Phasing: The First Step in Helping Matches Make Sense

By
Philip Spivey

www.fppt.info

DNA 101

The relatively pain free version!

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Autosomal Testing (at-DNA)

- Ancestry
- 23andMe
- MyHeritage
- FTDNA's Family Finder
- LivingDNA

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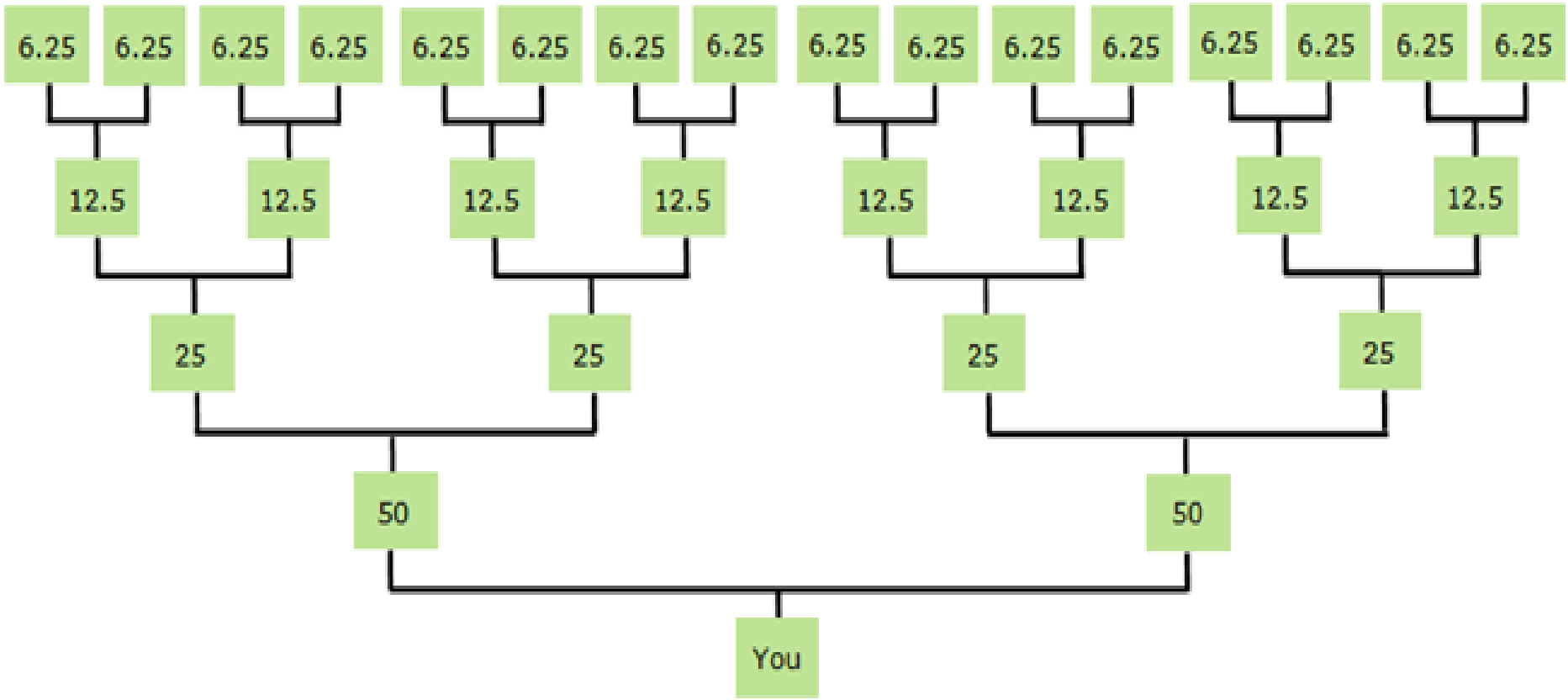
at-DNA Inheritance



"Expected Ethnicity Results," Ancestry (https://support.ancestry.com/s/article/Unexpected-Ethnicity-Results : accessed 2 March 2020). Potential inheritance percentages.

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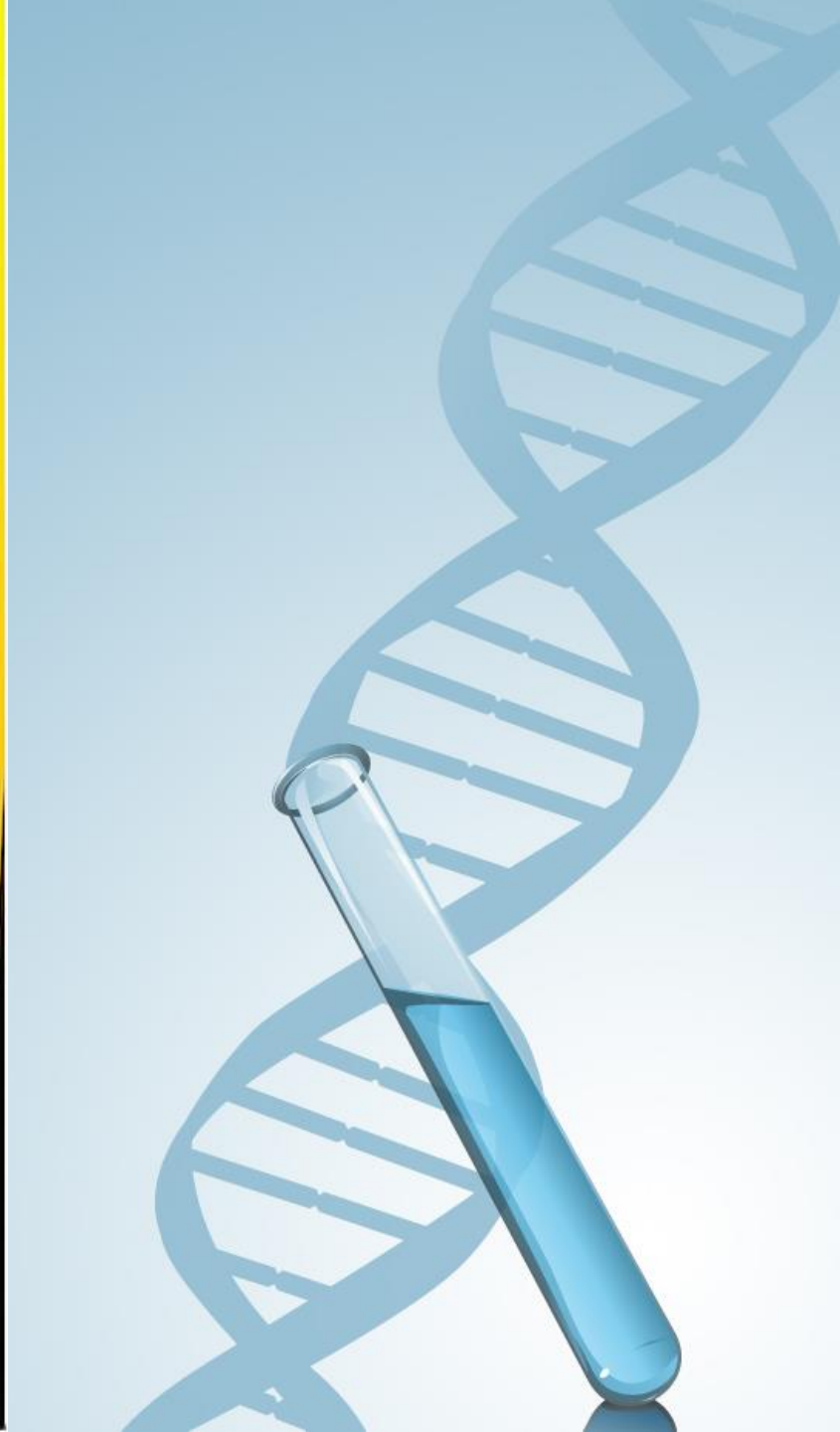
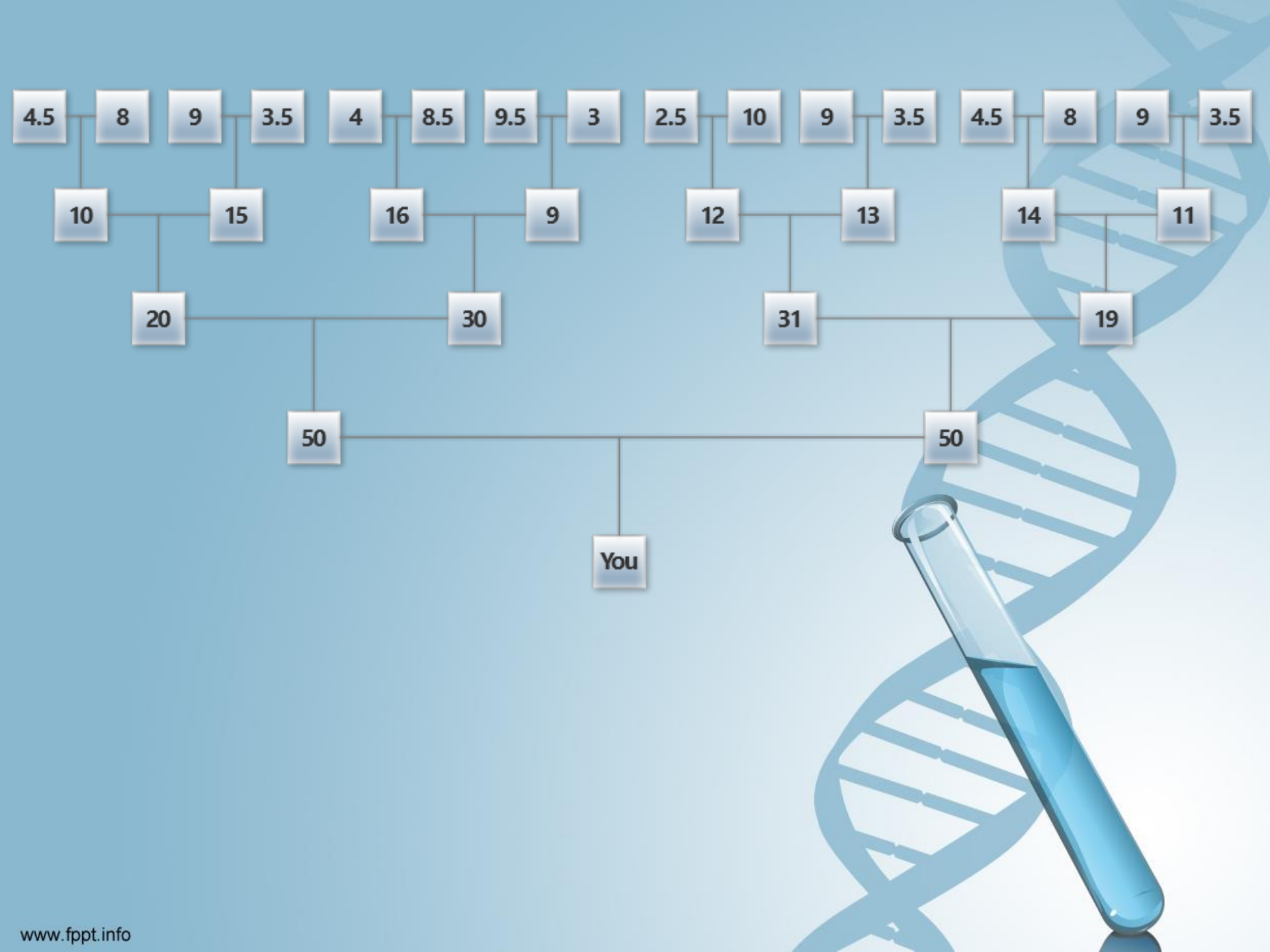
SKIN DEEP: THE SCIENCE OF RACE
DAWN OF THE WHITE MINORITY
US AND THEM: WHY WE DIVIDE
DRIVING WHILE BLACK
SPECIAL ISSUE
NATIONAL GEOGRAPHIC
Black and White
These twin sisters make us rethink everything we know about race
APRIL 2018
WHAT'S YOUR STORY?





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DNA Match

Definition: A person that shares DNA with the test taker

- The closer the relationship, the more DNA shared
- Matches in a database only come from people that have tested at that database company or uploaded their data to that company

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Chromosome Definition

A **chromosome** is an organized package of DNA found in the nucleus of the cell.

Different organisms have different numbers of **chromosomes**. Humans have 23 pairs of **chromosomes** - 22 pairs of numbered **chromosomes**, called autosomes, and one pair of sex **chromosomes**, X and Y

"Chromosome," definition, *International Society of Genetic Genealogy* (https://isogg.org/wiki/Chromosome : accessed 2 March 2020).

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1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10	10
11	11
12	12
13	13
14	14
15	15
16	16
17	17
18	18
19	19
20	20
21	21
22	22
Y	X

Male

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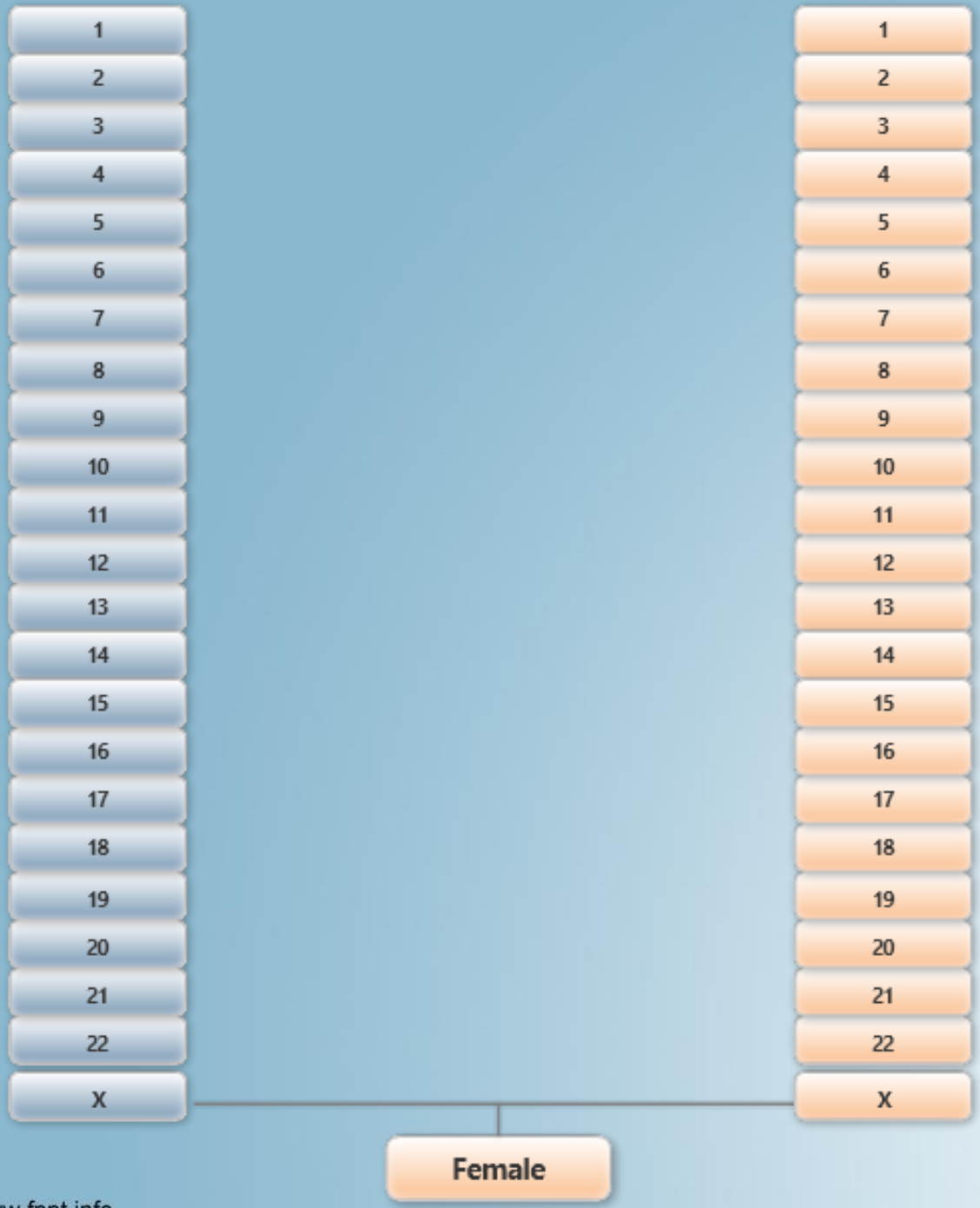

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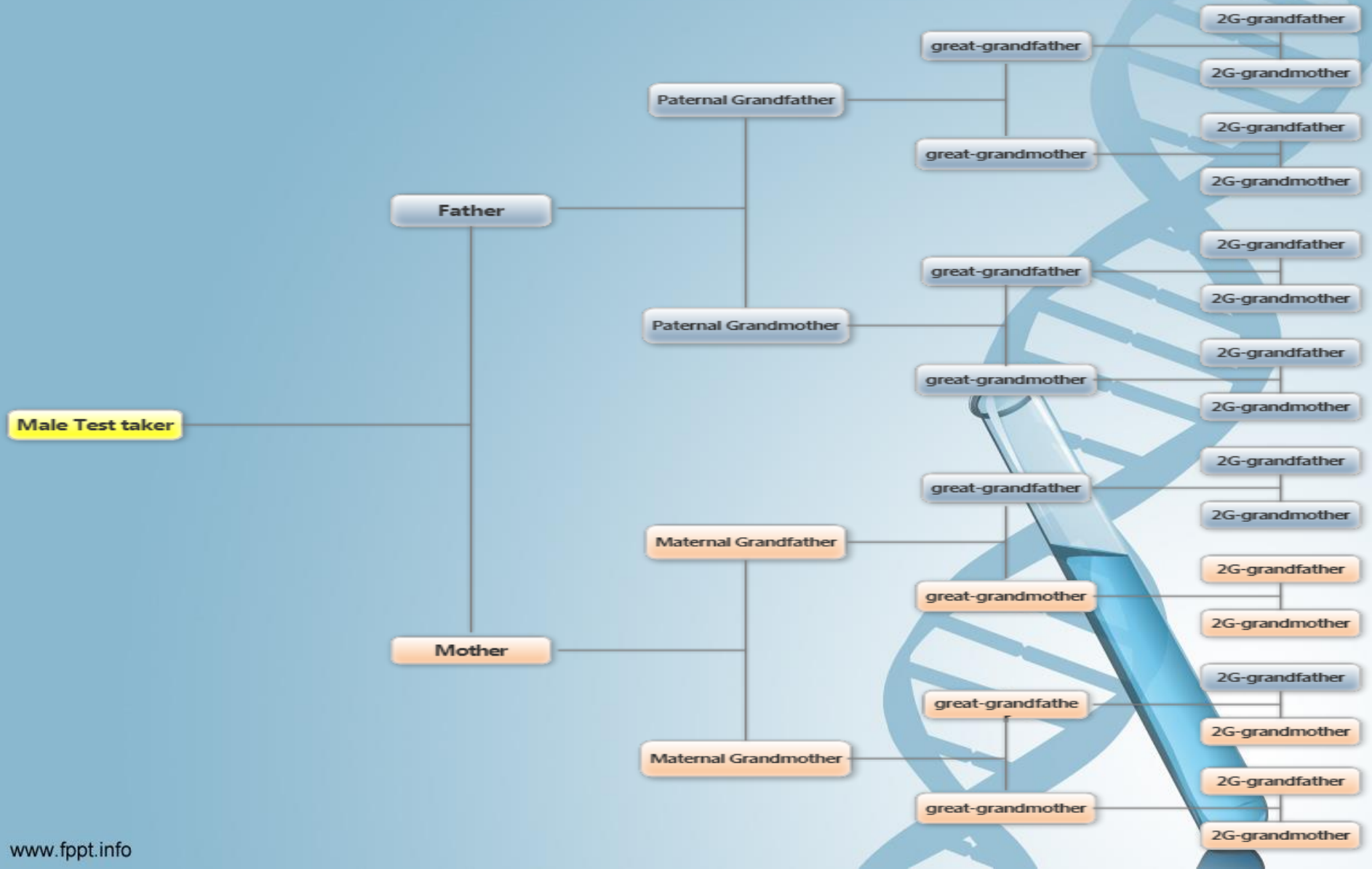
Male X-DNA Inheritance Pattern



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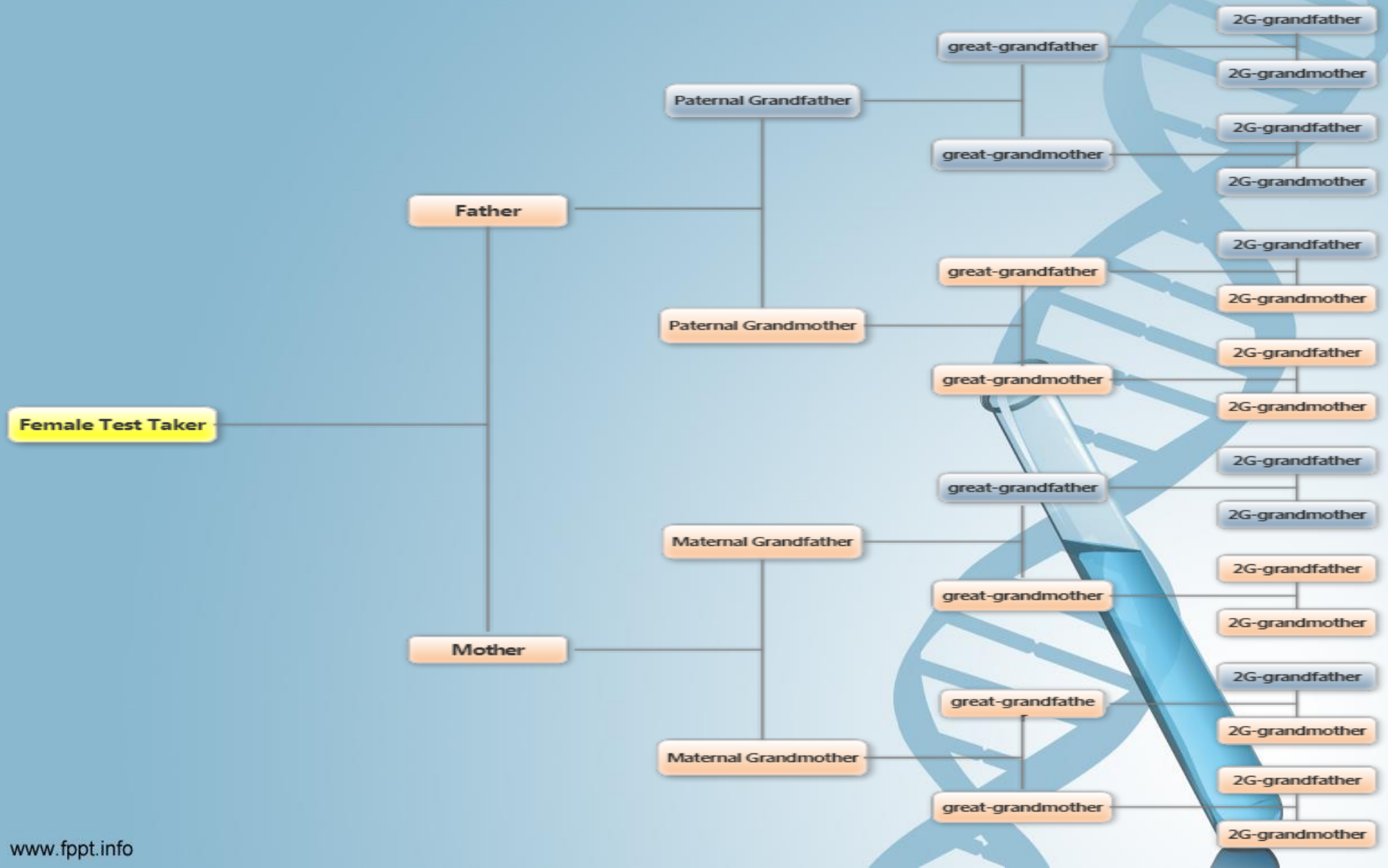
Female X-DNA Inheritance Pattern



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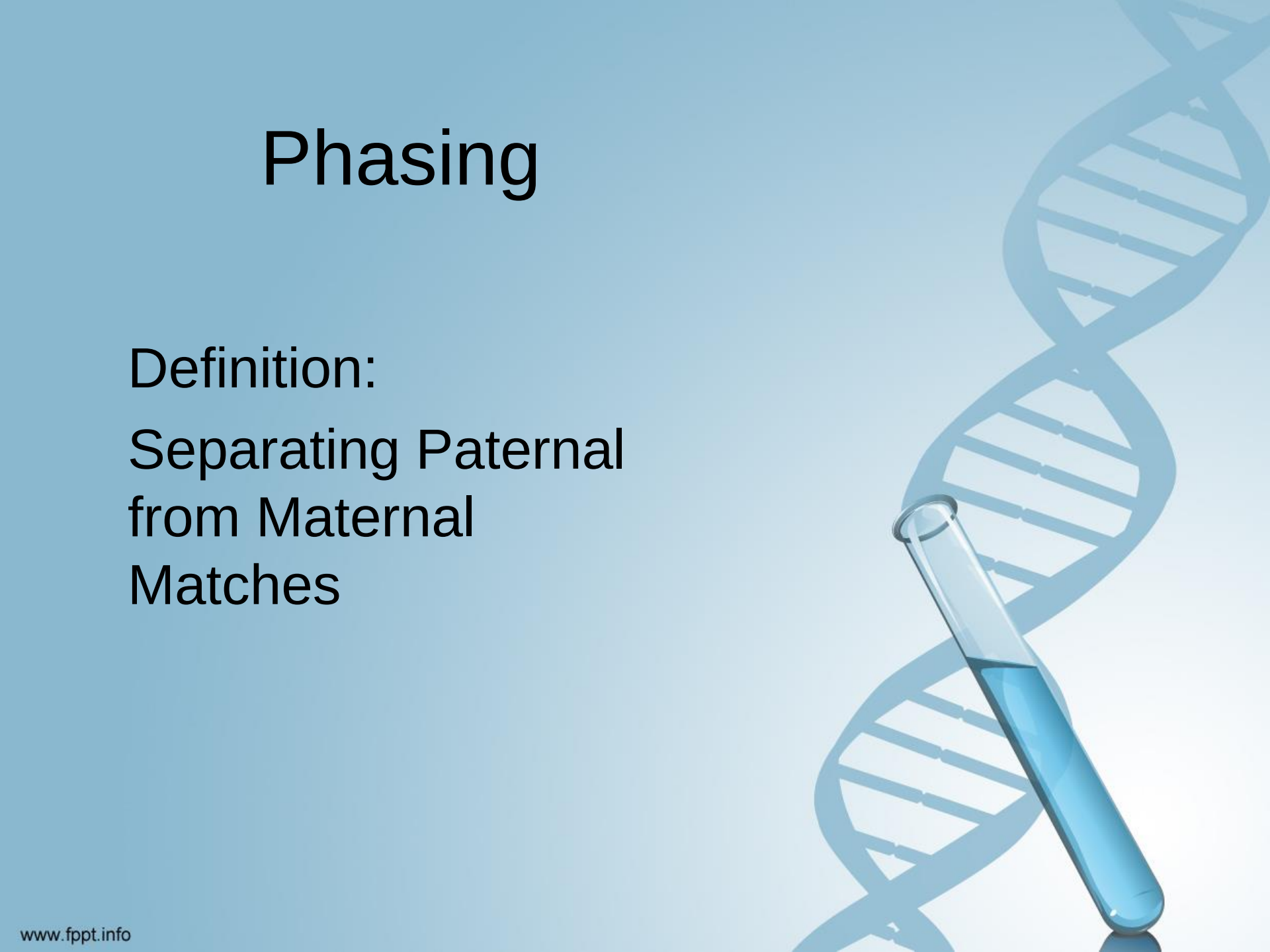
Phasing

Definition:

Separating Paternal from Maternal Matches



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Centimorgan (cM)

Definition: A measurement of genetic distance. It implies distance along a chromosome.

It tells us how much DNA we share with a match.

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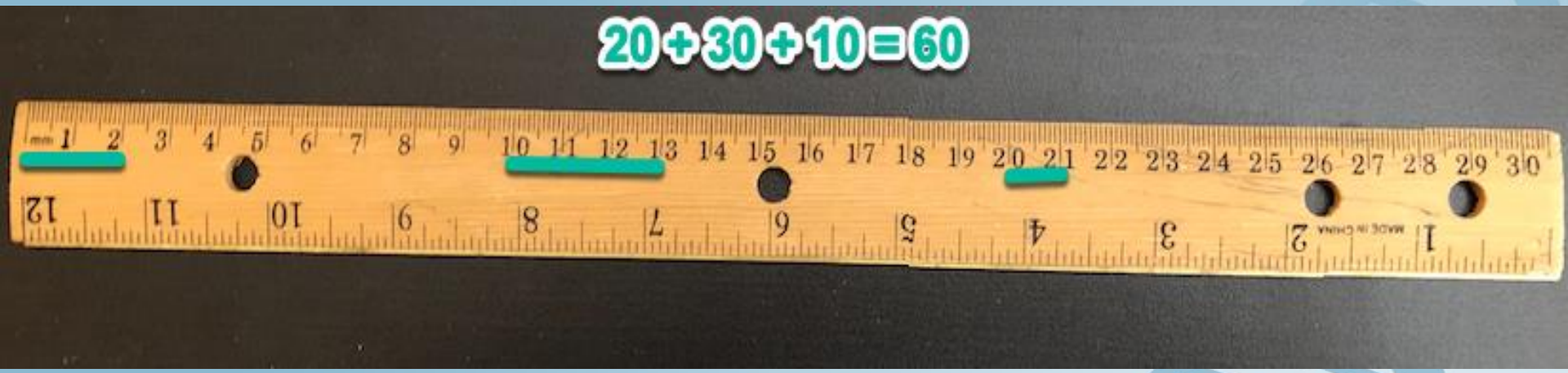

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DNA Segments

The number of areas on a chromosome where we share DNA. This is usually expressed as the total number across all the chromosomes.

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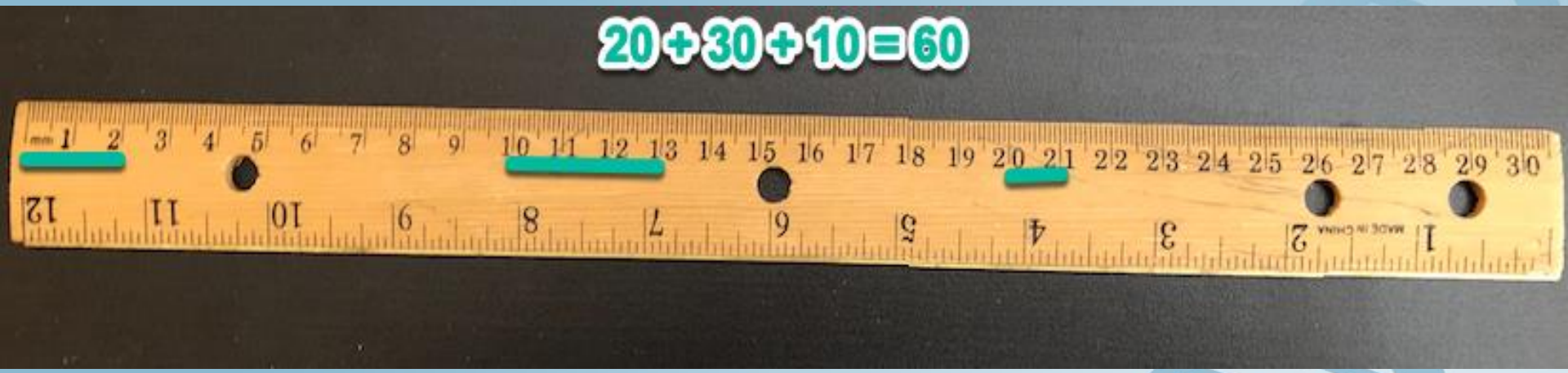

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Why is the amount of cM important?

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The Shared cM Project – **Version 4.0** (March 2020)

Blaine T. Bettinger
www.TheGeneticGenealogist.com
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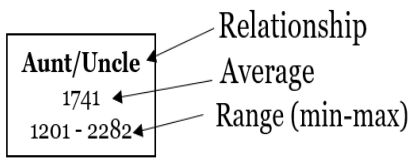
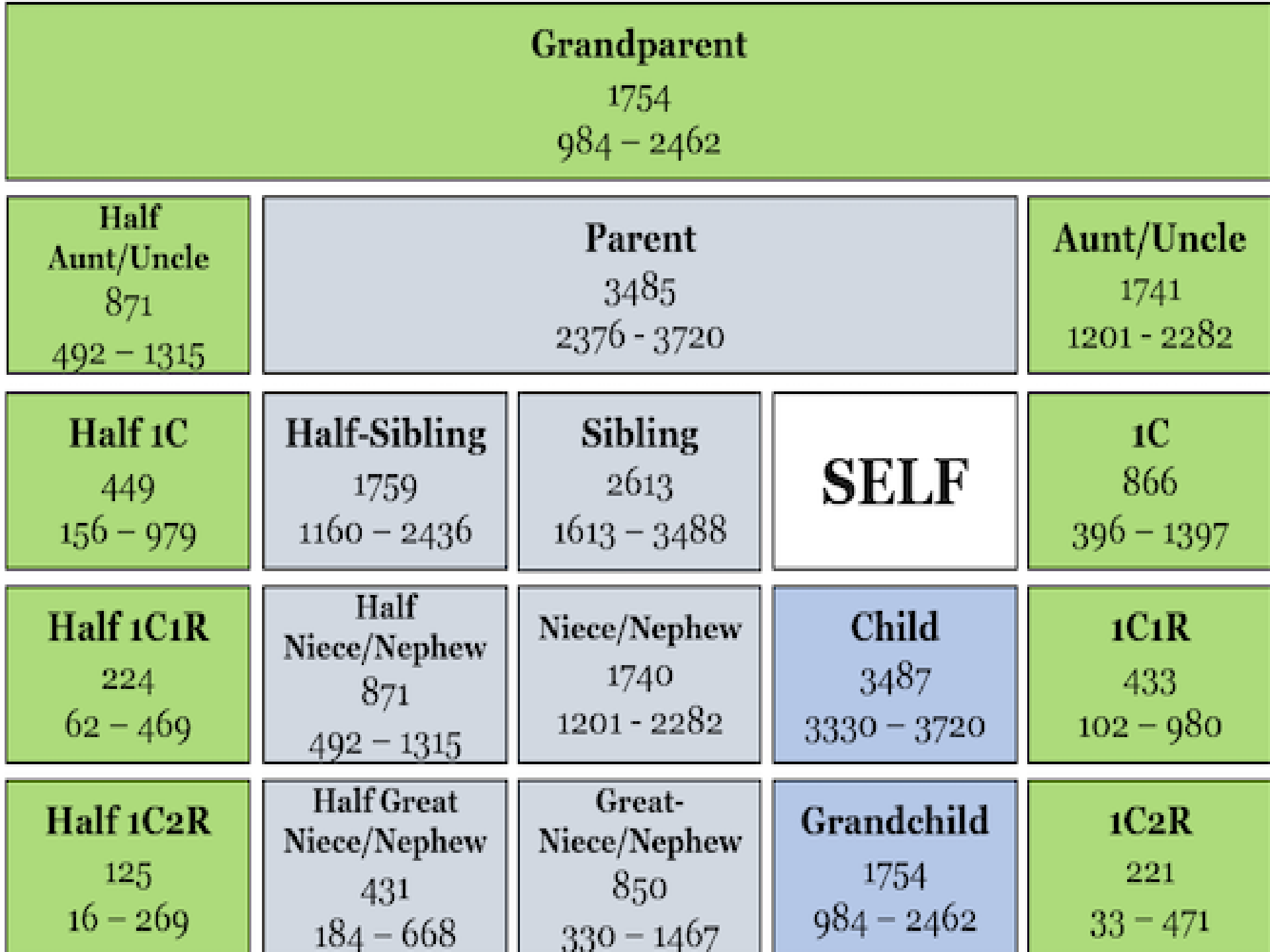
How to read this chart:



						Great-Great-Great-Grandparent			GGGG-Aunt/Uncle	
						Great-Great-Grandparent		GGG-Aunt/Uncle		
Half GG-Aunt/Uncle 208 103 – 284	Great-Grandparent 887 485 – 1486						Great-Great Aunt/Uncle 420 186 – 713	1C3R 117 25 – 238	2c3R 51 0 – 154	Other Relationships
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	2c2R 71 0– 244	3C2R 36 0 – 166	6C 18 0 – 71
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	3C1R 48 0 – 192	4C1R 28 0 – 126	6C1R 15 0 – 56
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	4c 35 0 – 139	5c 25 0 – 117	6C2R 13 0 – 45
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 3330 – 3720	1C1R 433 102 – 980	2c1R 122 14 – 353	3C1R 48 0 – 192	4C1R 28 0 – 126	5C1R 21 0 – 80	7C 14 0 – 57
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 22 0 – 93	5C2R 18 0 – 65	7C1R 12 0 – 50
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	4C3R 19 0 – 60	5C3R 13 0 – 30	8C 11 0 – 42

Minimum was automatically set to 0 cM for relationships more distant than Half 2C, and averages were determined only for submissions in which DNA was shared


Grandparent
1754
984 – 2462
Half Aunt/Uncle
871
492 – 1315
Parent
3485
2376 - 3720
Aunt/Uncle
1741
1201 - 2282
Half 1C
449
156 – 979
Half-Sibling
1759
1160 – 2436
Sibling
2613
1613 – 3488
SELF
1C
866
396 – 1397
Half 1C1R
224
62 – 469
Half Niece/Nephew
871
492 – 1315
Niece/Nephew
1740
1201 - 2282
Child
3487
3330 – 3720
1C1R
433
102 – 980
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

Ancestry.com

- Total amount of DNA shared (cM)
- Total number of segments shared
- The amount of X-DNA is included in the total amount of DNA shared and total segments.
- No specific X-DNA information given
- No chromosome information provided

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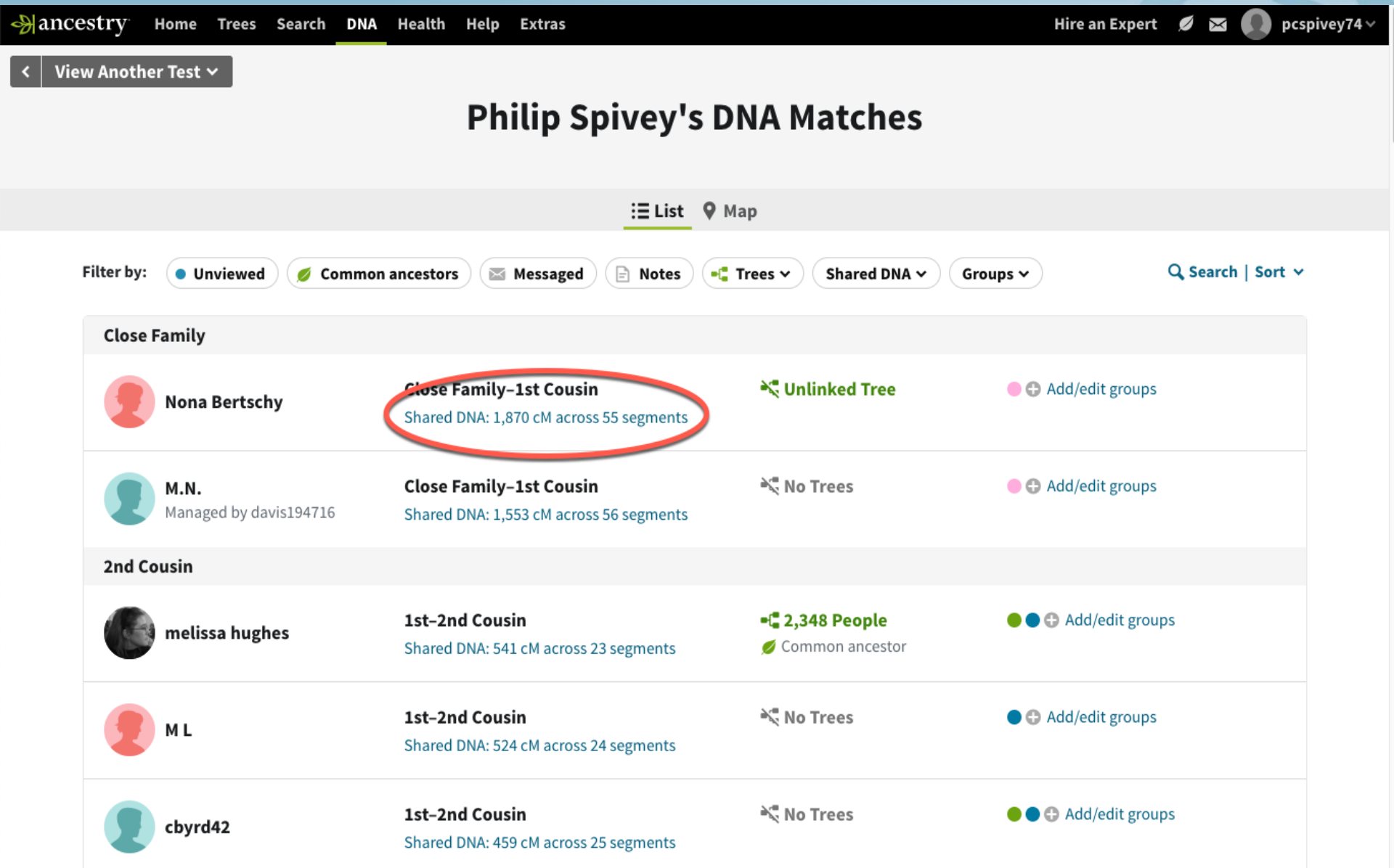
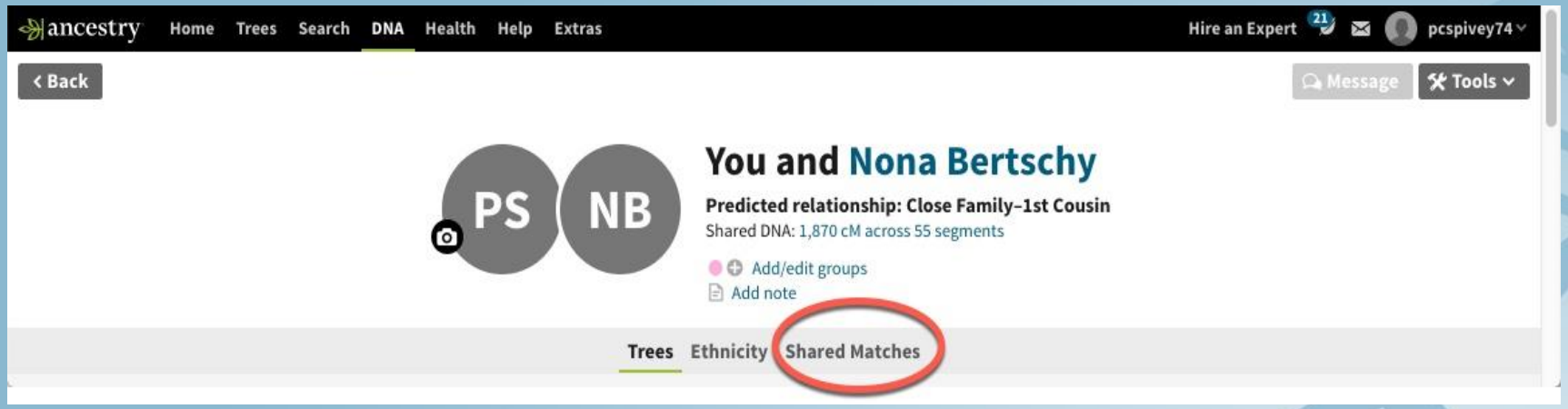
Ancestry-Matches





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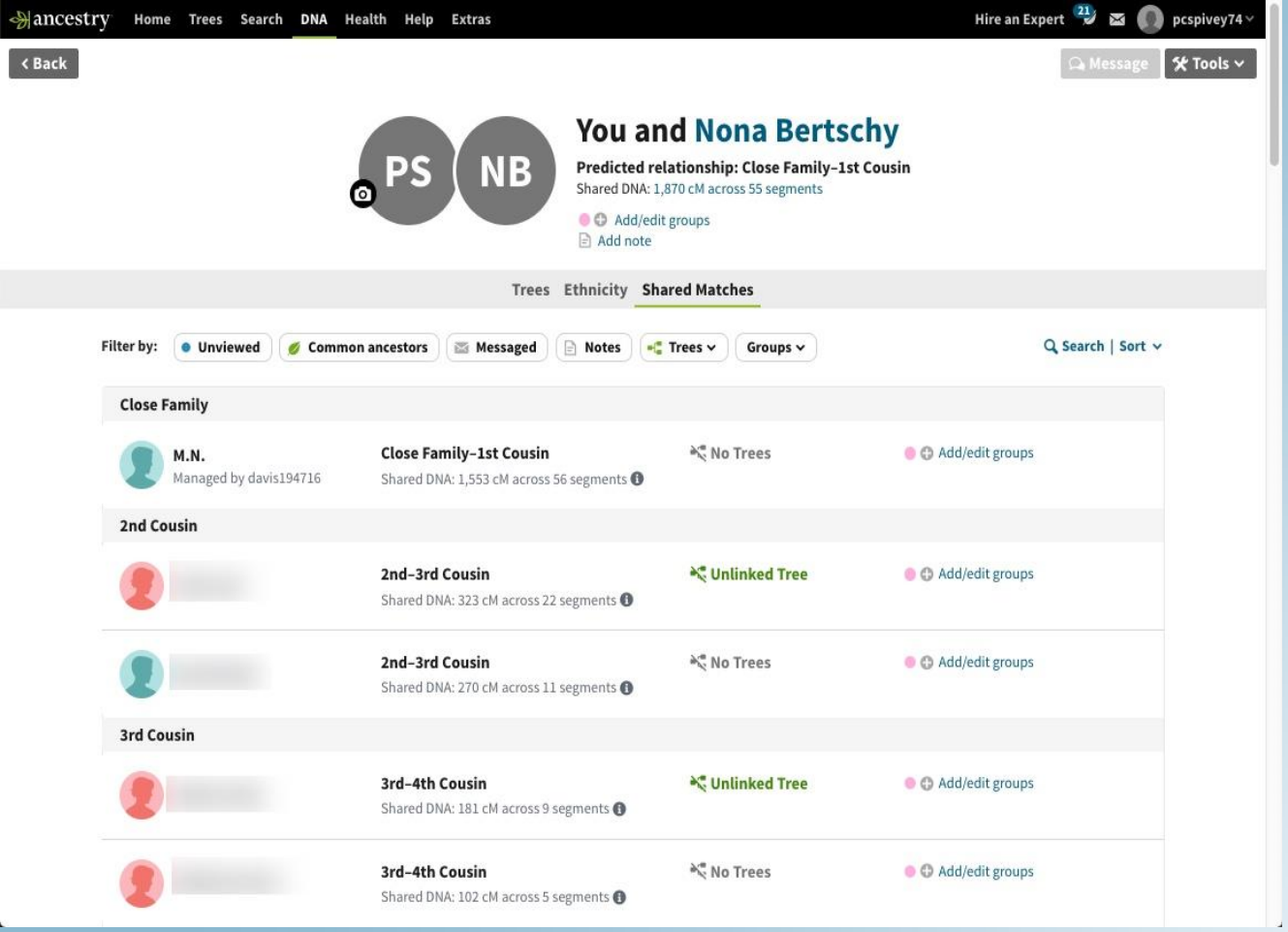

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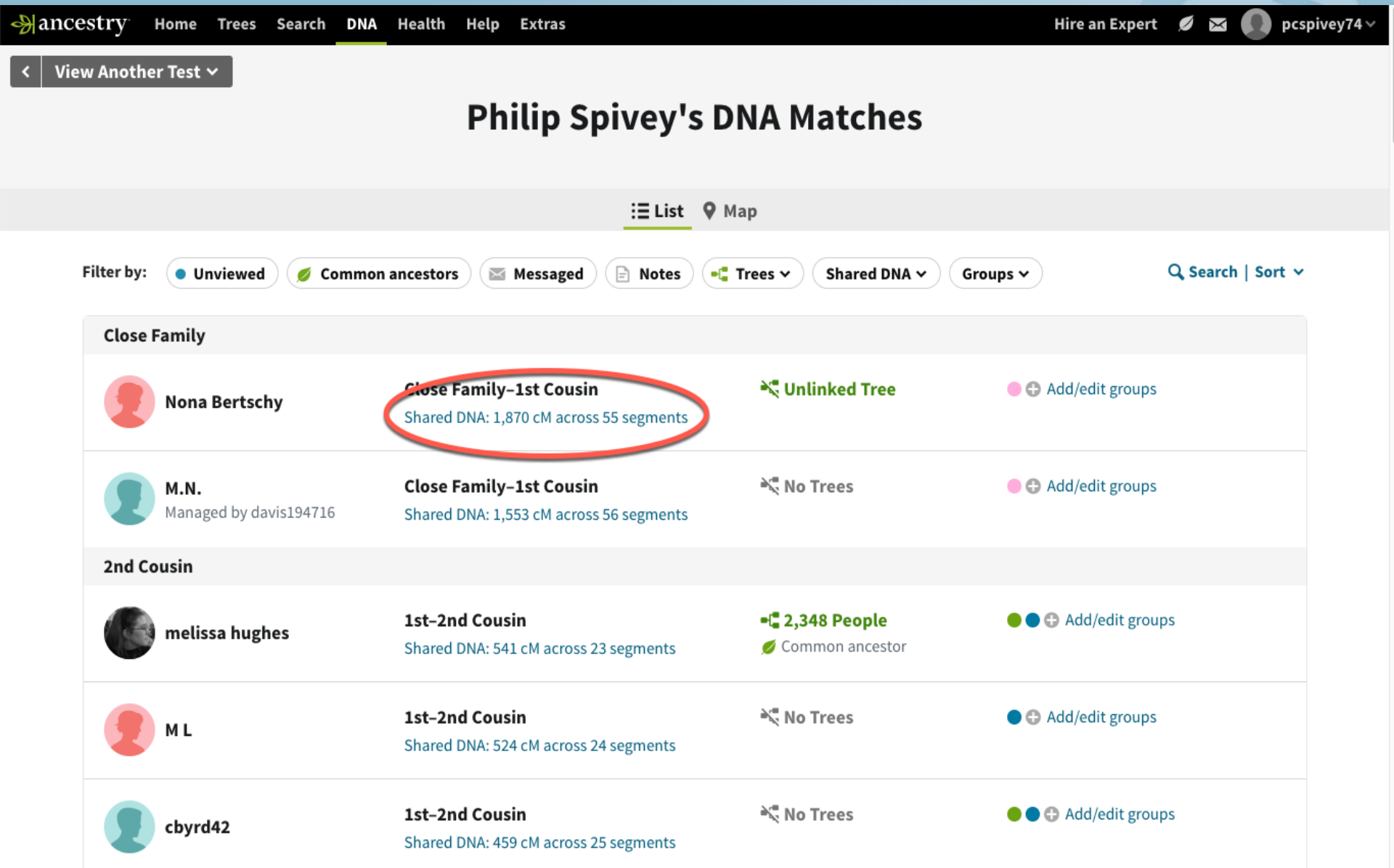
Ancestry-Matches



My Quick Links

+ Add Quick Links

Philip's updates

Tutorial NEW

Refund Policy updated on October 21, 2019 IMPORTANT

Complete Family Ancestry survey

myProjects

Cobb & Cobbs
English Mapping
H and HV mtDNA Hg
H4 mtGenome
Ireland mtDNA
Irish Mapping
R _R1b ALL Subclades

MANAGE PROJECTS JOIN A PROJECT

Family Ancestry

Family Finder

See the percentage breakdown of your origins as well as your ancient origins, and connect with your autosomal DNA relatives on all of your ancestral lines within the last 5 generations.

Results Completed: August 26, 2014

Matches | myOrigins | Matrix
Data Download | Chromosome Browser | ancientOrigins
Advanced Matches | Learn More

Partner Services

Vitagene Health Report

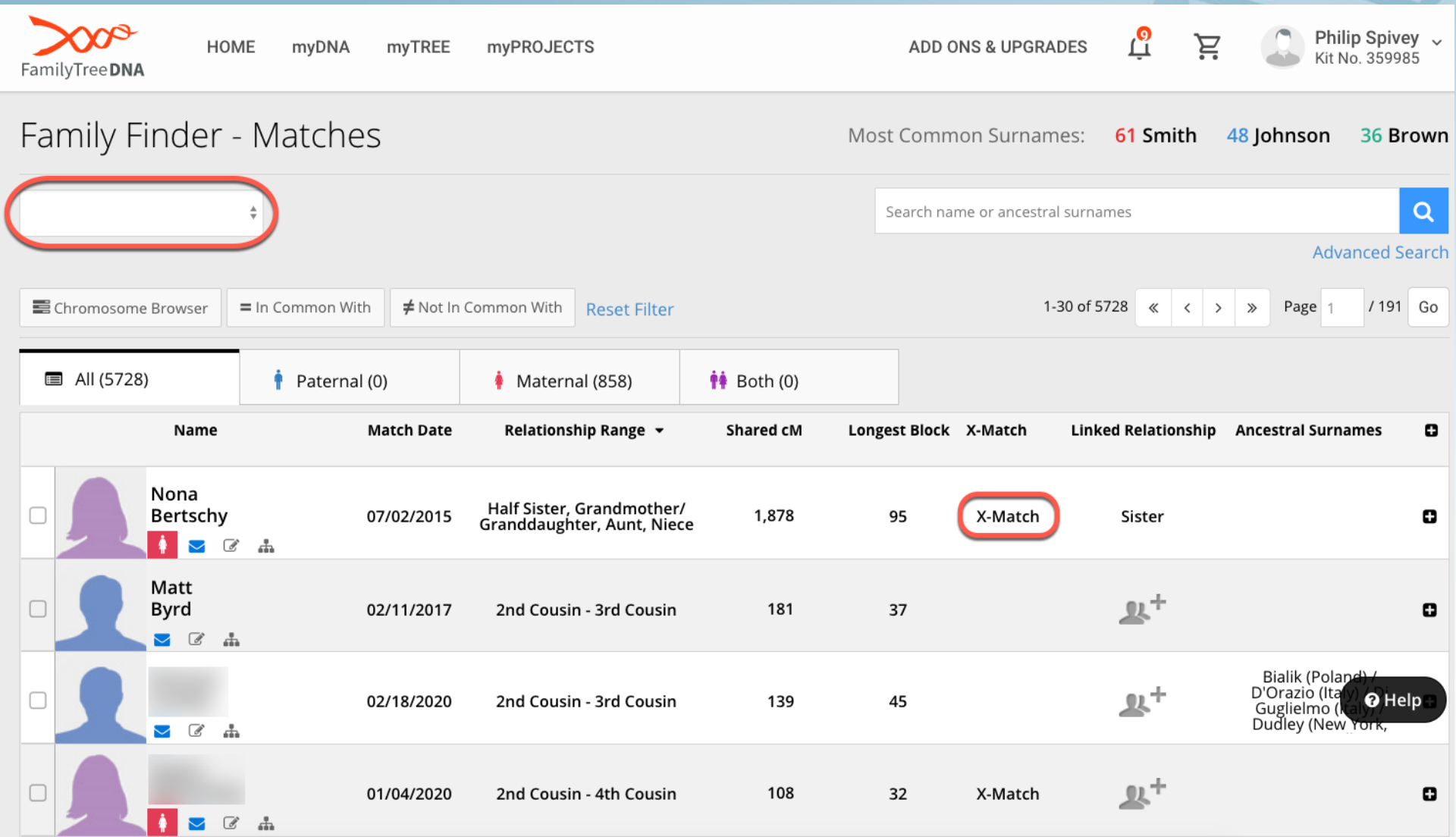
Paternal Ancestry R-BY134644

Y12 Y25 Y37 Y67 Y111 Big Y

Y-DNA

Follow the migration paths of your paternal line's ancestors, and connect with your Y-DNA

FTDNA-Matches



Chromosome Browser

A representation of 22 chromosomes showing the areas of shared DNA. The browser may also include the X chromosome. (usually not phased)

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Compare

Philip Spivey YOU

With

Nona Bertschy
Half Sister, Grand...

Selected 1/7 Clear All

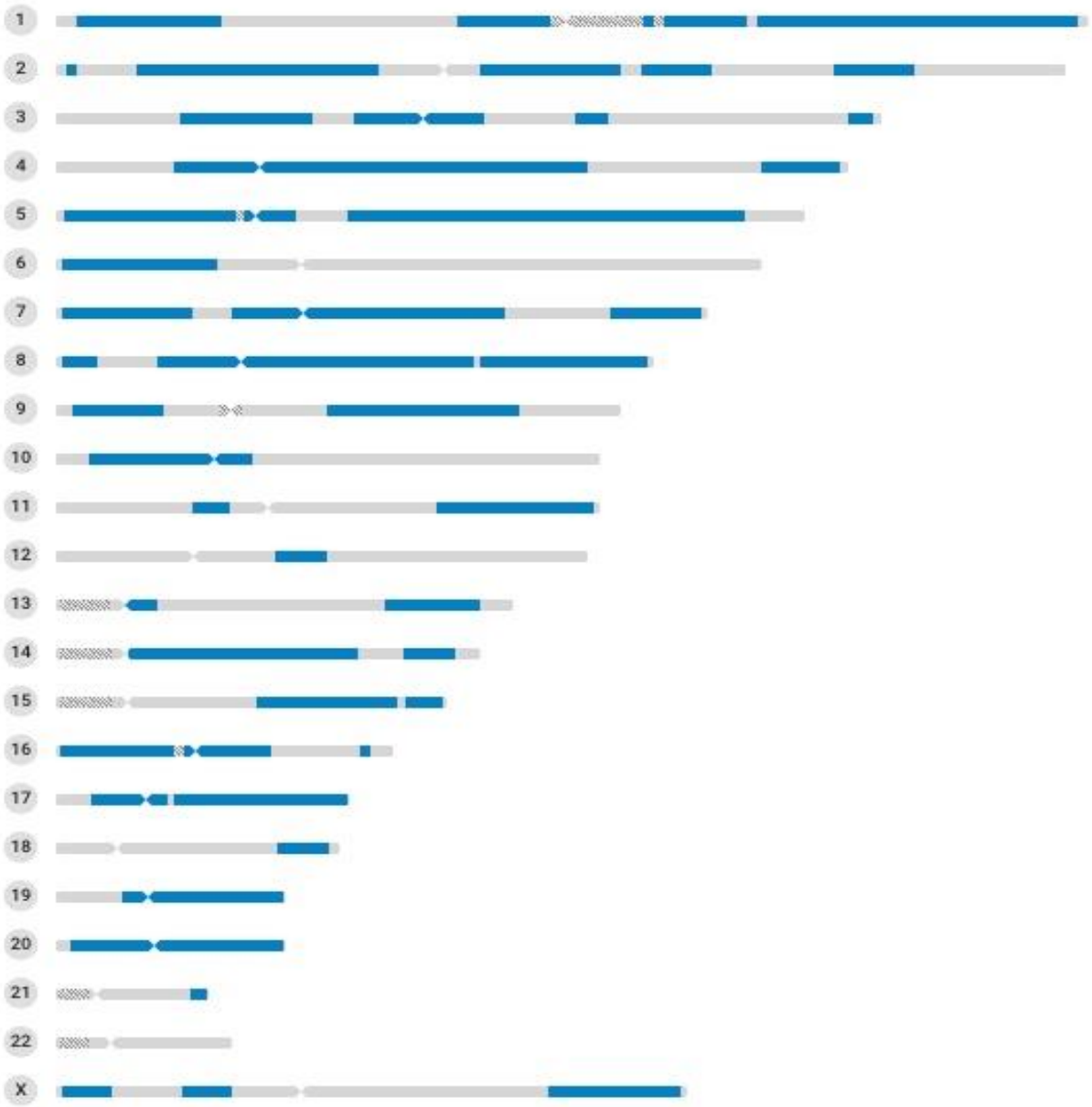
Update Selected Matches

← Shared DNA Segments

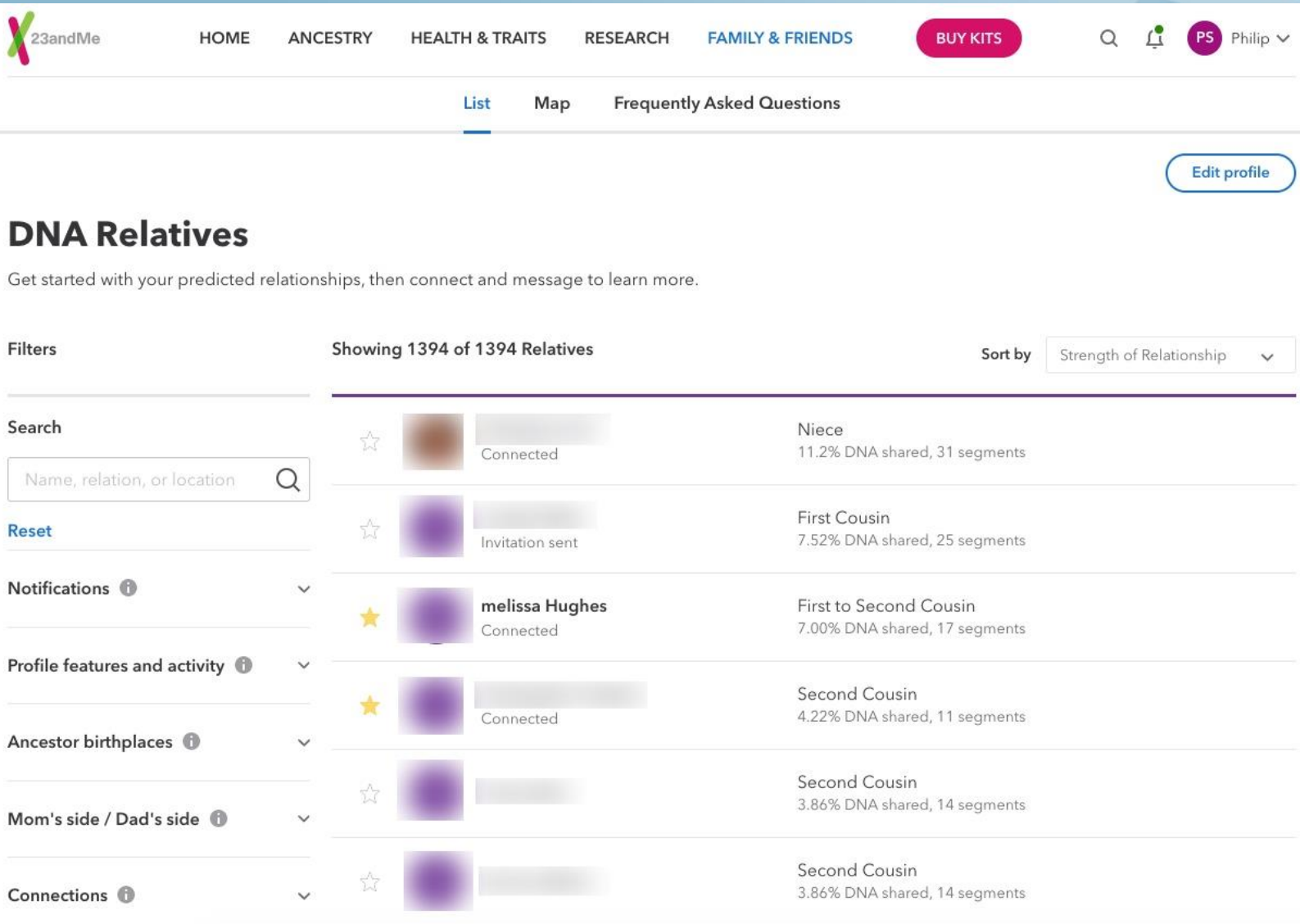
Chromosome View | Detailed Segment Data

5+ centimorgans

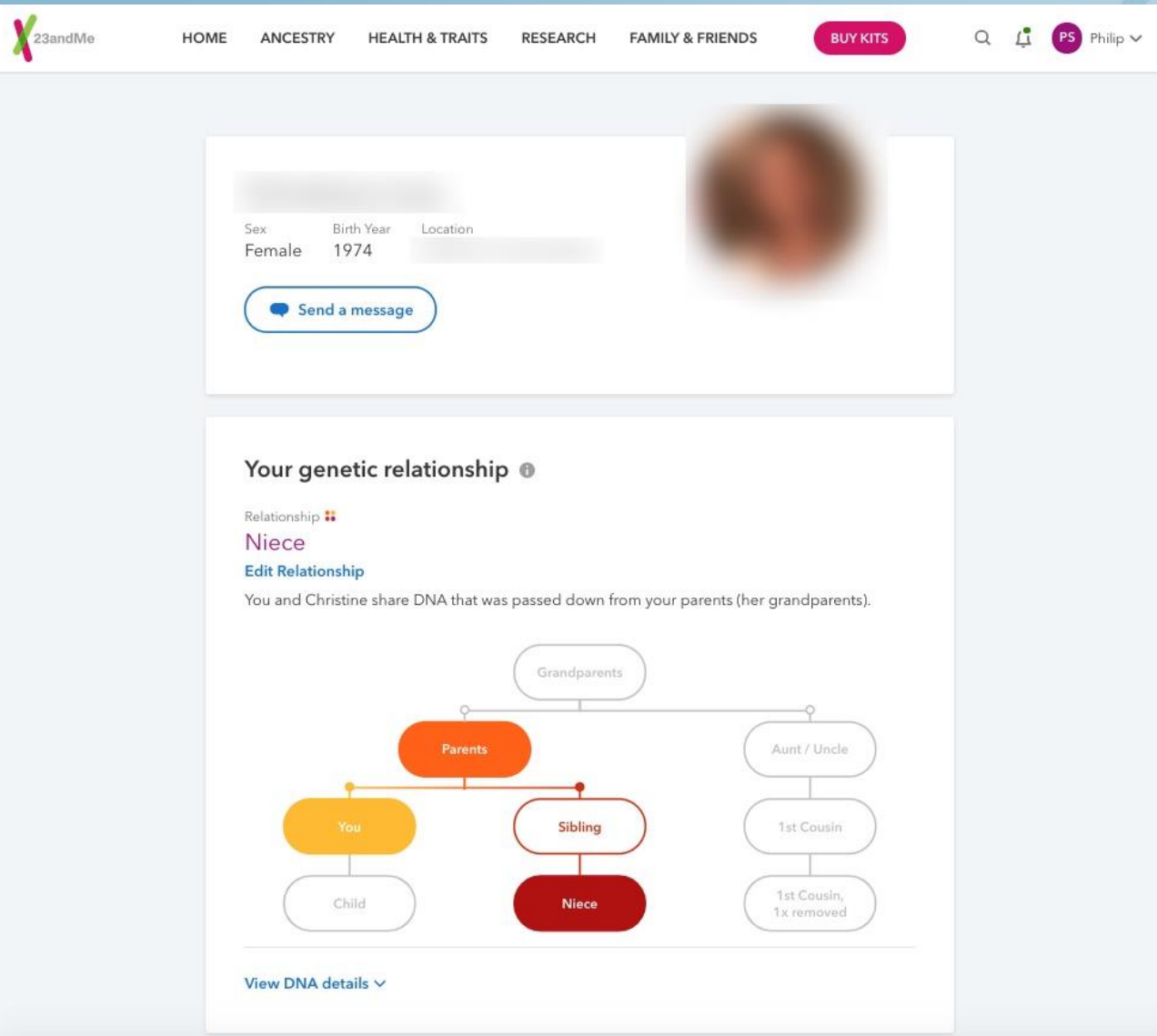
Download Segments



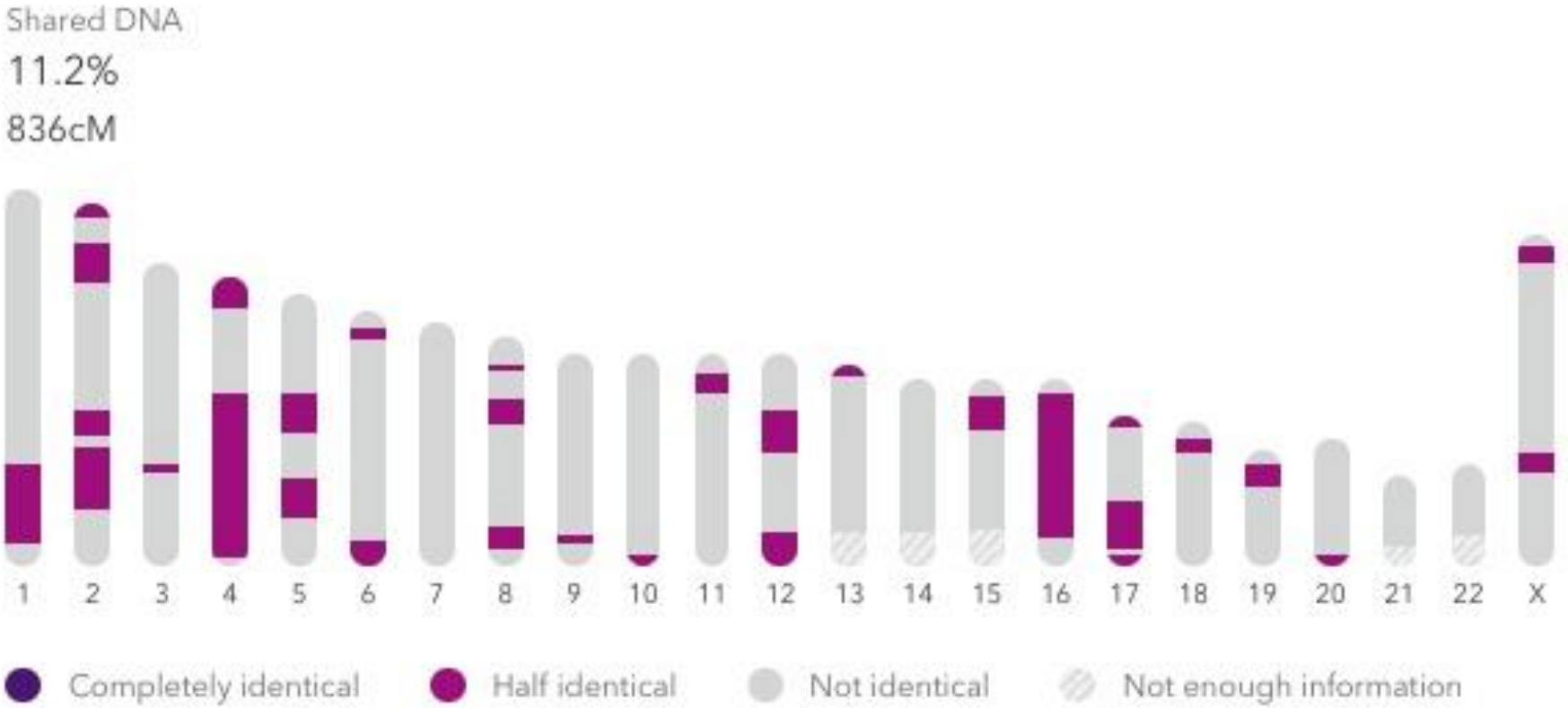
23andMe-Matches



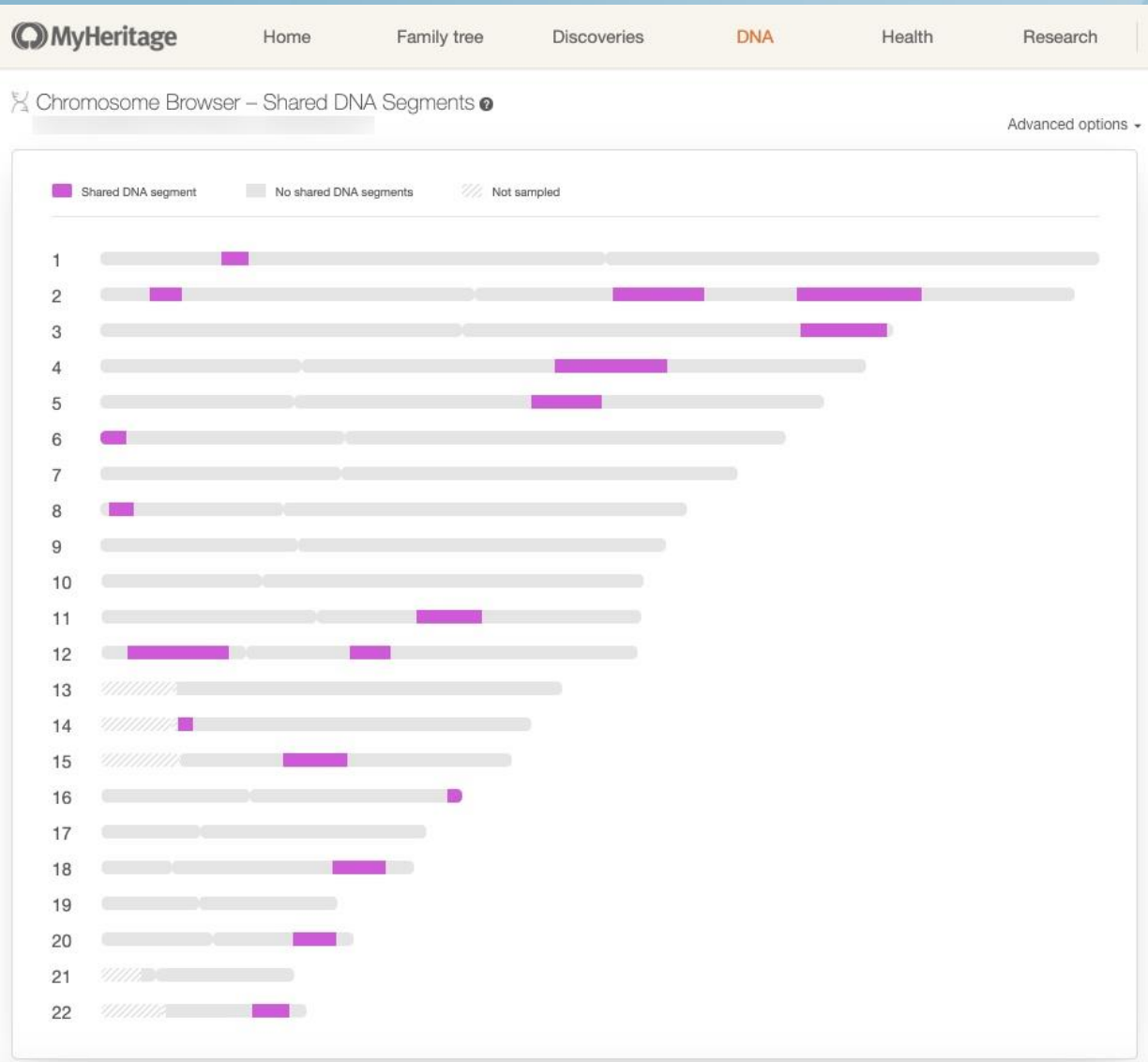
23andMe-Match Profile



23andMe-Browser



MyHeritage-Browser



https://www.gedmatch.com/

Tools for DNA and Genealogy Research

Welcome to GEDmatch. If you are already registered, just enter your login ID and password in the place provided below.

If you are not previously registered, click on the registration link near the bottom of this page. You will be asked to provide a valid email address and a password. After you are registered, you will be required to accept the GEDmatch Terms of Service. You can read the Terms of Service before you register by clicking on the link at the bottom of this page.

GEDmatch provides applications for comparing your DNA test results with other people. There are also applications for estimating your ancestry. Some applications are free. More advanced applications require membership in the GEDmatch Tier1 program at $10 per month.

If you have any questions or comments, you can reach us at GEDmatch@verogen.com

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Log In

Email Address: pcspivey@gmail.com

Password: ••••••••••••••

Log in

Not Registered? Click HERE to register at the main site - when registered return to this page to access www.gedmatch.com

Clustering

Putting matches into groups with similar characteristics.

- Phasing matches (simplest form of clustering)
- Sub-clusters
  - Family groups
  - DNA

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Phasing Genetic Networks (Clusters)

- Automatic Clustering
  - GEDmatch-Autoclustering
  - MyHeritage-Autocluster
  - Genetic Affairs
  - Ancestry ThruLines
- Manual Clustering
  - Dana Leeds method

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User Profile (113035):
Name: Philip Spivey
Email: pcspivey@gmail.com

Tier 1 Member

Tier 1 Paid Until 2020-03-21

View/Change/Delete your profile (password, email, groups)

Change EU/Unknown kit status

The number of online users is 134

LEGEND:	
(Status indicators shown to the right of each kit below)	
✓	Kit has completed all processing and has good status
✎	Click on pencil if you wish to EDIT or DELETE kit profile
2	Likely duplicate - may need to be deleted
R	Research kit
?	Unknown Status
Click on blue kit number to go directly to one-to-many results	

Your DNA resources:

M696320	R	✓	Philip Spivey	✎
A809522	R	✓	Philip Spivey	✎
A333798	R	2	Philip Spivey	✎
T978605	R	✓	Philip Spivey	✎
A314348	R	✓	Nona Bertschy	✎
A213141	R	✓	Paula Stringer	✎
T575566		✓	Matt Byrd	POLICE ✎
A210918	R	✓	Barbara Spivey	✎
XL194899C1	y	✓	Philip Spivey	POLICE ✎

You have not uploaded any GEDCOM (genealogy) resources

Information:

- User Lookup - Find information on your matches.
- How to use GEDmatch
- GEDmatch Terms of Service
- GEDmatch info about you
- GEDmatch Wiki
- Useful Videos
- Support Request

Upload your DNA files:

- Generic Uploads (23andme, FTDNA, AncestryDNA, most others)

DNA Applications:

- One-To-Many Beta - give it a try
- One-To-Many DNA Comparison Result
- One-to-One Autosomal DNA Comparison
- One-to-One X-DNA Comparison
- Admixture (heritage)
- Admixture / Oracle with Population Search
- People who match both, or 1 of 2 kits
- DNA File Diagnostic Utility Analyze DNA file upload for potential problems.
- Are your parents related?
- 3-D Chromosome Browser
- Archaic DNA Matches
- Ancestor Projects NEW

GEDmatch Forums

- Gedmatch Forums - Starting over!

Tier 1

- One-To-Many DNA Comparison Beta
- One-To-Many DNA Comparison
- Q-Matching One-To-One
- Segment Search
- Phasing
- Triangulation
- Multiple Kit Analysis (MKA)
- Lazarus
- My Evil Twin
- Combine multiple kits into 1 superkit NEW!
- Clusters, Single Kit Input, Basic Version NEW!

GEDmatch® Auto-Clustering

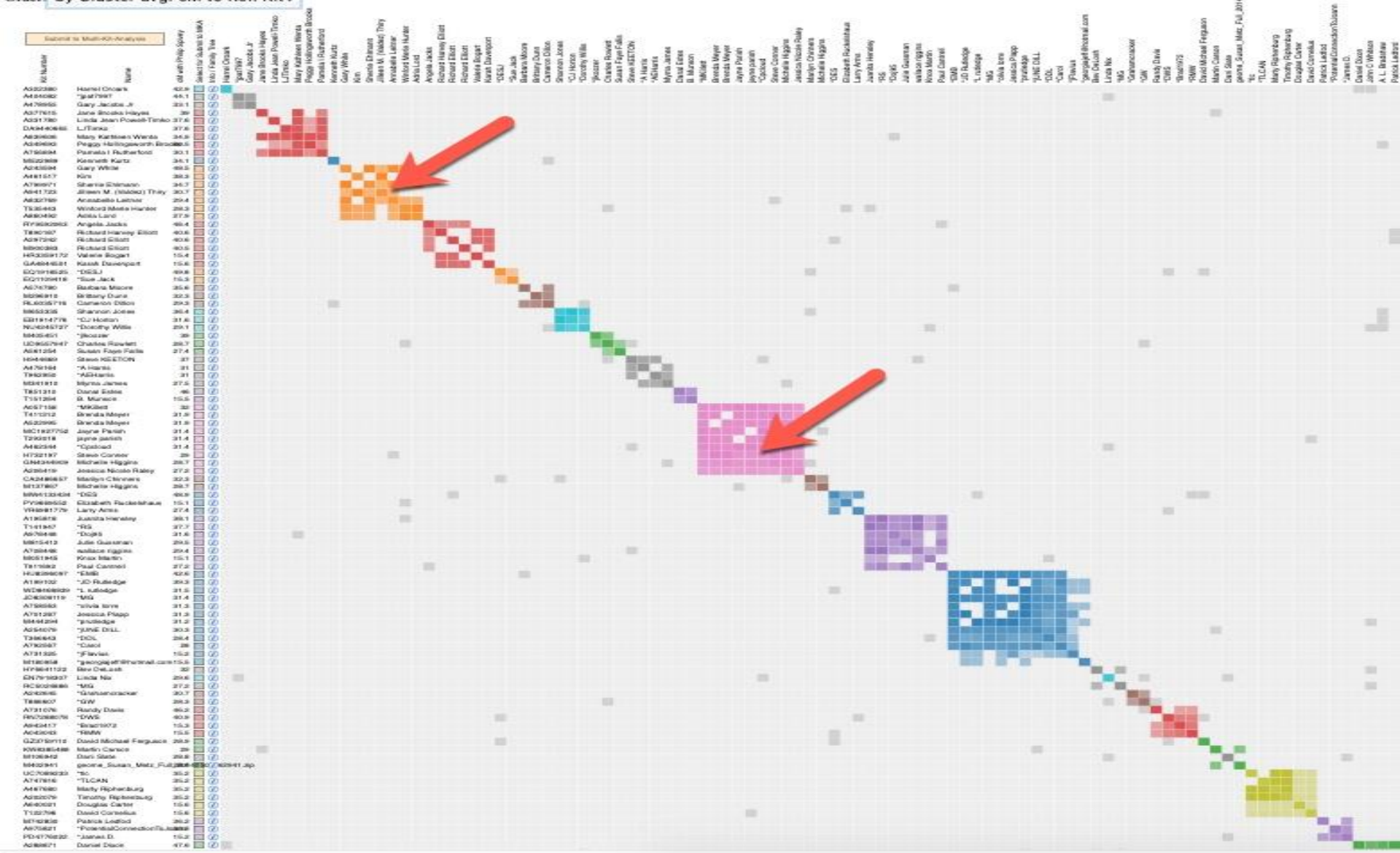
Here is a link to a useful YouTube video on using the Tier 1 Clustering tool.

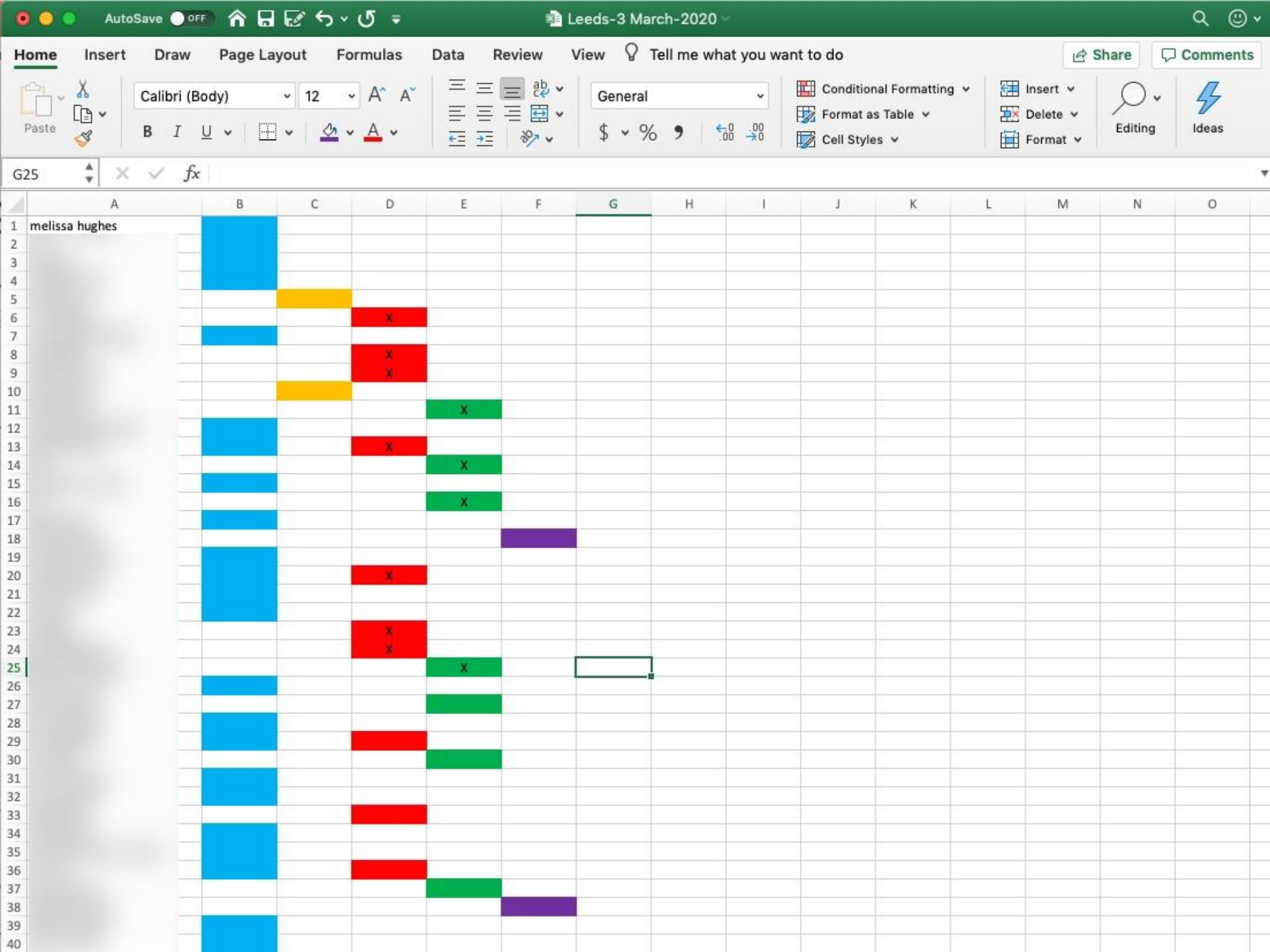
Reference Kit: XL194899C1 (Philip Spivey)
425 Kits
144 Clusters
Lower cM threshold= 15
Upper cM threshold= 50

The AutoCluster feature on GEDmatch® was developed in collaboration with Evert-Jan Blom from Genetic Affairs

2020-03-03

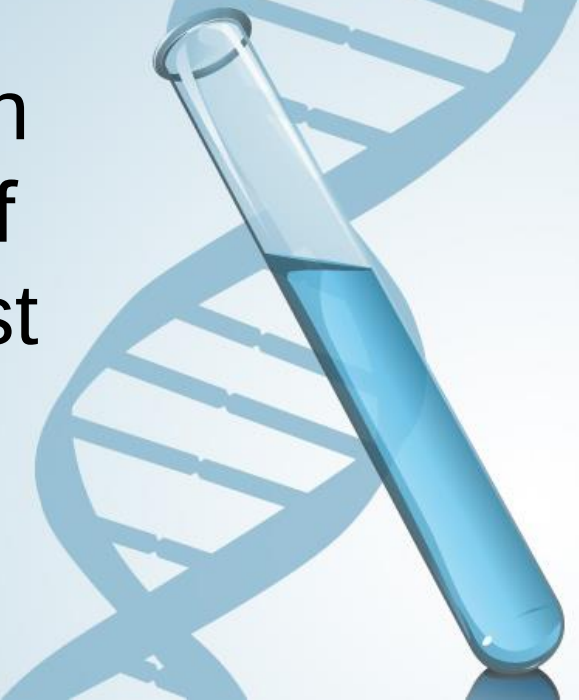
Order: by Cluster avg. cM to Ref. Kit




AutoSave OFF
Leeds-3 March-2020
Home
Insert
Draw
Page Layout
Formulas
Data
Review
View
Tell me what you want to do
Share
Comments
Paste
Calibri (Body)
12
General
Conditional Formatting
Format as Table
Cell Styles
Insert
Delete
Format
Editing
Ideas
G25
melissa hughes

Things to keep in mind

- For males – all X-DNA matches are maternal
- Not all maternal matches are X-DNA matches
- X-DNA phasing works even when we don’t know any of the people on our match list



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Questions

?

pcspivey@gmail.com

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