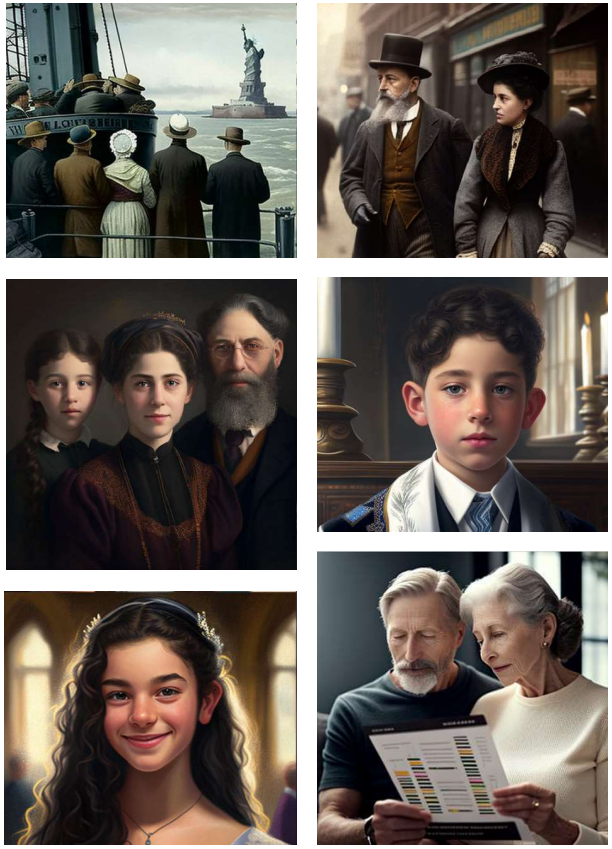


I received my DNA results!

Now What Do I Do With My Thousands of Matches?

Ben Kempner
Benjamin.Kempner@gmail.com

JGSSN
March 19, 2023

Agenda

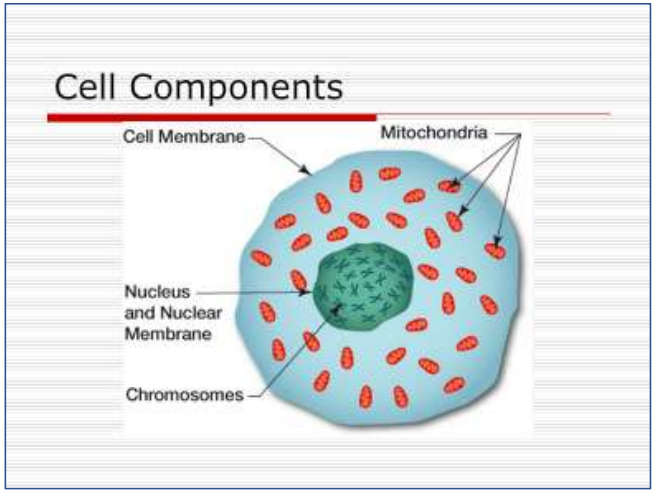
- DNA and DNA testing
- A little bit of science & history
- DNA test results
- Selecting your “best matches”
- Tips for contacting your “best matches”

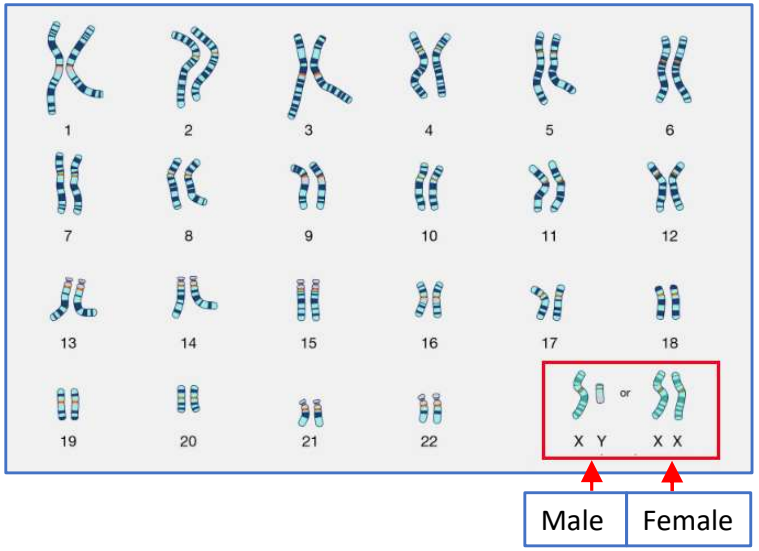
What is DNA?

DNA is the molecule inside cells that contains genetic information.

DNA molecules are passed from one generation to the next.

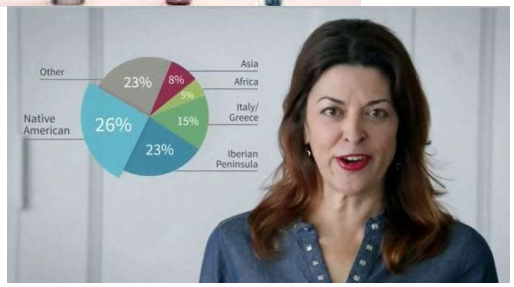
Each cell contains 23 pairs of chromosomes (23 from Mom + 23 from Dad).





Why should you get a DNA test?

- Ethnicity
- DNA matches



Which companies do DNA testing?

Company	Test Type	Comments
AncestryDNA	Saliva	More testers than all other companies
23andMe	Saliva	Can also provide traits and genetic health risks
MyHeritage	Swab	Tools to analyze DNA matches, health tests + lots of photo tools
FamilyTree DNA	Swab	Proved atDNA, Y-DNA, and mtDNA tests Will send kit to funeral home. *
Living DNA	Swab	Specializes in British & Irish ancestry

ancestry.com

MyHeritage

FamilyTreeDNA

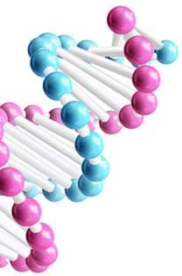
23andMe

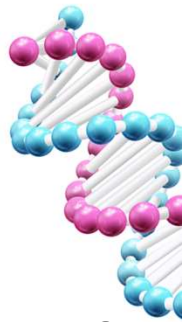
Living DNA

* https://www.yourdnaguide.com/ydgblog/dna-testing-deceased-dying#:~:text=DNA%20testing%20for%20a%20relative,is%20recently%20deceased%20is%20possible

How many DNA tests has each company done?

- Ancestry = 23M
- 23andMe = 12.8M
- MyHeritage = 6.5M+ (#1 tester in Europe)
- Family Tree DNA = 1.2M
- Living DNA = 300K





Source: https://isogg.org/wiki/Autosomal_DNA_testing_comparison_chart

Which companies should I test with?

Ancestry

And / or

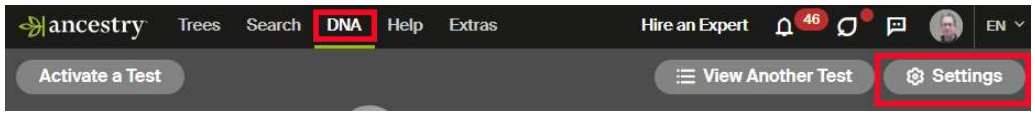
23andMe

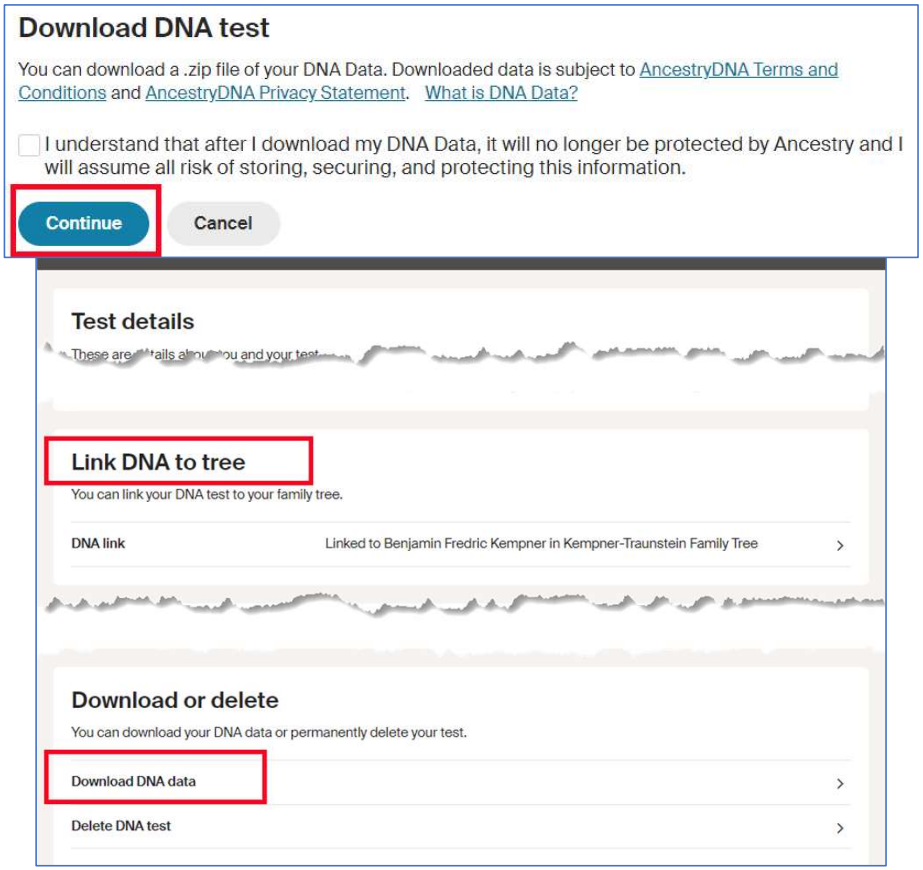
Then transfer DNA to MyHeritage & FTDNA

Downloading is easy (and free)

Example: download DNA file from Ancestry

1. DNA → Settings
2. Consent and Continue
3. Make sure you've linked your DNA to your tree
4. Download

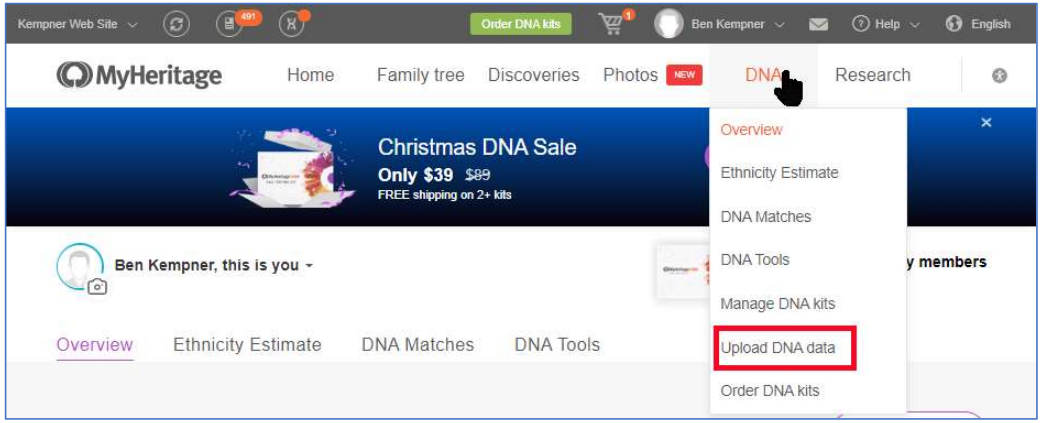


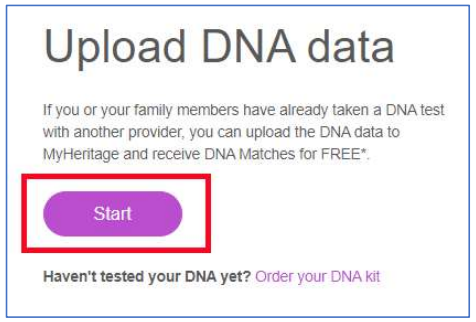


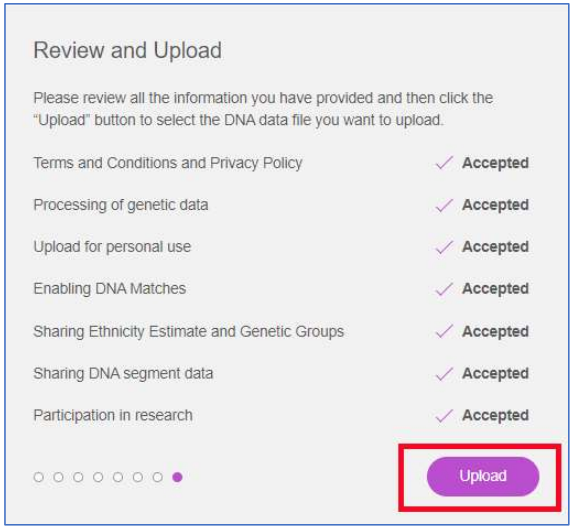
Uploading is easy (and free)

Example: upload DNA file to MyHeritage

1. DNA → Upload DNA data
2. Make consent choices
3. Select the DNA file that you downloaded
4. Upload





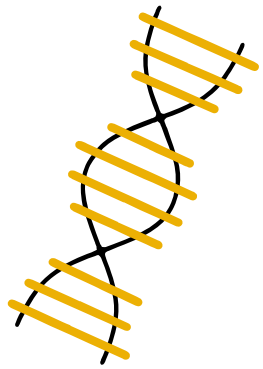


Q: What do you get for free?

A: You will see all your DNA matches for people who tested or uploaded their DNA to MyHeritage (or FTDNA or Living DNA or GEDmatch, etc.)

If you want to use the DNA analysis tools such as a chromosome browser that the company has, you pay:

- MyHeritage = $29
- Family Tree DNA (FTDNA) = $19
- Living DNA – free (limited tools)
- GEDmatch = free, advanced tools = $10/month



Wow – so many matches!

My DNA matches	
Ancestry	157,645
23andMe	1,502 (max that they show)
MyHeritage	21,274
Family Tree DNA (FTDNA)	35,132
TOTAL	215,553

If you are genetically Jewish, you may ask these Four DNA Questions:

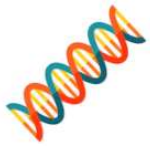
WHY IS MY DNA DIFFERENT FROM ALL OTHERS?

WHY DO I HAVE SO MANY MATCHES?

WHY DO SOME OF MY MATCHES HAVE SO MANY DNA SEGMENTS?

WHY DO I HAVE SMALL SEGMENTS OF SHARED DNA?

Just a little bit more science…



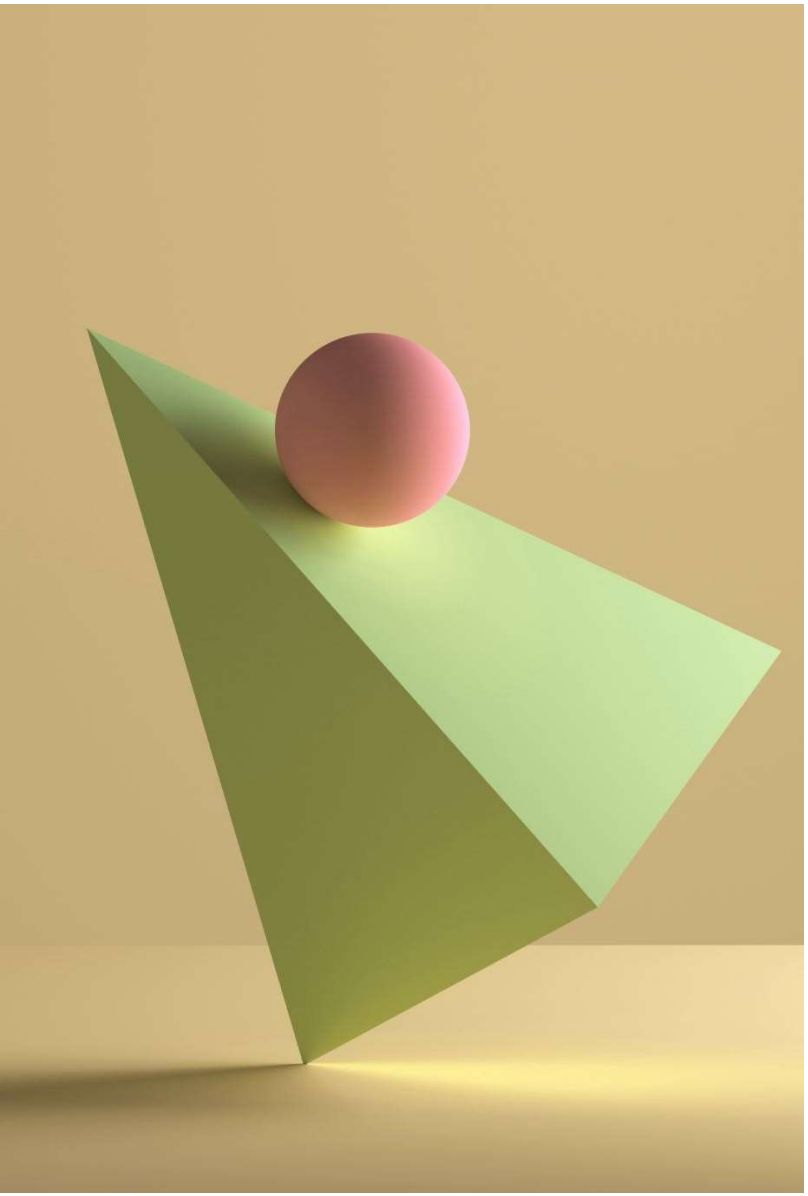
Where does your DNA come from?

Source of DNA	% of your DNA	What genetic genealogists call this
1. From your parents and their ancestors 	Most shared DNA	Identical by Descent (IBD)
2. Many people from same population carry the same DNA segment(s) (endogamy) 	Depends on your ethnicity or location	Identical by Population (IBP)
3. By chance 	If it happens, it's with very short segments (< 5 cM)	Identical by Chance (IBC)

What is endogamy?

Practice of marrying within the same ethnic, cultural, social, religious or tribal group

Over several generations, descendants of this population begin to share many segments of DNA with each other

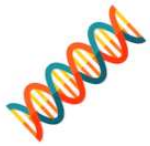


A few examples of endogamous groups

- Jews
- Polynesians
- Low German Mennonites
- Amish
- Acadians or Cajuns (French settlers in what is now Nova Scotia)
- French Canadians
- People from many Arabic countries
- Newfoundlanders
- People from many islands
- Members of the Church of Jesus Christ of Latter-day Saints

How did Jewish endogamy occur?

A little bit of history…



Ashkenazic, Sephardic and other Jews

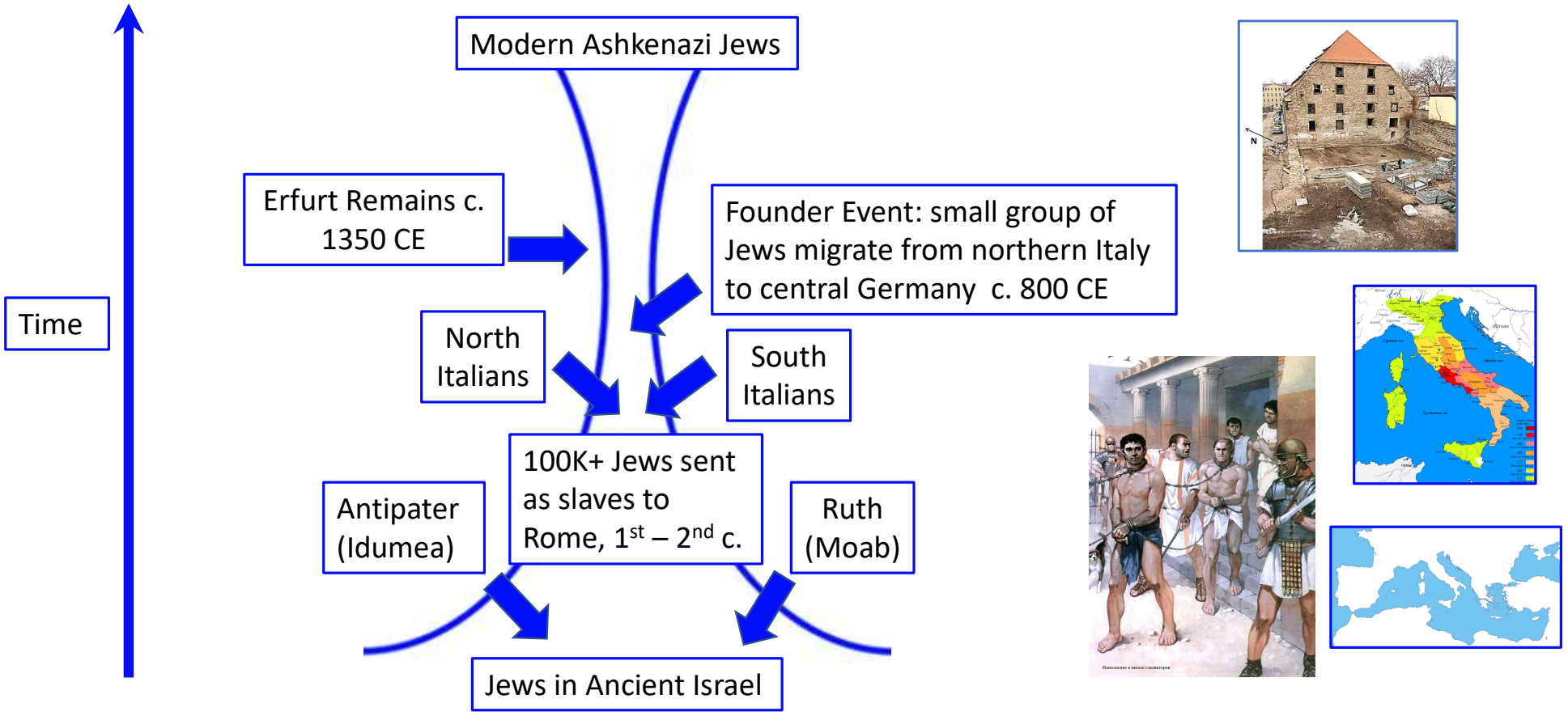
Video source: https://www.youtube.com/watch?v=M-TjGJ9bgKQ&t=125s

Ancient DNA from medieval Germany tells the origin story of Ashkenazi Jews

- 2013 construction to build a parking lot in Erfurt, Germany uncovered a 14th century Jewish cemetery.
- Study published in 2022 led by scientists from Harvard and the Hebrew University of Jerusalem
- Results suggested that Ashkenazi Jews originated in this area sometime before the 14th century

Sources: https://www.mpg.de/19586285/ancient-dna-from-medieval-germany-tells-the-origin-story-of-ashkenazi-jews
https://www.smithsonianmag.com/history/how-construction-of-a-parking-lot-uncovered-new-insights-about-medieval-jews-180981222/

The migration from the Middle East through Italy to Germany

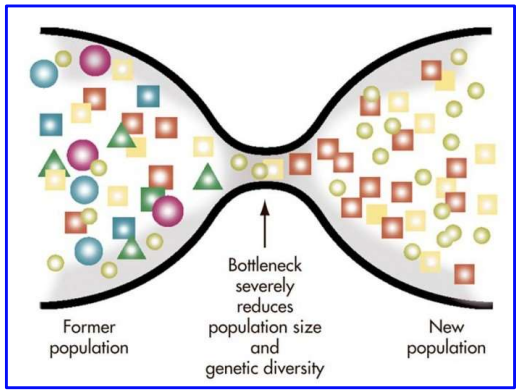


Source: https://www.youtube.com/watch?v=89D2RDgzLLE&t=723s

Founder Event and Genetic Bottleneck reviewed

Founder Event:

- Occurs when a small group becomes separated from the larger population.
- Over time, new subpopulation (i.e., Ashkenazis) will have the genes of the initial small group

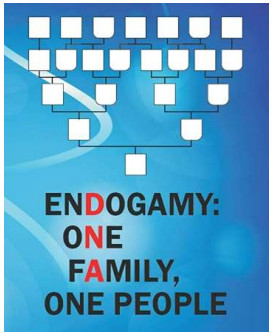


Bottleneck:

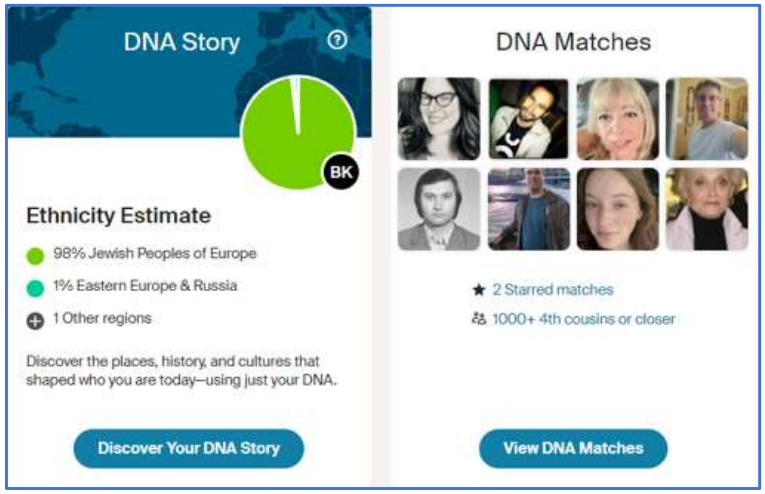
- Occurs with a sharp reduction in the size of a population – i.e. the migration from Italy to Germany
- Bottlenecks reduce the variation in the gene pool & cause people to share the SAME SEGMENTS OF DNA – endogamy!

Ashkenazi Jews have strong levels of endogamy due to:

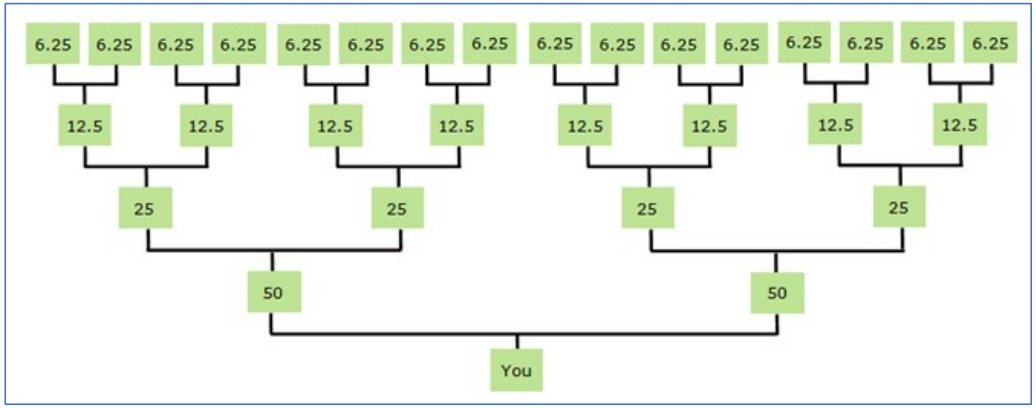
- Traditional marriage within the religion
- Isolation of the founder group & the severe genetic bottlenecks



Back to our DNA tests…what do we get and what do we do with our thousands of matches?



Ethnicity Estimate DNA Matches



At seven generations back, less than 1% of your DNA is likely to have come from any given ancestor

Ethnicity Results

DNA Matches

What information do you see for each DNA Match?

Match Name

Estimated Relationship

Do they have a tree?

Tree choices
- No tree
- Unlinked tree
- Private linked tree
- Public linked tree *

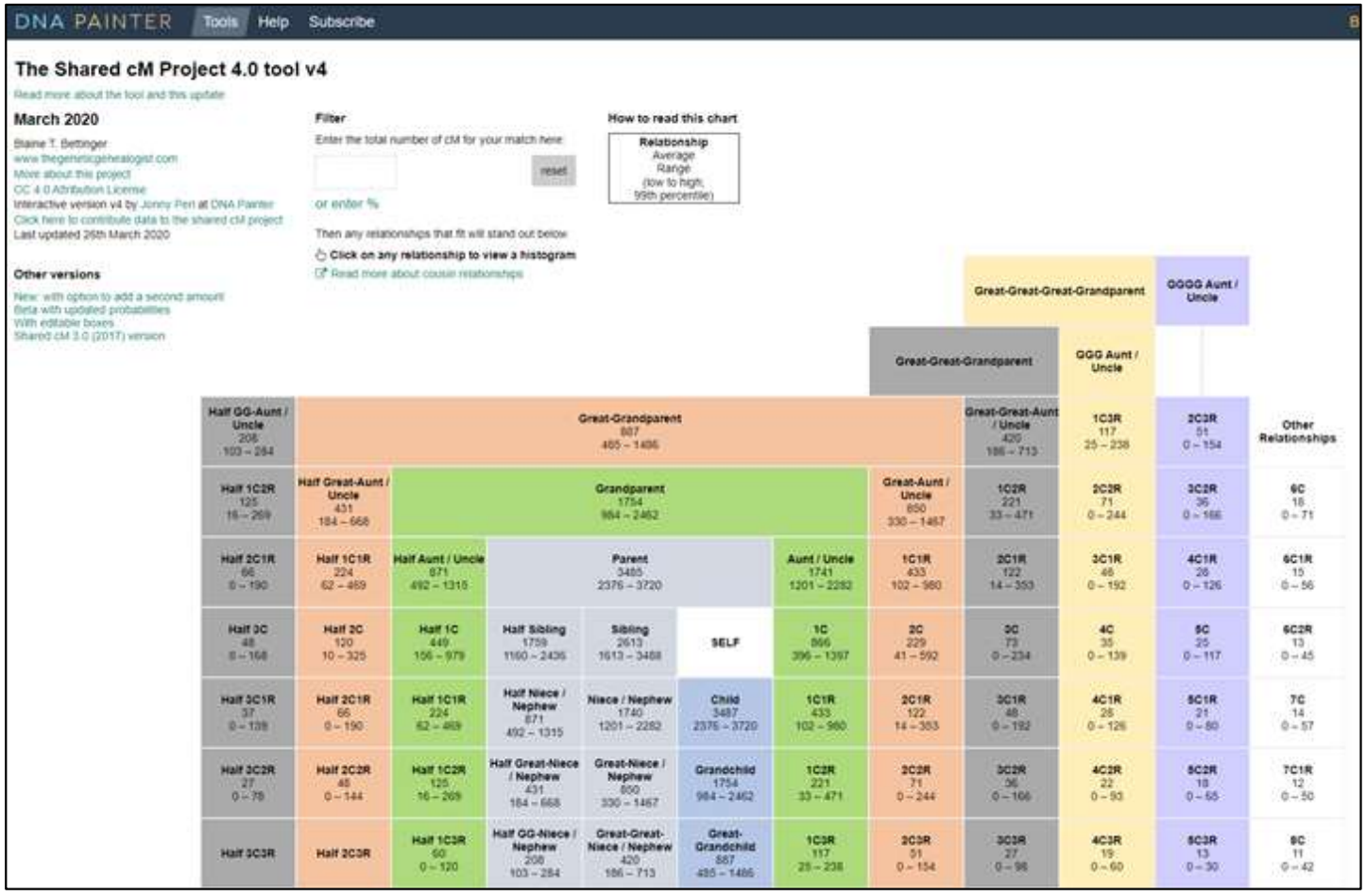
Amount of Shared DNA
cM = centimorgans

Ancestry assigns matches as Maternal or Paternal. If they're not sure, it will say Parent 1, Parent 2, or Unassigned.

Ancestry checks your tree and your DNA match's tree and lets you know if you have a common ancestor

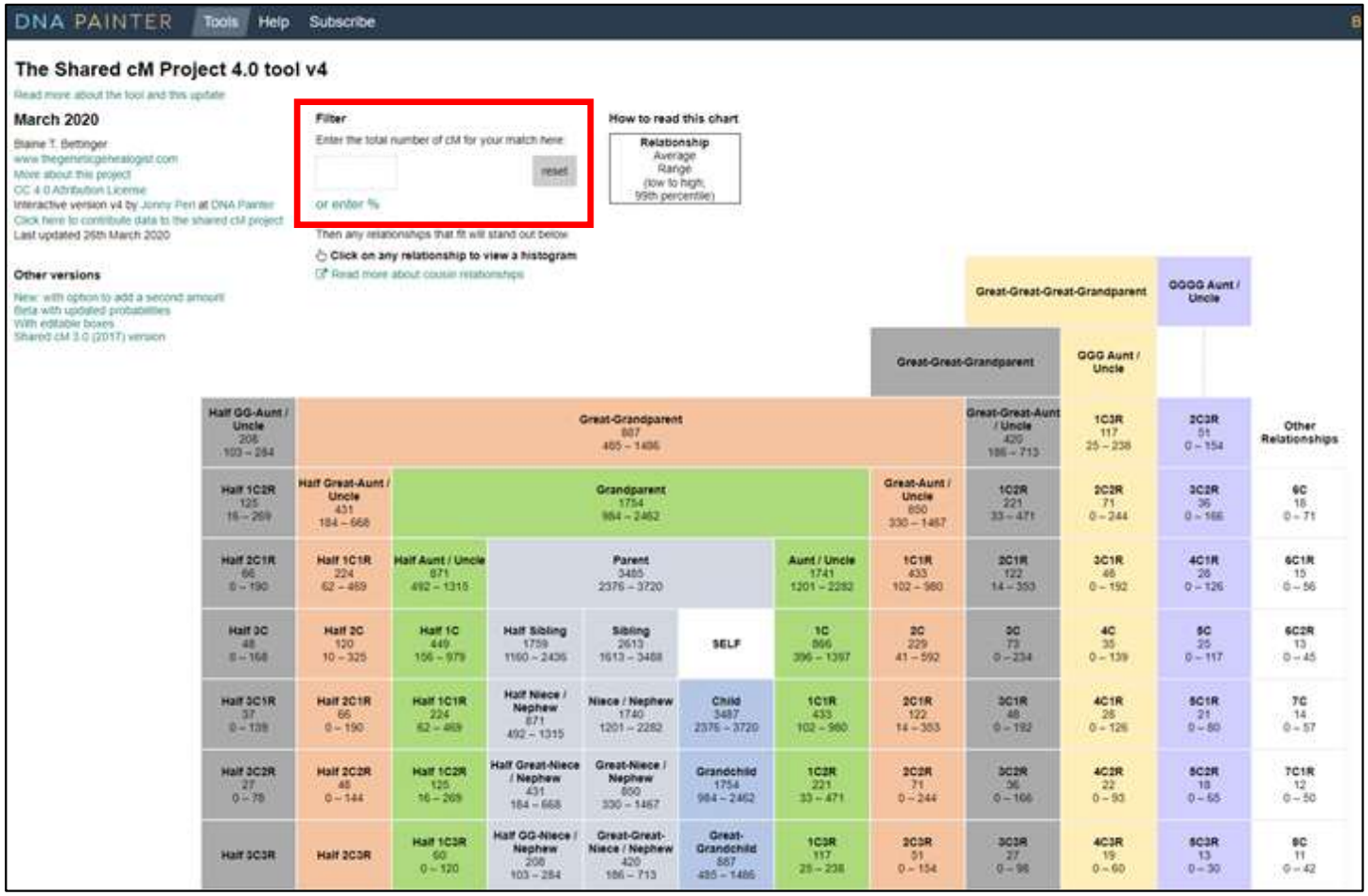
* Connecting your DNA test to a public family tree can **help you learn how you're related to DNA matches**.

The Shared cM Project 4.0 tool v4



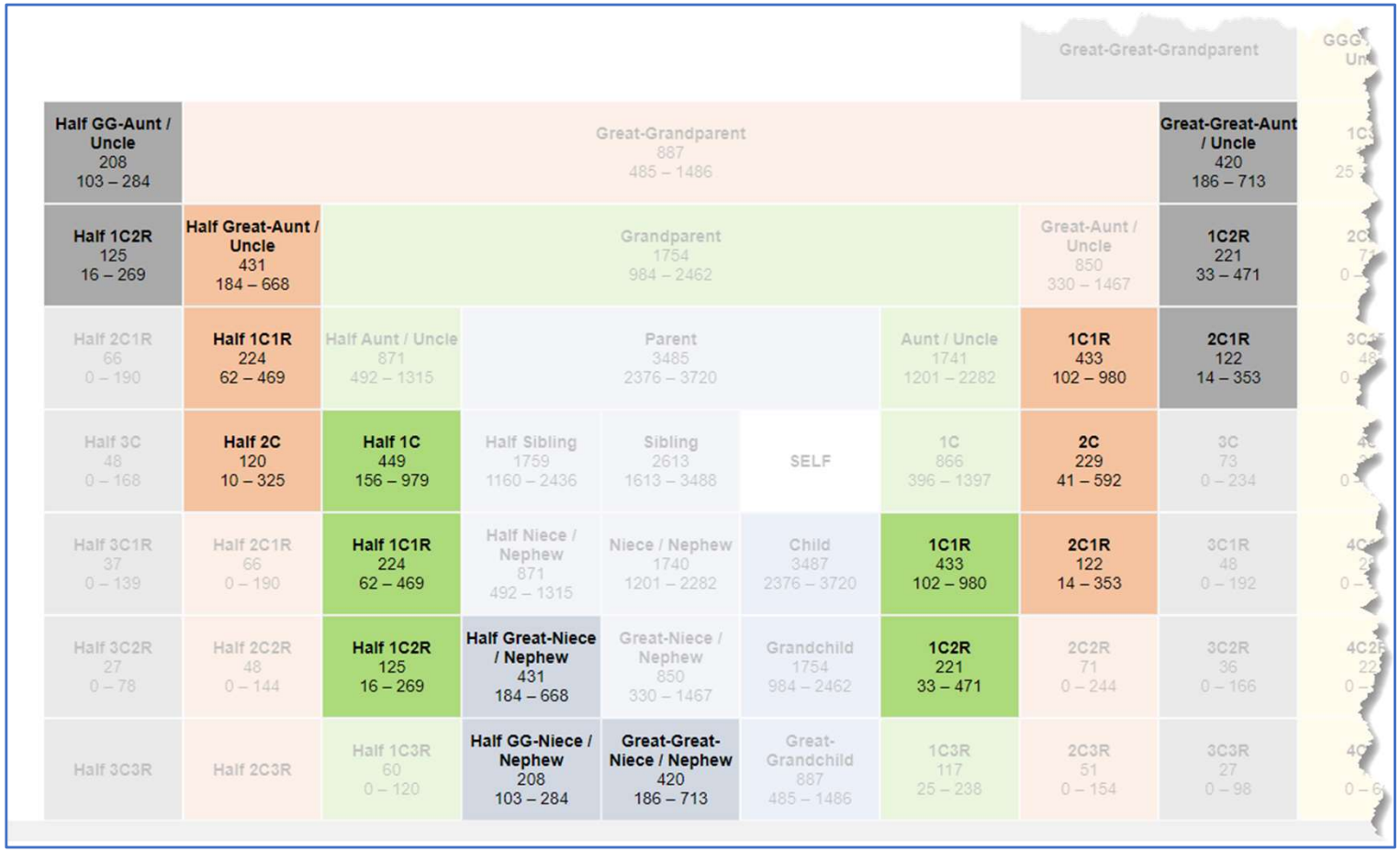
Bookmark this page: https://dnapainter.com/tools/sharedcmv4

Where do you insert the shared cM of your DNA match?



Bookmark this page: https://dnapainter.com/tools/sharedcmv4

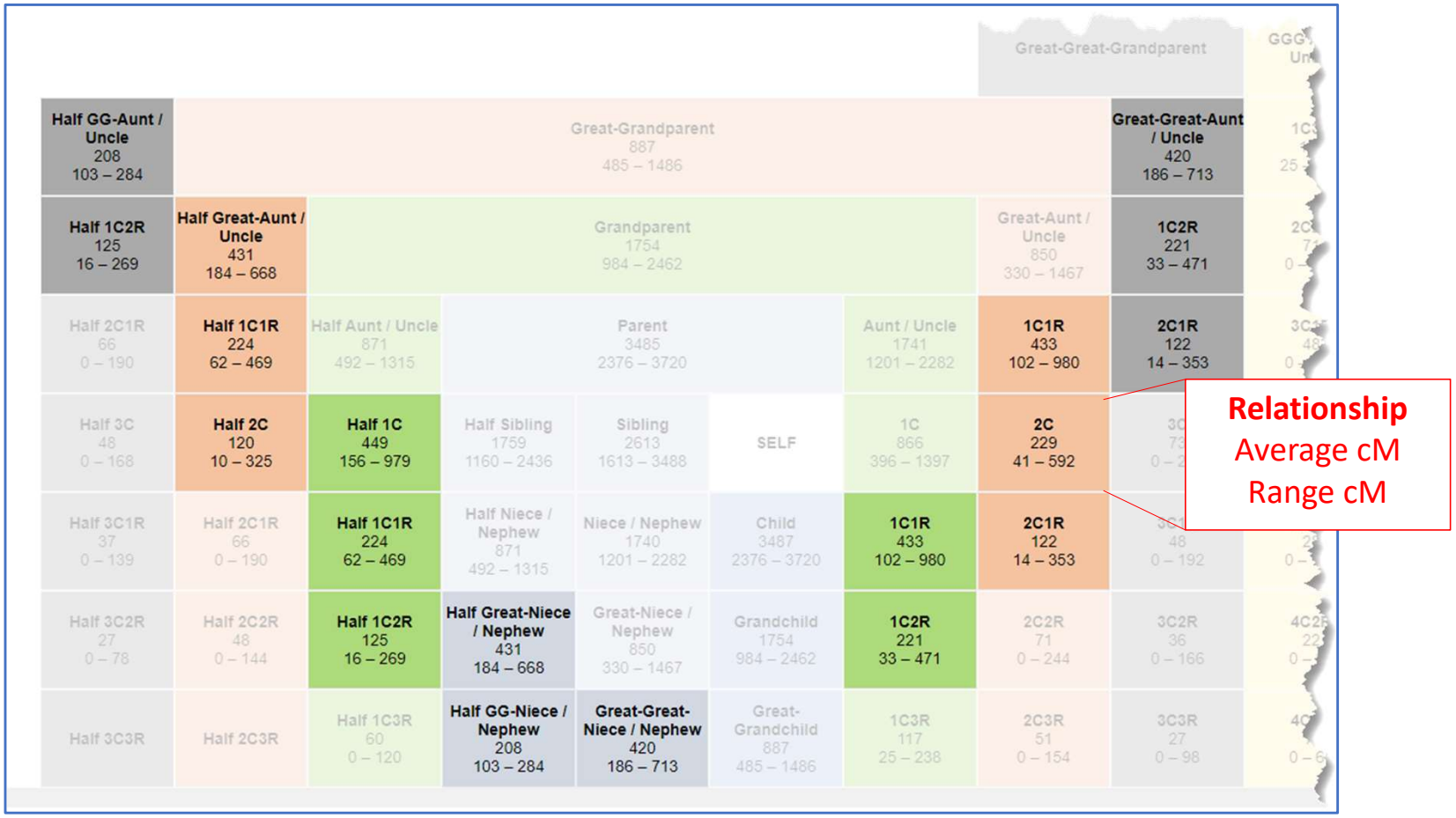
These are the possible relationships if you share 250 cM



						Great-Great-Grandparent		GGG Un
Half GG-Aunt / Uncle 208 103 – 284	Great-Grandparent 887 485 – 1486						**Great-Great-Aunt / Uncle** 420 186 – 713	1C 25 –
Half 1C2R 125 16 – 269	**Half Great-Aunt / Uncle** 431 184 – 668	Grandparent 1754 984 – 2462				Great-Aunt / Uncle 850 330 – 1467	**1C2R** 221 33 – 471	2C 0 –
Half 2C1R 66 0 – 190	**Half 1C1R** 224 62 – 469	Half Aunt / Uncle 871 492 – 1315	Parent 3485 2376 – 3720			Aunt / Uncle 1741 1201 – 2282	**1C1R** 433 102 – 980	**2C1R** 122 14 – 353	3C 0 –
Half 3C 48 0 – 168	**Half 2C** 120 10 – 325	**Half 1C** 449 156 – 979	Half Sibling 1759 1160 – 2436	Sibling 2613 1613 – 3488	SELF	1C 866 396 – 1397	**2C** 229 41 – 592	3C 73 0 – 234	0 –
Half 3C1R 37 0 – 139	Half 2C1R 66 0 – 190	**Half 1C1R** 224 62 – 469	Half Niece / Nephew 871 492 – 1315	Niece / Nephew 1740 1201 – 2282	Child 3487 2376 – 3720	**1C1R** 433 102 – 980	**2C1R** 122 14 – 353	3C1R 48 0 – 192	4C 0 –
Half 3C2R 27 0 – 78	Half 2C2R 48 0 – 144	**Half 1C2R** 125 16 – 269	**Half Great-Niece / Nephew** 431 184 – 668	Great-Niece / Nephew 850 330 – 1467	Grandchild 1754 984 – 2462	**1C2R** 221 33 – 471	2C2R 71 0 – 244	3C2R 36 0 – 166	4C2R 0 –
Half 3C3R	Half 2C3R	Half 1C3R 60 0 – 120	**Half GG-Niece / Nephew** 208 103 – 284	**Great-Great-Niece / Nephew** 420 186 – 713	Great-Grandchild 887 485 – 1486	1C3R 117 25 – 238	2C3R 51 0 – 154	3C3R 27 0 – 98	4C 0 – 6

Bookmark this page: https://dnapainter.com/tools/sharedcmv4

Where do you find the average shared cM for a relationship

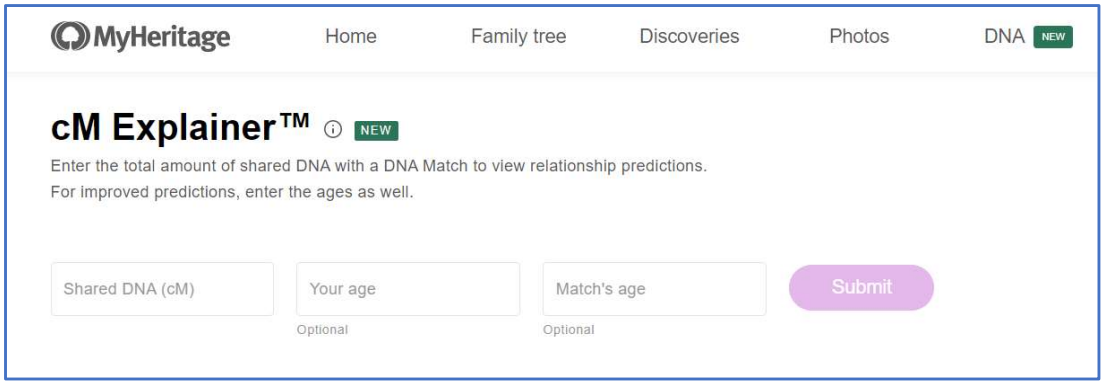


Bookmark this page: https://dnapainter.com/tools/sharedcmv4

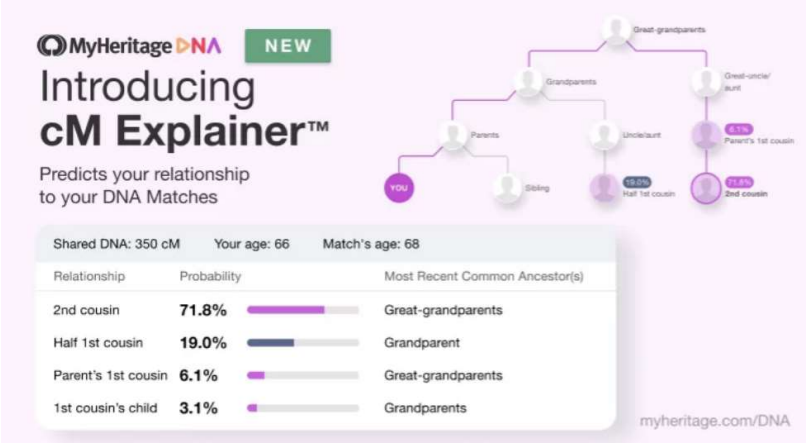
A new and free tool from MyHeritage…cM Explainer

The cM Explainer estimates familial relationships between DNA Matches with high accuracy.

- Free & doesn't require a MyHeritage account
- Predicts relationships based on centimorgan and ages (when known)
- Based on ages and relationships of millions of people in MyHeritage database



www.MyHeritage.com/cm



Ashkenazic Shared DNA Survey – August 2022 Update

- Jewish genealogist, Lara Diamond, is collecting data to reflect shared DNA from Jewish respondents.
- As of August 2022, she has collected 6455 data points.
- Jews (& partial Jews) with the same relationship (i.e., 1C, 2C, etc.) share more DNA than non-Jews = effects of endogamy

Lara's Jewnealogy

Example comparisons of average cM shared at different relationship levels

Relationship	Shared cM Project	Ashkenazic Shared DNA Survey
1C	866	922
2C	229	272
3C	73	113
4C	35	53
5C	25	48

Source: https://larasgenealogy.blogspot.com/2022/08/ashkenazic-shared-dna-survey-august.html

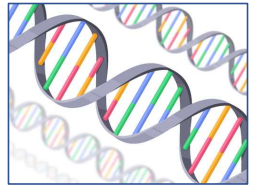
Techniques for finding your best DNA matches

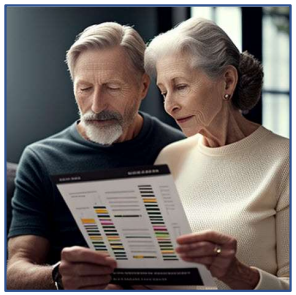
Let’s look for cousins that meet these criteria

ancestry.com	Shared DNA ≥ 90 cM Longest segment ≥ 20 cM # of segments ≤ 11 (less is better)
23andMe	Shared DNA ≥ 1.3% (97 cM) Longest segment ≥ 20 cM + 2 more segments ≥ 10 cM
MyHeritage	Shared DNA ≥ 100 cM Longest segment ≥ 30 cM One segment ≥ 15 cM One segment ≥ 10 cM
FamilyTreeDNA	Shared DNA ≥ 100 cM Longest segment ≥ 30 cM One segment ≥ 15 cM One segment ≥ 10 cM

OR

Any match that shares a longest segment of 40 cM or more – regardless of Total Shared DNA





Let's prioritize and document your best DNA matches

	A	B	C	D	E	F	G	H	I	J	K
1	DNA Company	DNA Match Name	Total DNA Shared (cM)	Largest segment (cM)	2nd largest segment	3rd largest segment	Number of Segments	Public Tree Size	Maternal or Paternal	X Match	Surname, ethnicity, and/or location clues
2											
3											
4											
5											
6											
7											
8											
9											
10											
11											
12											
13											
14											
15											
16											
17											
18											

Keep track of your best matches in a spreadsheet or simply on a piece of paper

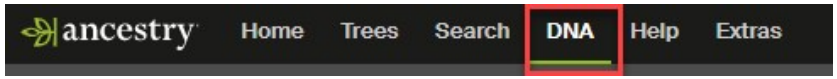
Shared DNA ≥ 90 cM
Longest segment ≥ 20 cM
Number of segments ≤ 11 (less is better)

OR

Any match with longest segment ≥ 40 cM, regardless of total Shared DNA

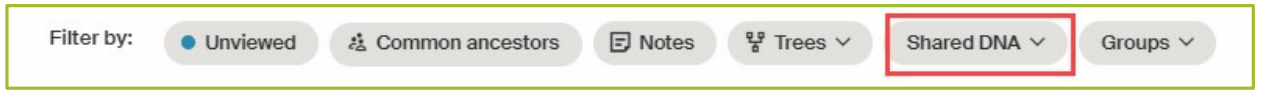
Select your matches that you share 90+ cM with

1



2

3



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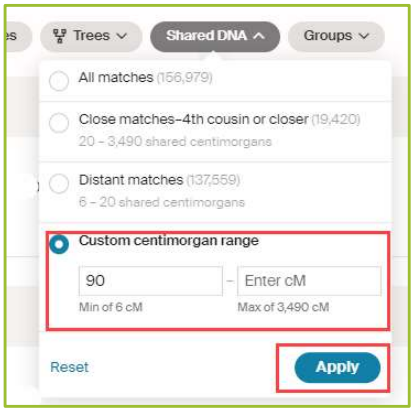


Note: you can set an upper limit to filter out close relatives

Find matches with 20+ cM & ≤ 11 segments

Look at each of your matches (90+ cM)

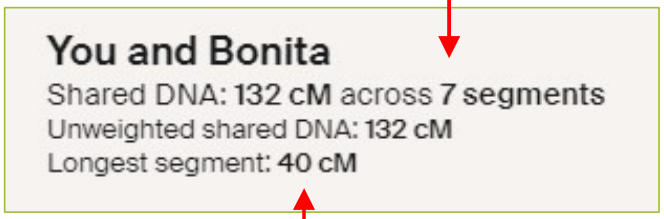
Record each match that has a largest segment of at least 20 cM

And who share less than 12 segments

Keep track of the names

5

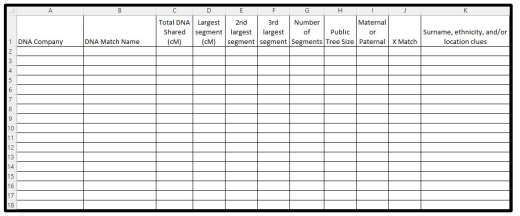
Less than 12 segments



6

20+ cM longest segment

7



Any match with a longest segment of 40+ cM should go on your “best matches” list

8

Filter by Shared DNA and select 40 – 89 cM AND Public linked trees.

Public linked trees 40 - 89 cM

9

Click on the middle line with cM

10

Select matches with longest segment 40+ cM

You and Lou
Shared DNA: 63 cM across 5 segments
Unweighted shared DNA: 82 cM
Longest segment: 40 cM

Lou **DOES** make the cut – longest segment is **40 cM**

You and Jon
Shared DNA: 61 cM across 4 segments
Unweighted shared DNA: 87 cM
Longest segment: 49 cM

Jon **DOES** make the cut – longest segment is **49 cM**

You and Donna
Shared DNA: 59 cM across 8 segments
Unweighted shared DNA: 87 cM
Longest segment: 21 cM

Donna **doesn’t** make the cut – longest segment is **29 cM**

Your prioritized list will become much more manageable

Total matches = 156,979

Matches that share 90+ cM = 47

Matches that share 90+ cM and have a longest segment ≥ 20 cM = 14

Matches w/90+ cM, longest segment ≥ 20 cM AND less than 12 segments = 11

Add matches w/longest segment of 40+ cM (6) = 17

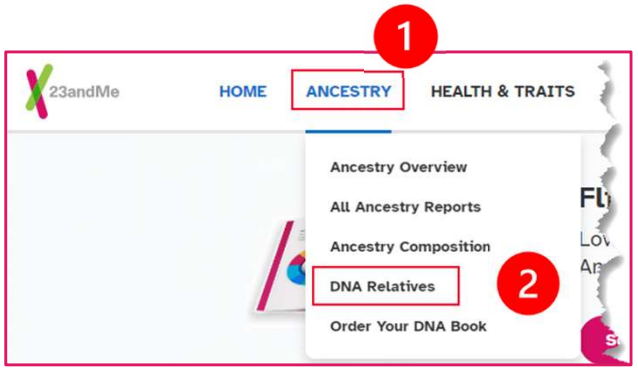
When you're recording your "best matches", don't forget to note the size of their public tree!

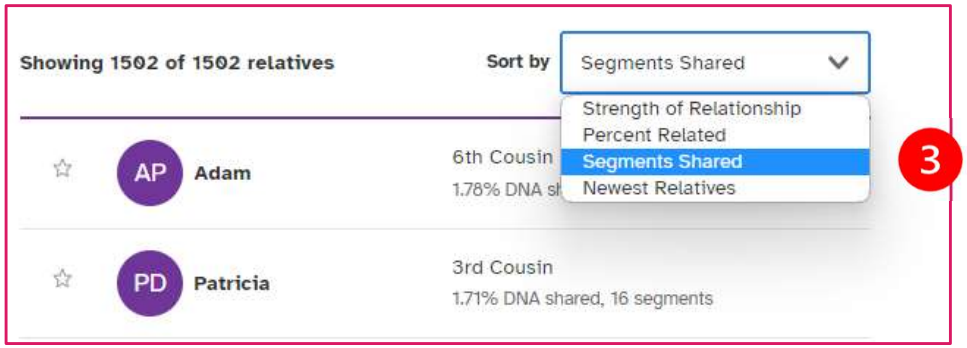
Shared DNA ≥ 1.3% (97 cM)
Longest segment ≥ 20 cM
+ 2 more segments ≥ 10 cM

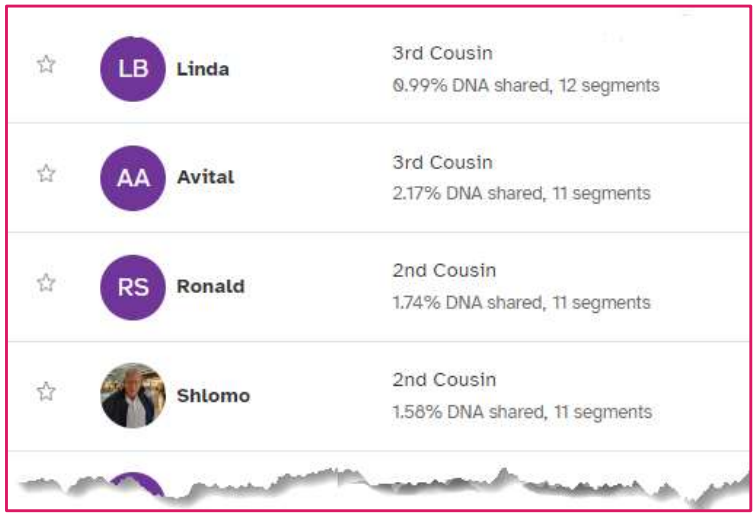
OR

Any match with longest segment ≥ 40 cM,
regardless of total Shared DNA

Sort 23andMe matches by Segments shared….







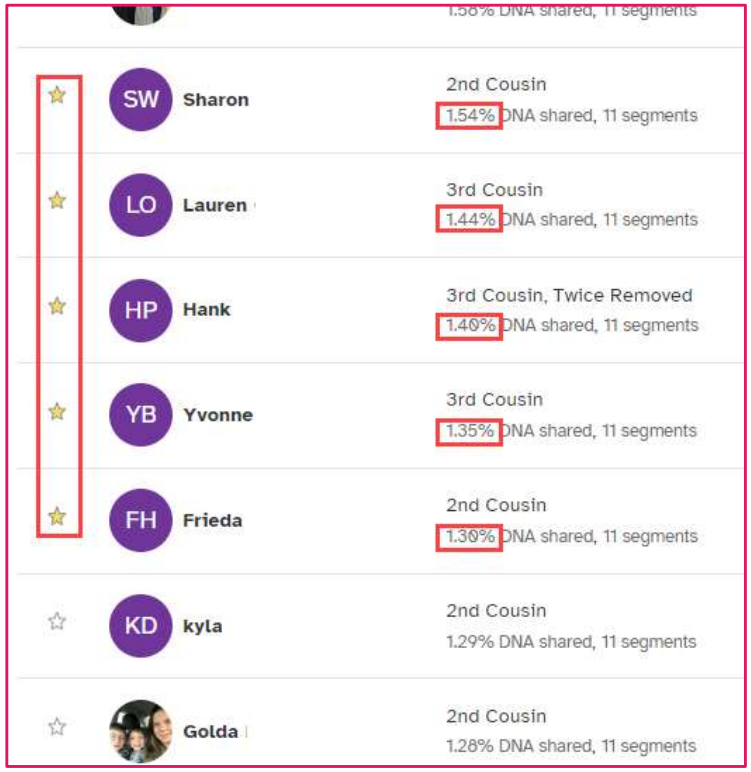
23andMe shows your matches in segment size groups with the most shared DNA at the top of each segment size.

Then go through segment size group & “star” favorites…

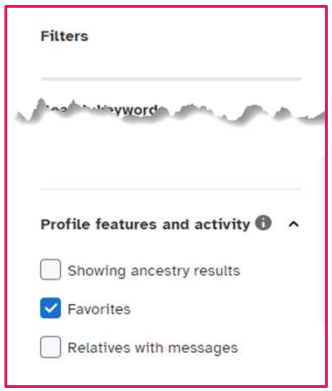
For each segment size group, click on the star for matches that share 1.3% or more.

Starred matches become your “Favorites”.

4



5

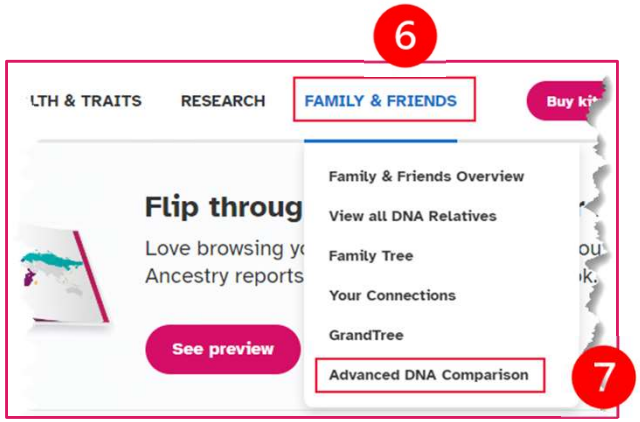


When you’ve created your Favorites, write the names down or take photos of those 2 or 3 screens or do “Print Screens”.

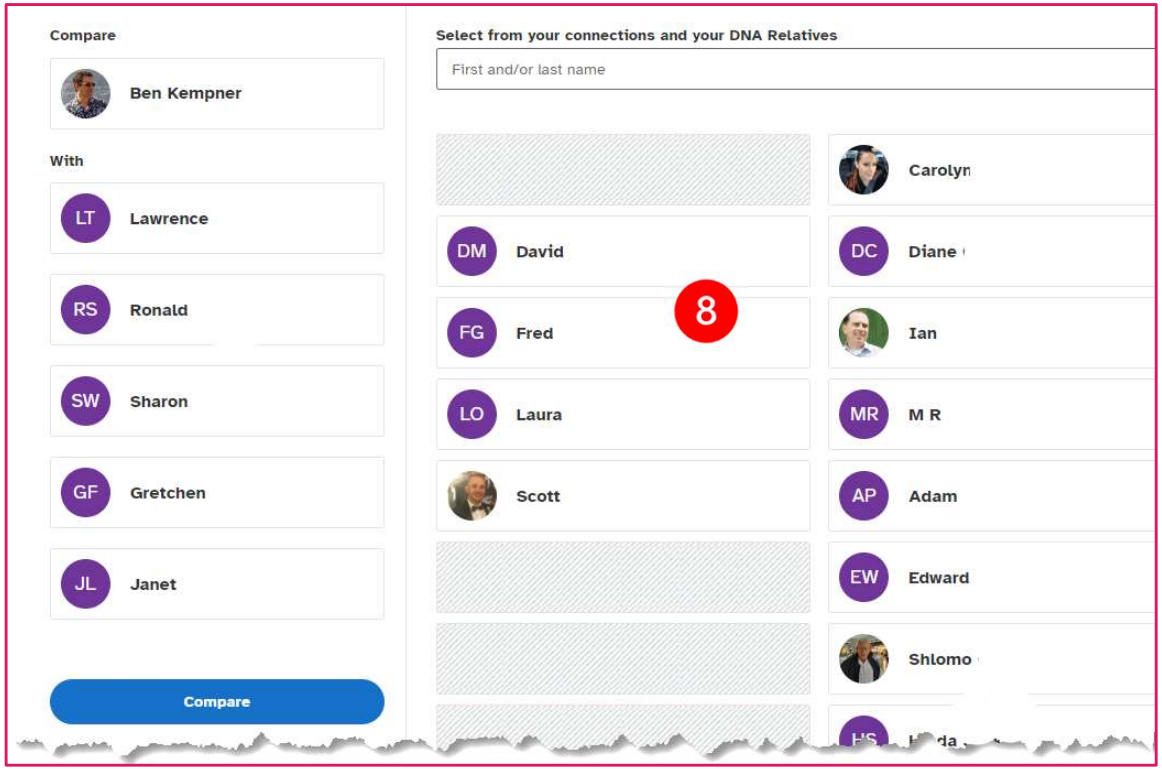
Use the Chromosome Browser see which matches meet the criteria

23andMe

Shared DNA ≥ 1.3% (97 cM)
Longest segment ≥ 20 cM
+ 2 more segments ≥ 10 cM



6. Family & Friends
7. Advanced DNA Comparison
8. Select up 5 matches from your list of matches sharing 1.3%+



Here are 5 of my matches in the Chromosome Browser

Which matches have longest segment ≥ 20 cM + 2 more ≥ 10 cM?

How can you tell how long a match's segment is?

Just hover over the segment

Detailed segment data

Comparison	Chrom.	Start Position	End Position	Genetic Distance (cM)	Number of SNPs	Identity
Ben Kempner / Lawrence	1	82874078	99906061	16.76		
Ben Kempner / Lawrence	2	45072989	49716853	7.56	1371	Half
Ben Kempner / Lawrence	5	83575190	157528485	65.70		Half
Ben Kempner / Lawrence	6	9831530	13554043	7.06	1075	Half
Ben Kempner / Lawrence	6	37664221	43475474	8.63	1364	Half
Ben Kempner / Lawrence	17	2017079	5906442	7.90	931	Half
Ben Kempner / Lawrence	17	11423255	26610769	17.73		
Ben Kempner / Ronald	1	70525234	79419439	6.11	1761	Half

3rd Longest

Longest

9

2nd Longest

Then scroll down to the
Detailed segment data

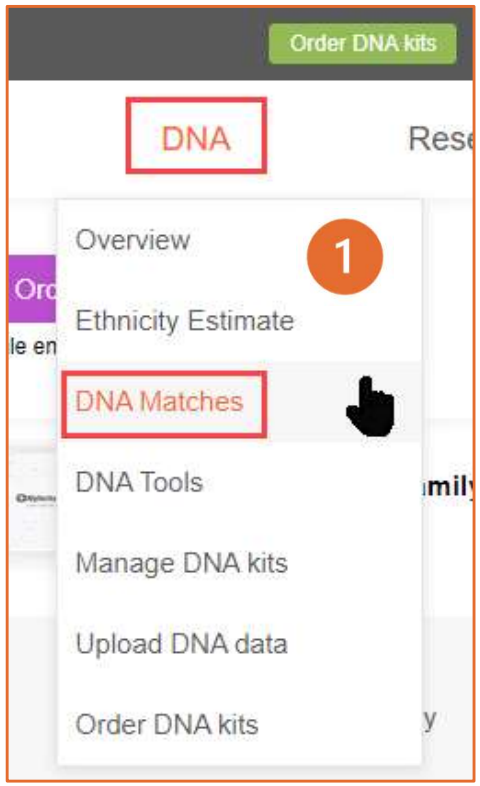
Shared DNA ≥ 100 cM
Longest segment ≥ 30 cM
One segment ≥ 15 cM
One segment ≥ 10 cM

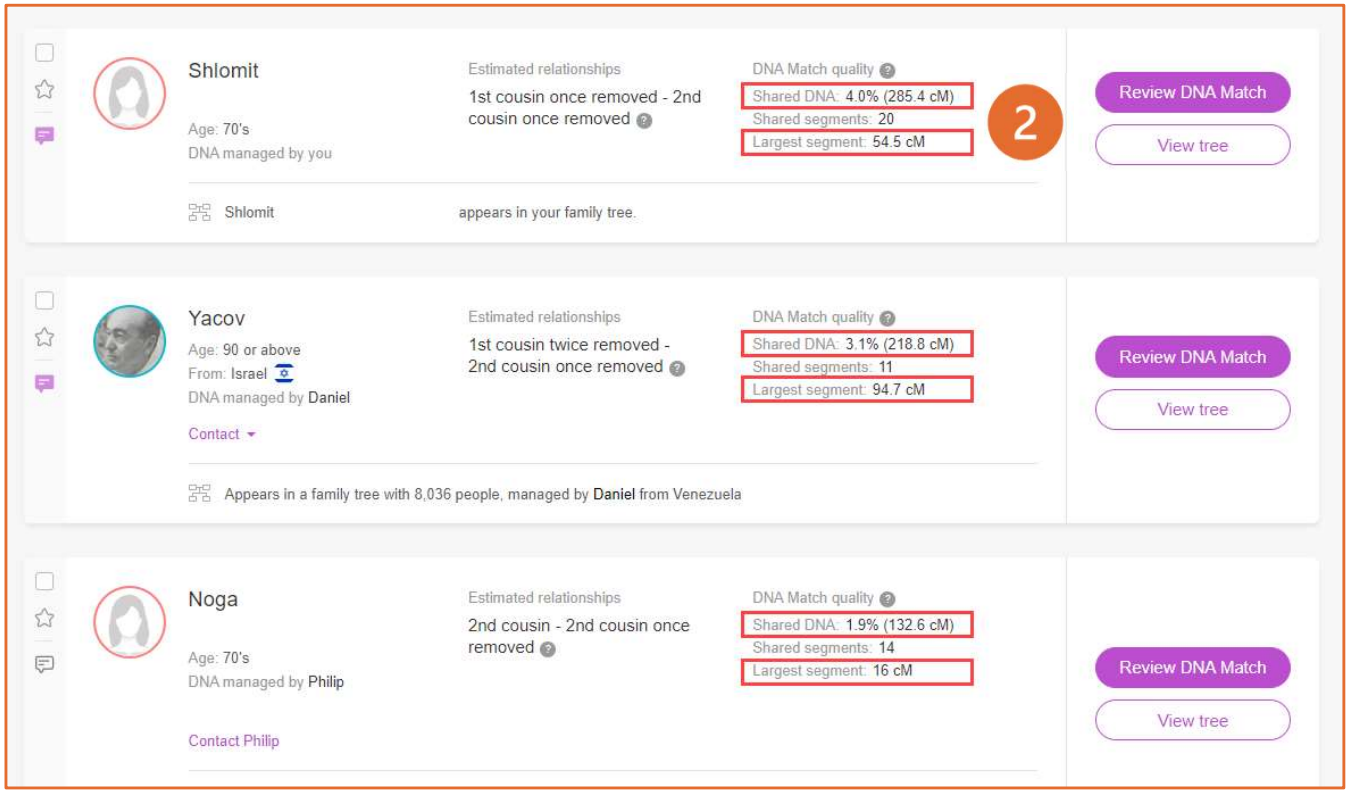
OR

Any match with longest segment ≥ 40 cM, regardless of total Shared DNA

Finding your matches that meet the first 2 criteria is easy!

MyHeritage

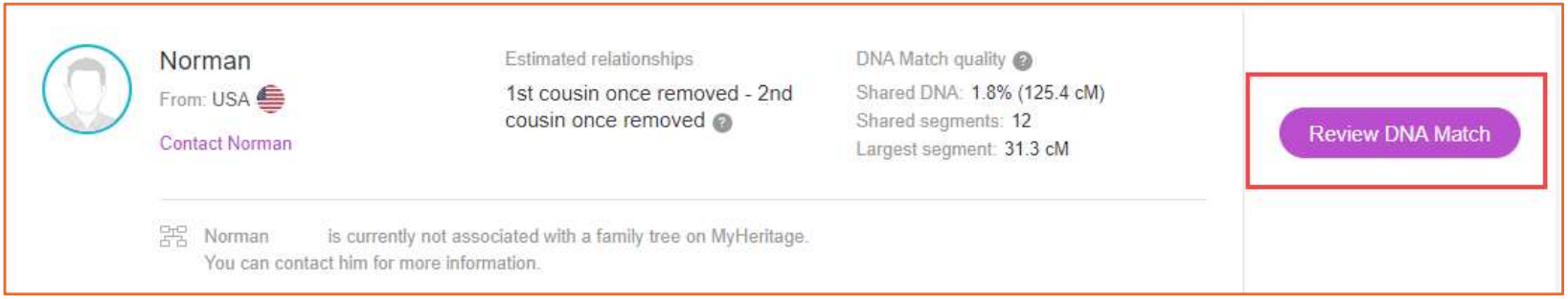




Finding the other segment sizes is easy too!

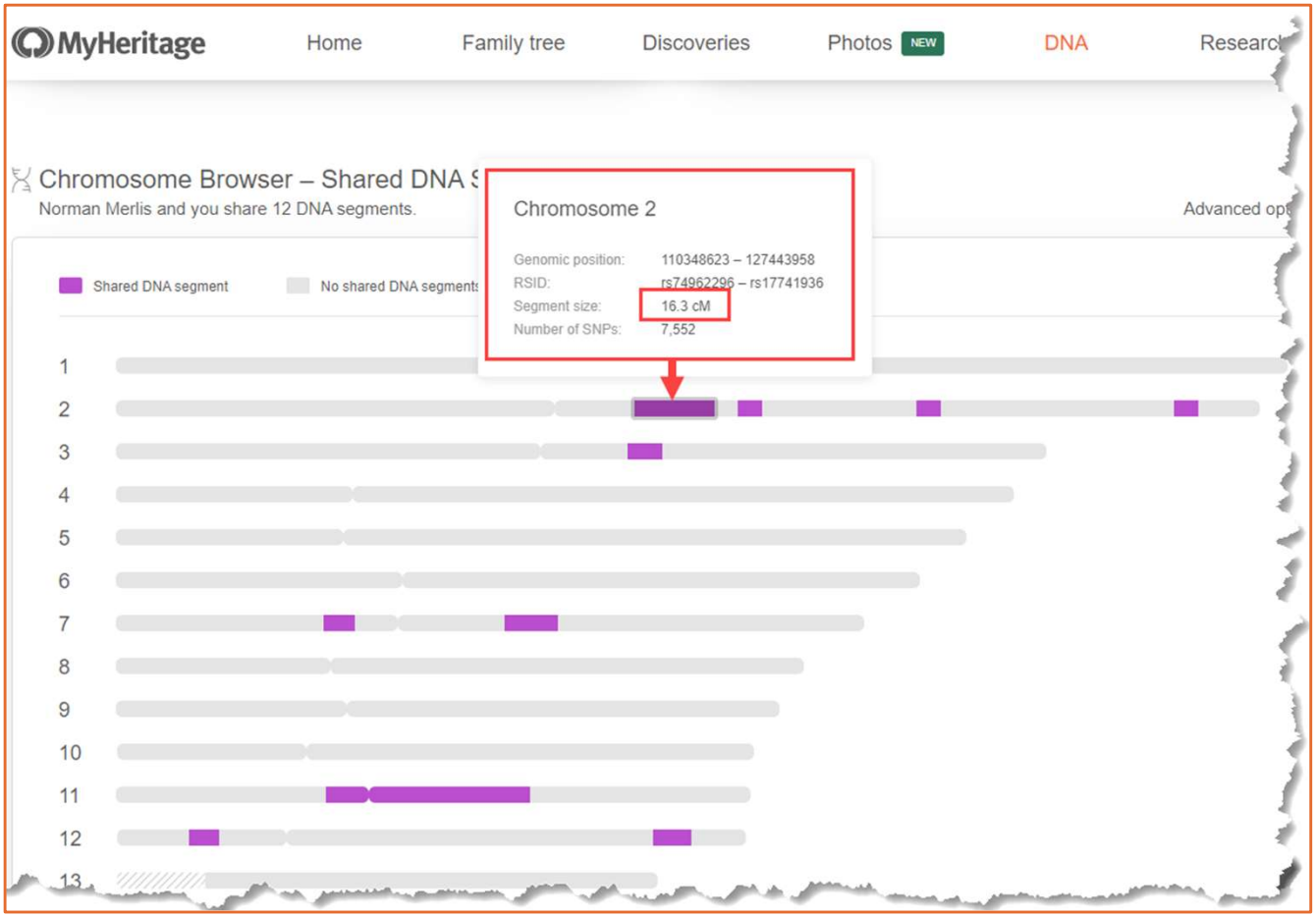
Shared DNA ≥ 100 cM
Longest segment ≥ 30 cM
One segment ≥ 15 cM
One segment ≥ 10 cM

For each of your matches sharing ≥ 100 cM & with a largest segment ≥ 30 cM,
Just click on Review DNA Match



3

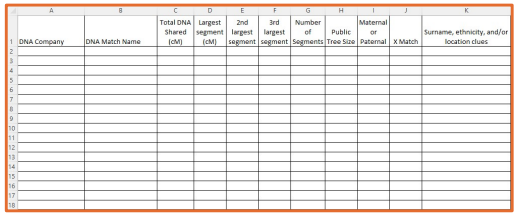
Scroll down to the Chromosome Browser for that person



4

Hover over the segments to see their size. Find the 2nd and 3rd largest.

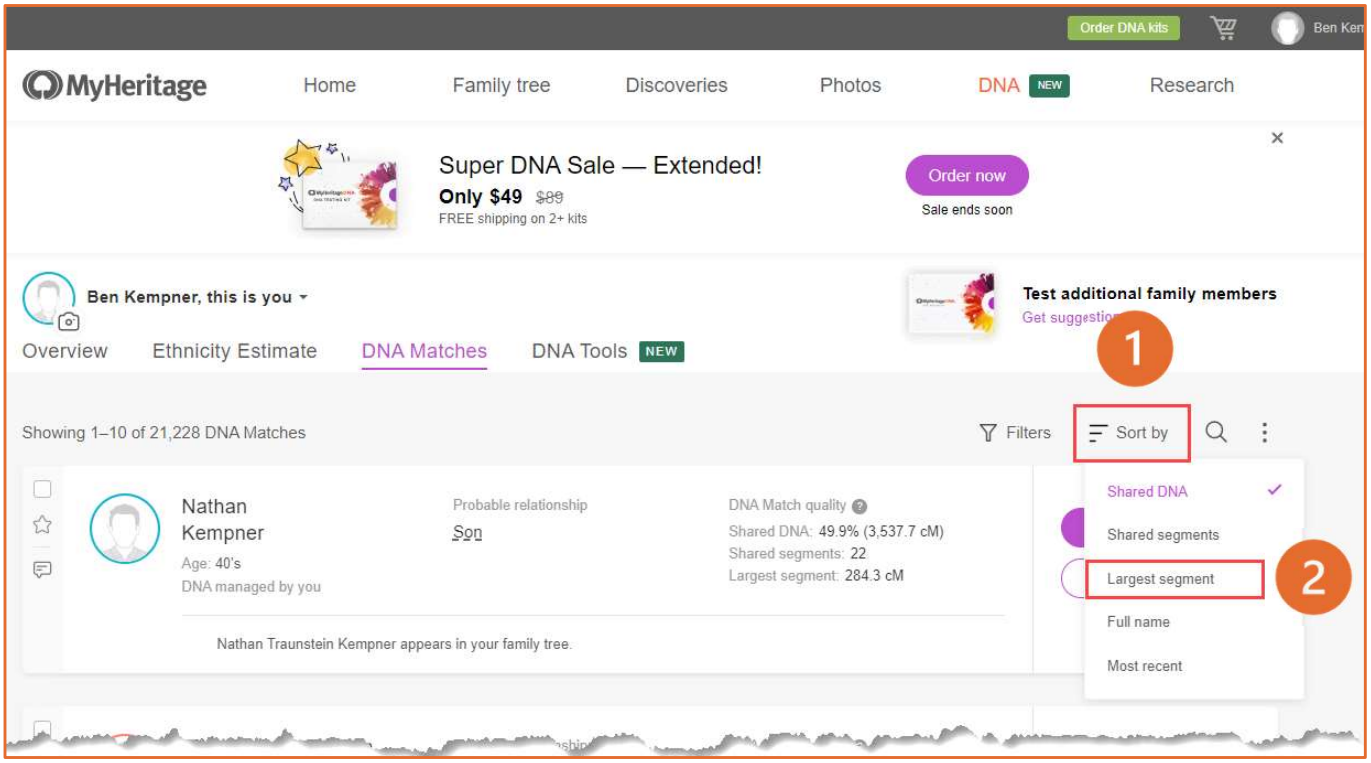
5



DNA Company	DNA Match Name	Total DNA Shared (cM)	Largest segment (cM)	2nd largest segment	3rd largest segment	Number of Segments	Public Tree Size	Maternal or Paternal	X Match	Surname, ethnicity, and/or location clues

If the match meets the criteria, record on your “best matches” list

Finding matches with a longest segment of 40+ cM is easy



FamilyTreeDNA

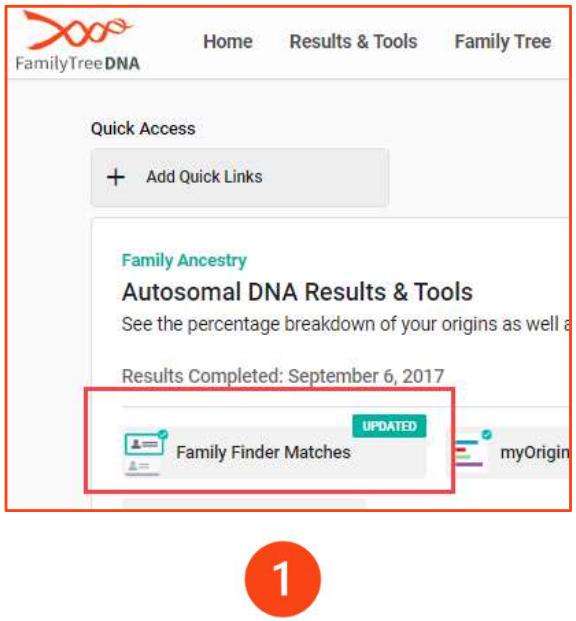
FamilyTreeDNA

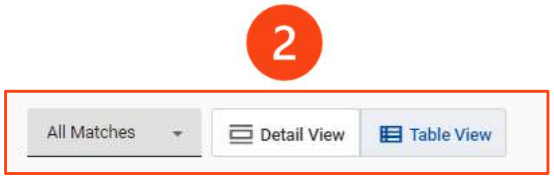
Shared DNA ≥ 100 cM
Longest segment ≥ 30 cM
One segment ≥ 15 cM
One segment ≥ 10 cM

OR

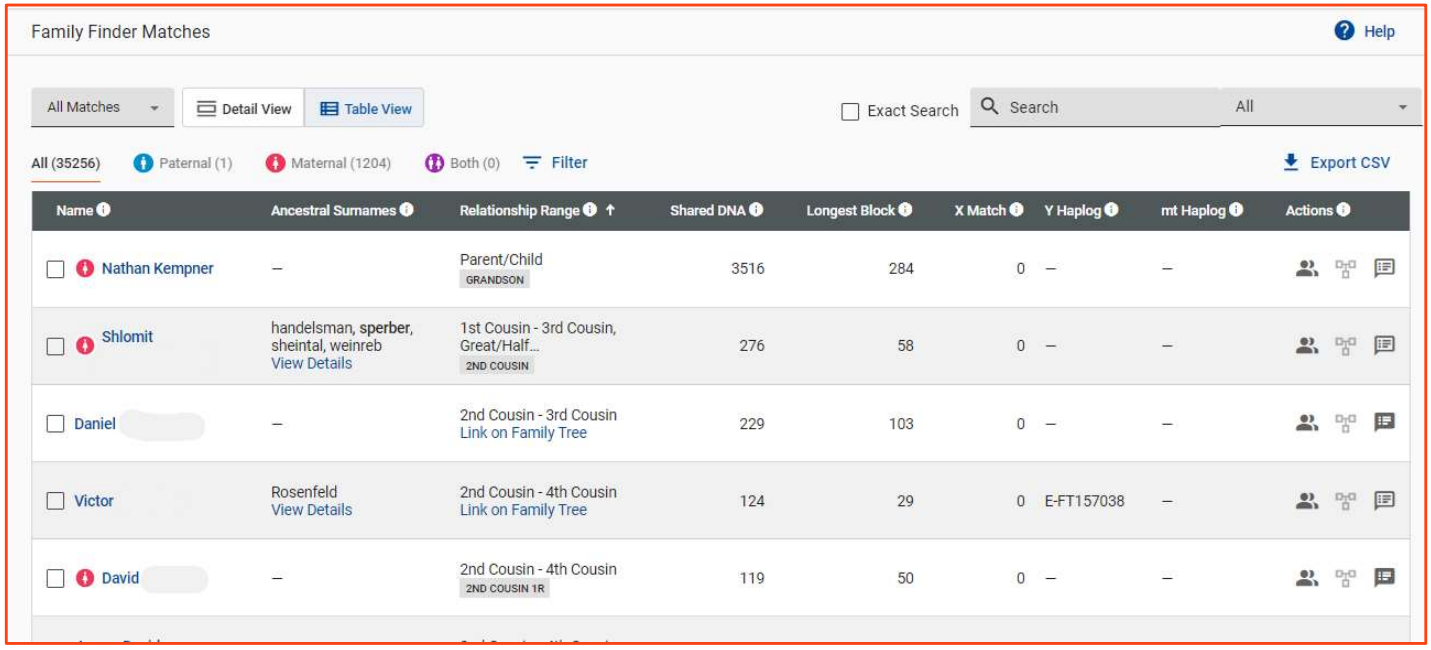
Any match with longest segment ≥ 40 cM, regardless of total Shared DNA

Go to your Family Finder Matches

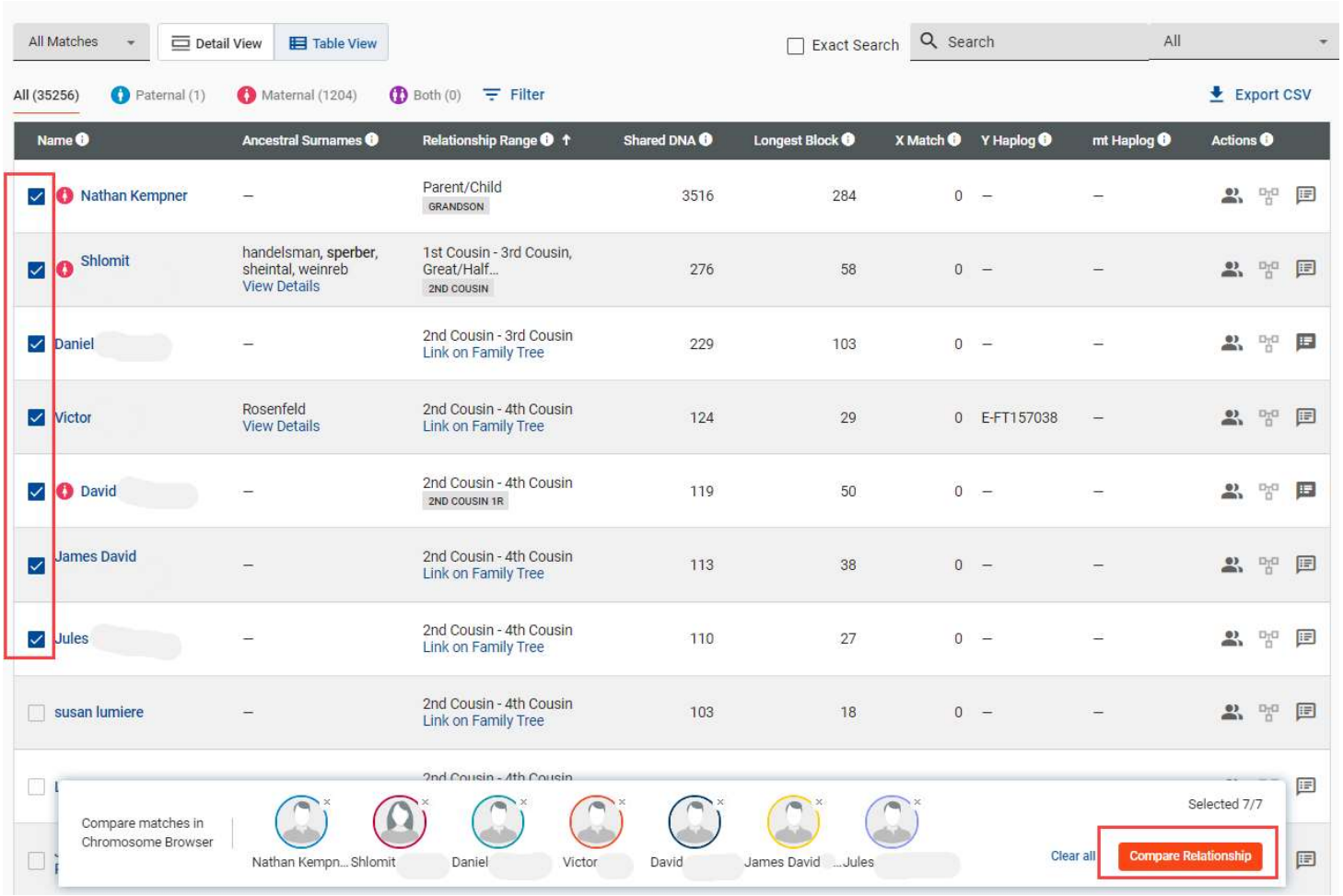




Click on Table View



Check the boxes next to your matches that share 100+ cM

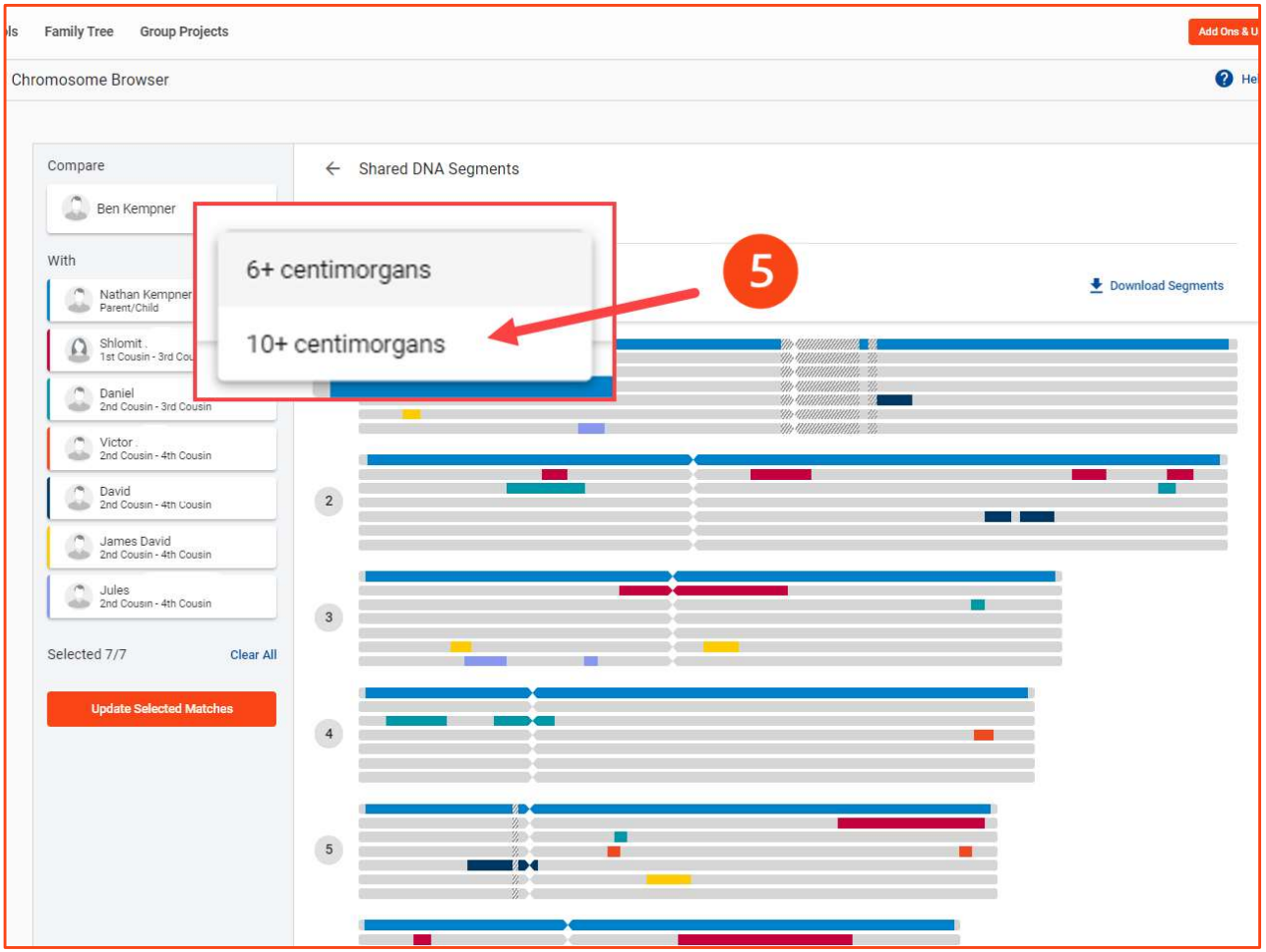


3

4

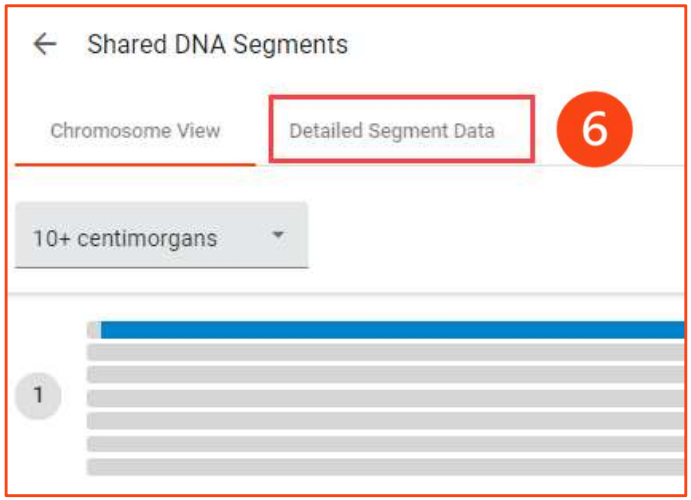
You can check up to 7 people at once. Then click “Compare Relationship”

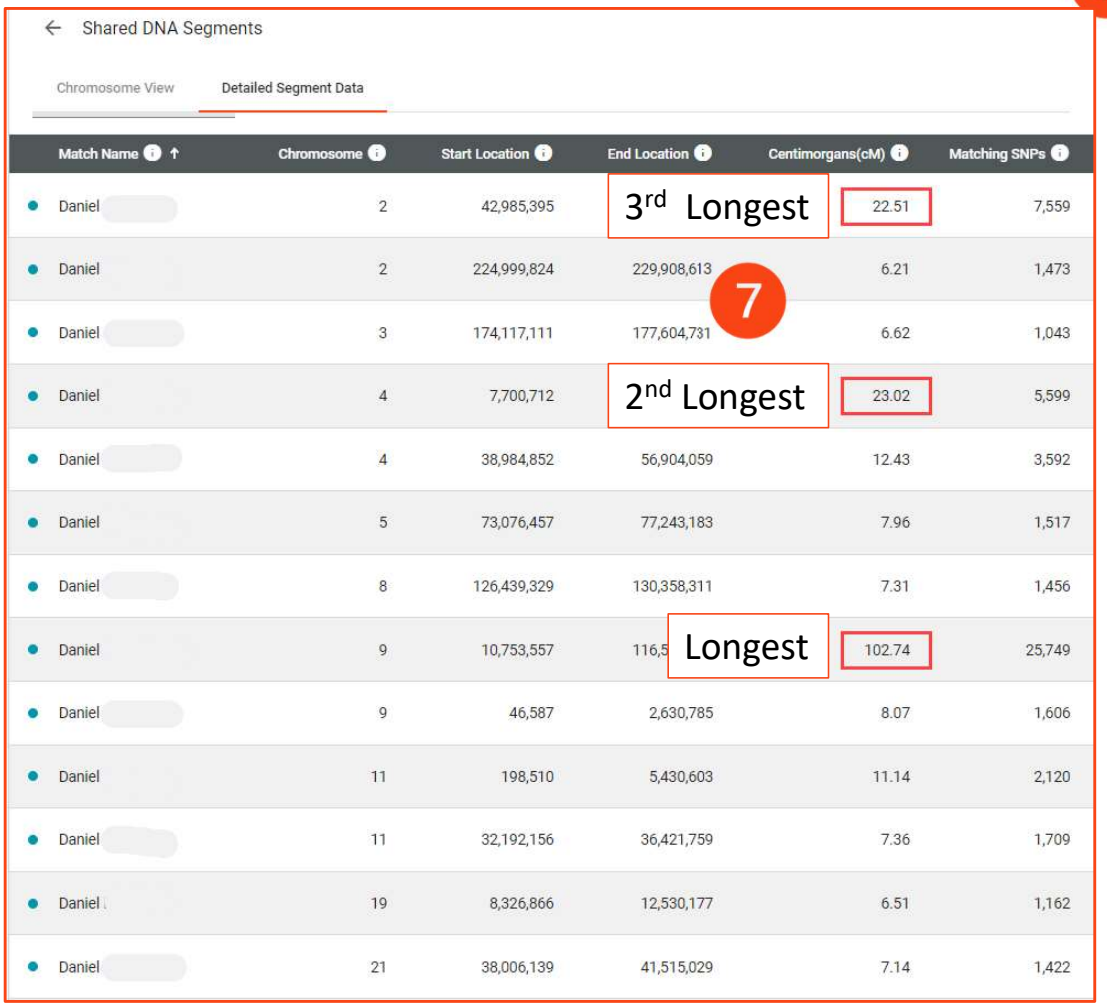
Filter out segments less than 10 cM



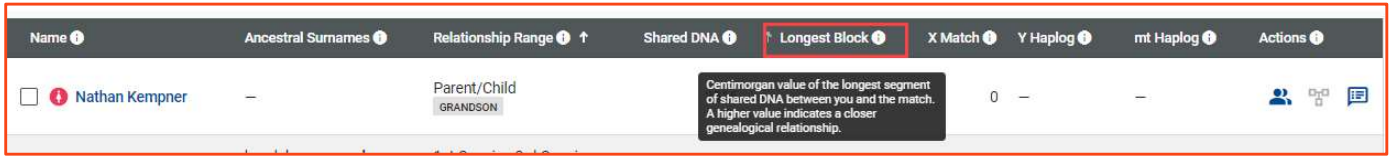
Then view the Detailed Segment Data

Shared DNA ≥ 100 cM
Longest segment ≥ 30 cM
One segment ≥ 15 cM
One segment ≥ 10 cM



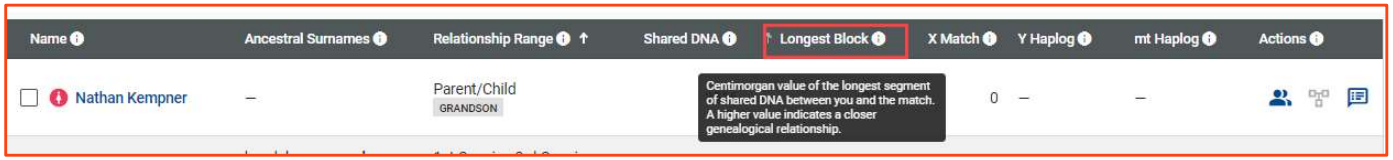


Finding matches with a longest segment of 40+ cM is easy w/FTDNA



1

Click on Longest Block and the list will be sorted in ascending order with the shortest blocks at the top.



2

Just click on Longest Block again and the list will be sorted in descending order with the longest at the top.

Finish adding your matches that meet the criteria to your list

Shared DNA ≥ 100 cM
Longest segment ≥ 30 cM
One segment ≥ 15 cM
One segment ≥ 10 cM

	A	B	C	D	E	F	G	H	I	J	K
1	DNA Company	DNA Match Name	Total DNA Shared (cM)	Largest segment (cM)	2nd largest segment	3rd largest segment	Number of Segments	Public Tree Size	Maternal or Paternal	X Match	Surname, ethnicity, and/or location clues
2											
3											
4											
5											
6											
7											
8											
9											
10											
11											
12											
13											
14											
15											
16											
17											
18											

Next steps!

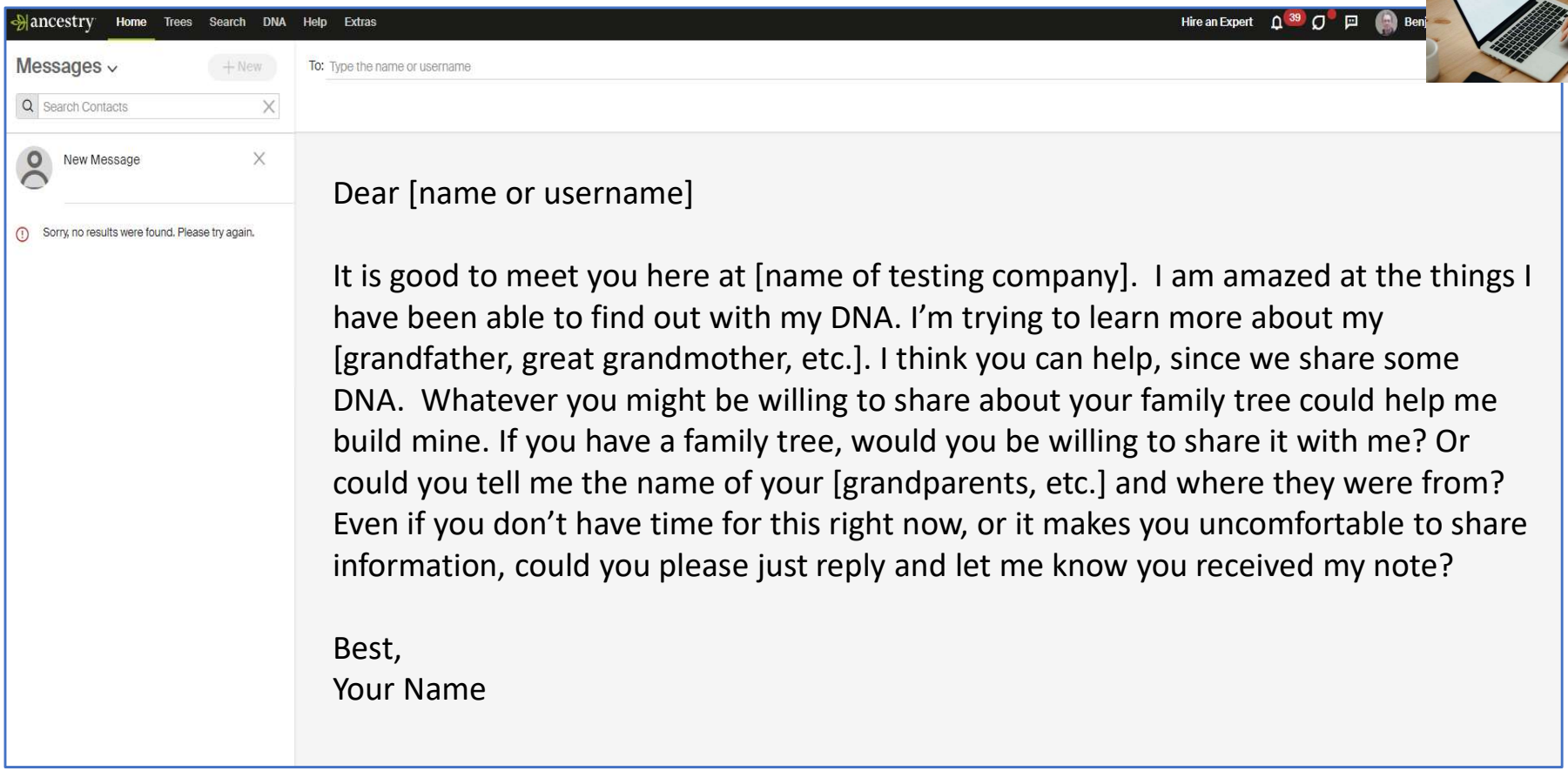
- Congratulate yourself on a job well-done!
- Look for additional clues for the people on your “best matches” list.
  - Surnames
  - Locations
  - Shared matches
  - Family trees – be sure to check to see if they’ve provided sources for their people – BMD records, etc.
- Now you’re ready to contact your matches to learn more about your family history!

Reaching out to DNA matches

Tips for contacting your DNA matches

- Start with their name – it's more personal. As some people administer more than one DNA account, make sure they know you're talking about.
- Keep it short.
- Ask a simple question – keep locations & names general (i.e. counties, states, surnames, not streets and full names).
- Start with Qs about deceased relatives, not living – until they're more comfortable.
- Don't mention centimorgans – it can be intimidating.
- Give them an easy action item.
- Always be respectful of their privacy.

Sample letter



Dear [name or username]

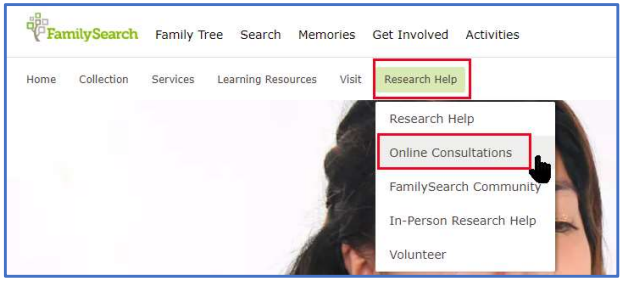
It is good to meet you here at [name of testing company]. I am amazed at the things I have been able to find out with my DNA. I'm trying to learn more about my [grandfather, great grandmother, etc.]. I think you can help, since we share some DNA. Whatever you might be willing to share about your family tree could help me build mine. If you have a family tree, would you be willing to share it with me? Or could you tell me the name of your [grandparents, etc.] and where they were from? Even if you don't have time for this right now, or it makes you uncomfortable to share information, could you please just reply and let me know you received my note?

Best,
Your Name

Source: Diahan Southard - https://www.yourdnaguide.com/ydgblog/contacting-your-dna-matches

Did you know that you can get a free consultation with someone at the SLC Family History Library w/o leaving home?

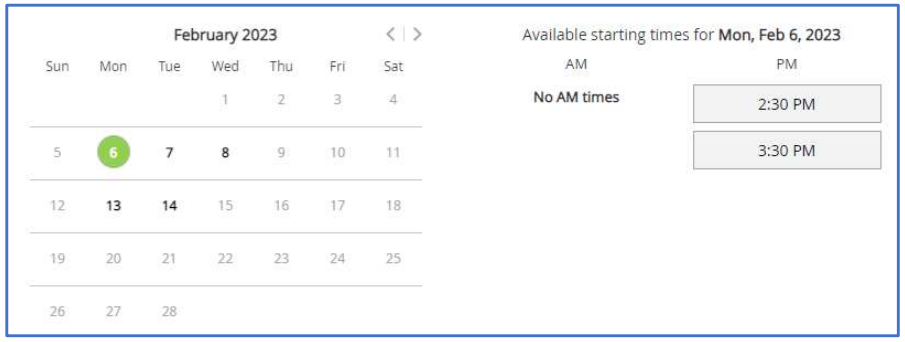
Go to familysearch.org/library and sign into your account.



Click on Research Help and then “Online Consultations”.

Click on “Schedule Now”.

Select your area of research.



Available times will appear. Schedule your consultation!