

Intro to Genetic Genealogy

Craig Rhombs





Welcome

- Who am I?
- Why am I doing this?
- Definition of genealogy = “an account of the descent of a person, family, or group from an ancestor or from older forms”
- Basic objectives
 - Present the basics from biology
 - Explain the practical application to genealogy



Where Can I Find Class Materials?

<https://281connections.us>

https://281connections.us/281connections_Wiki/Education.html

Contact: craig@281connections.us



Topic Outline

- Biological Groundings
 - The Cell and DNA
 - Nuclear DNA
 - Autosomal DNA
 - Sex chromosomes
 - Statistical processes
 - Mitochondrial DNA
- Genetic Testing for Genealogy
 - What you get
 - Interpreting autosomal match data
 - Interpreting yDNA and mtDNA match data
 - Examples from familytreedna.com and ancestry.com
 - Rules of Thumb and Cautions

Attitudes & Respect

- "I don't know who my grandfather was, I am much more concerned to know what his grandson will be." -- Abraham Lincoln
- "When a society or a civilization perishes, one condition can always be found. They forgot where they came from." -- Carl Sandburg
- "We are the children of many sires, and every drop of blood in us in its turn ... betrays its ancestor." -- Ralph Waldo Emerson



Review Expectations

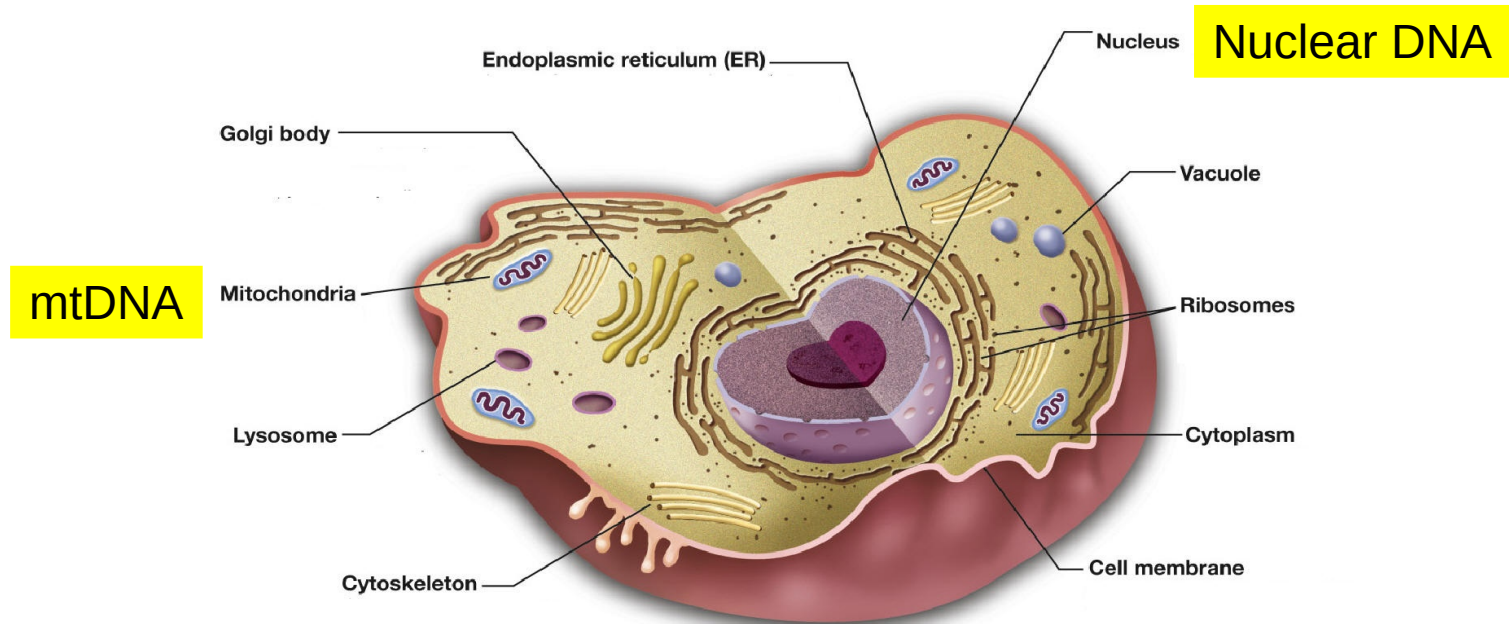
- This type of analysis may be difficult.
- It will cost \$.
- It may reveal stuff that you are uncomfortable with.
- It will be most useful if you have already done significant tradition research.
- It may also help you confirm suspicions or unclear results from traditional research.
- Some analytic results will vary for good reasons.
- There is a lot of marketing hype about what to expect.

More on Expectations

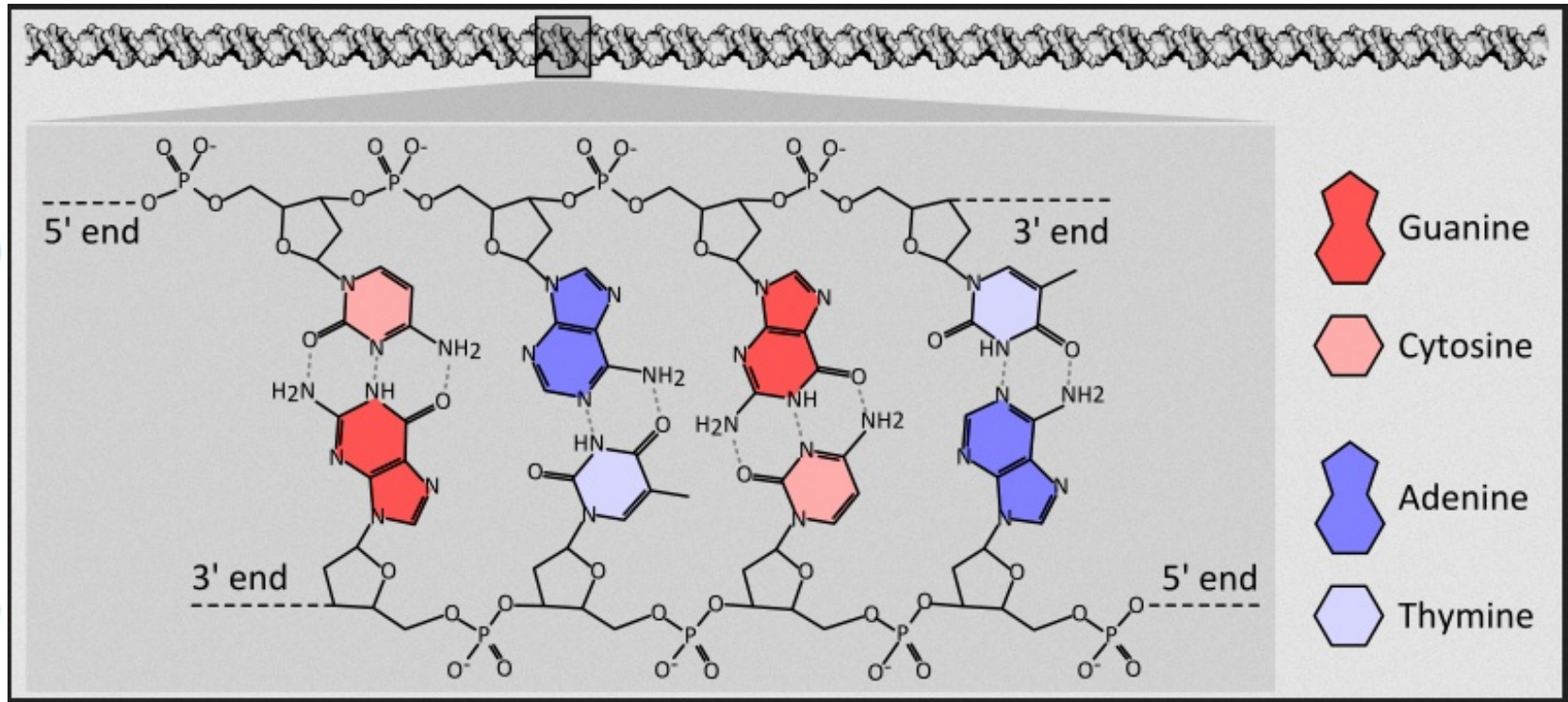
- Find cousins you did not know you had.
- Biology does not obfuscate.
- There are practical limits to how far back in time you can detect a genetic “signal”.
- Understand the math.
- https://en.wikipedia.org/wiki/Introduction_to_genetics

Cell Components – 2 kinds of DNA

Diagram of an Animal Cell



DNA at the Molecular Level



The chemical structure of a four base pair fragment of a DNA double helix. The sugar-phosphate backbone chains run in opposite directions with the bases pointing inwards, base-pairing A to T and C to G with hydrogen bonds.

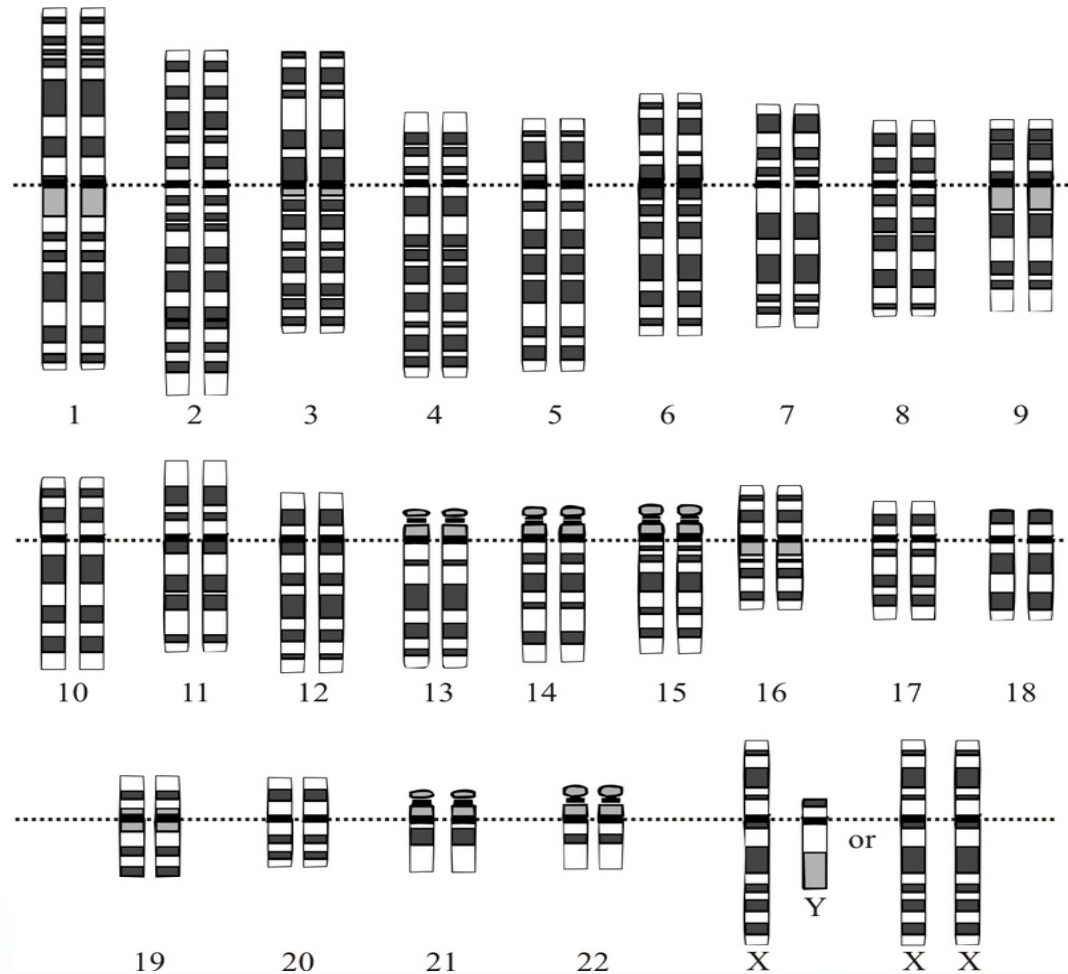
(Author: Thomas Shafee; This file is licensed under the Creative Commons Attribution 4.0 International license.)

Nuclear DNA

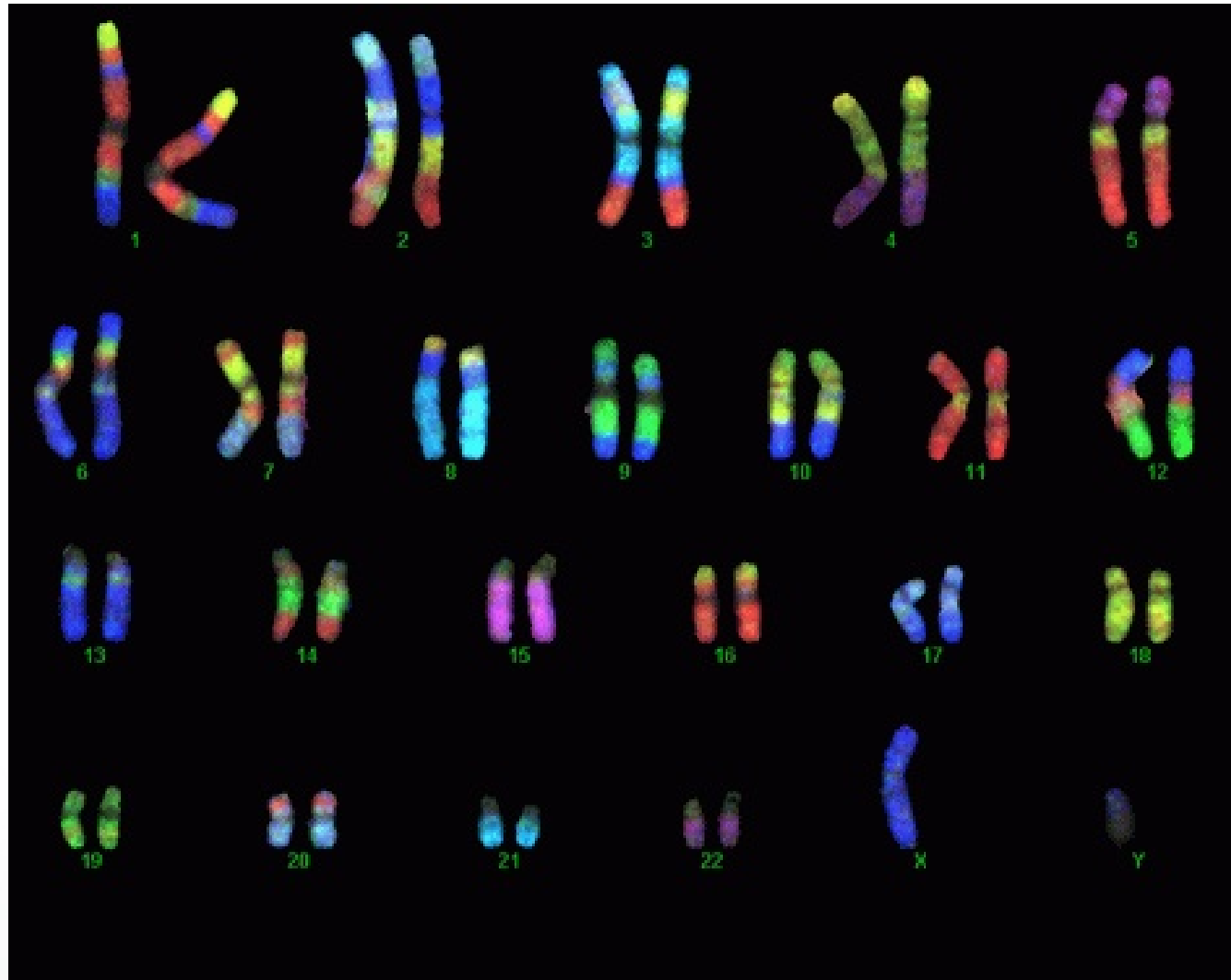
- 23 chromosome pairs (diploid cells)
- 23 single chromosomes (haploid cells)
- Meiosis (creating gametes)
- Genes (parts of chromosomes; alleles)
- Parental contributions
- Special nature of the sex chromosome pair

Human Genome (23 pairs)

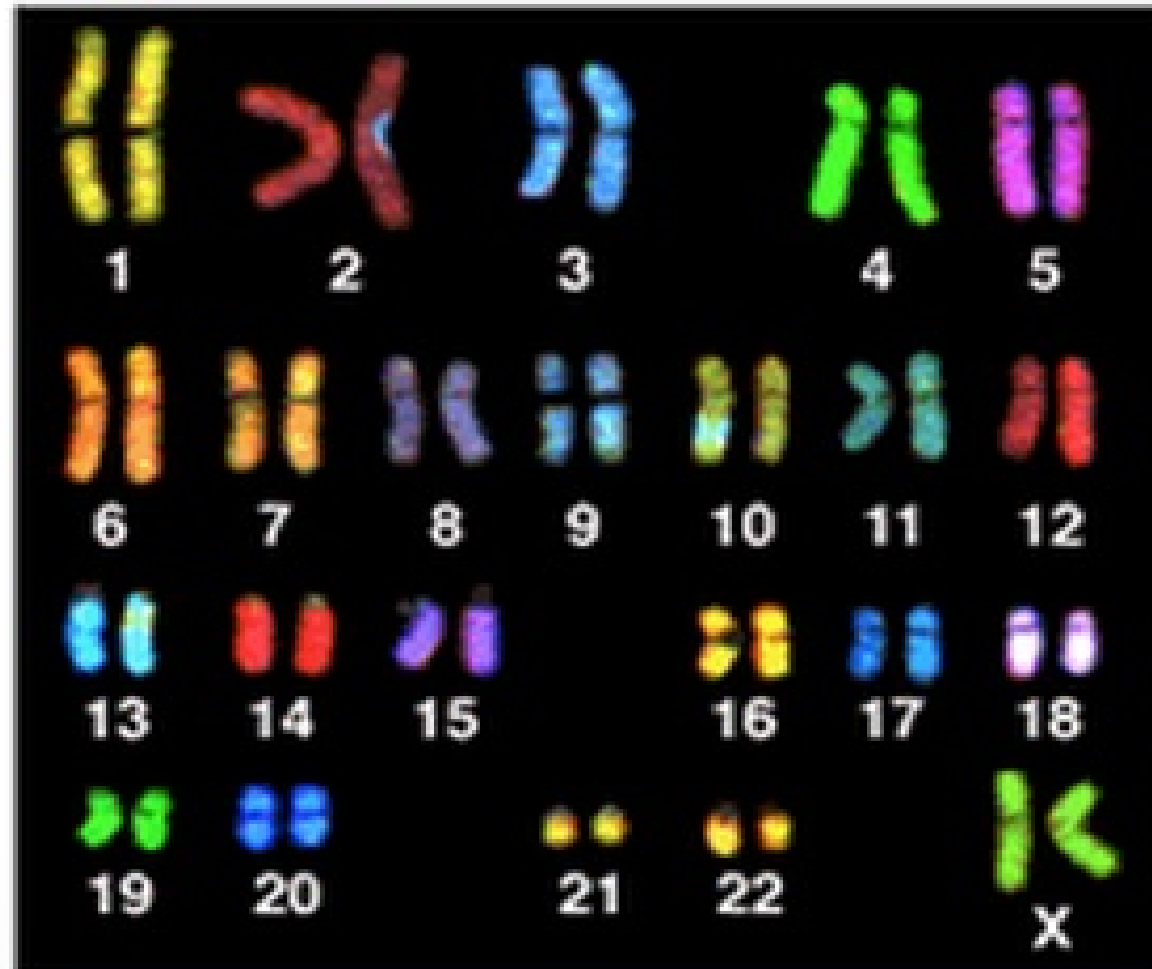
https://en.wikipedia.org/wiki/Human_genome



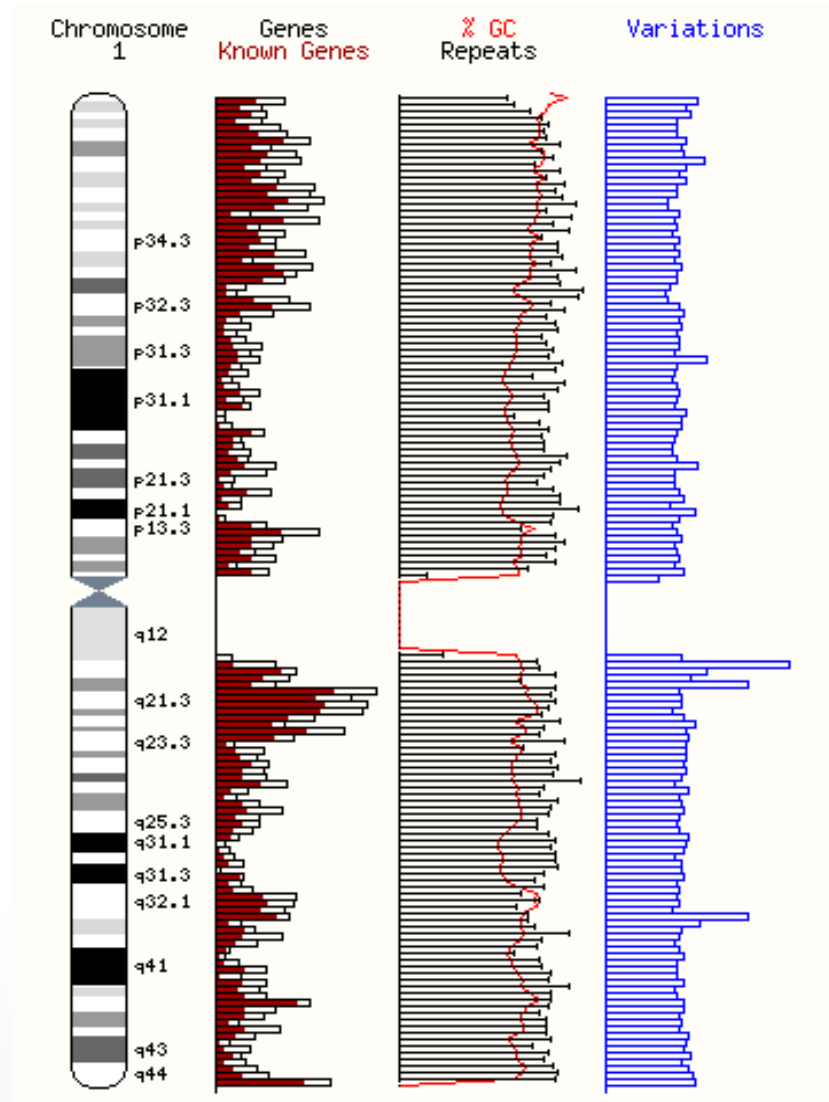
Human Male Karyotype Example



Human Female Karyotype Example



Genes



Autosomal DNA

- Chromosome Pairs 1-22
- A true balanced mix of mother and father
- Each pair composed of one from father and one from mother.
- Epigenetics – About gene expression. Way beyond the scope here, but I thought I would mention it. See for example, <https://en.wikipedia.org/wiki/Epigenetics>

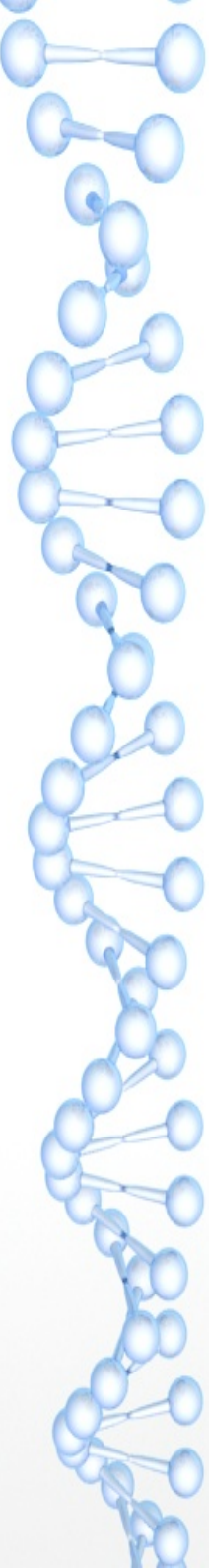
Theoretical Composition of Autosomal DNA

Gen 0	Gen 1	Gen 2	Gen 3	Gen 4	Gen 5
1	0.5	0.25	0.125	0.0625	0.03125
YBP 0	YBP 30	YBP 60	YBP 90	YBP 120	YBP 150
you	1-1 Dad	2-1 Pgd	3-1 G	4-1	5-1 GGG
				GG	5-2 GGG
				4-2	5-3 GGG
				GG	5-4 GGG
			3-2 G	4-3	5-5 GGG
				GG	5-6 GGG
				4-4	5-7 GGG
				GG	5-8 GGG
		2-2 Pgm	3-3 G	4-5	5-9 GGG
				GG	5-10 GGG
				4-6	5-11 GGG
				GG	5-12 GGG
			3-4 G	4-7	5-13 GGG
				GG	5-14 GGG
				4-8	5-15 GGG
				GG	5-16 GGG
	1-2 Mom	2-3 Mgd	3-5 G	4-9	5-17 GGG
				GG	5-18 GGG
				4-10	5-19 GGG
				GG	5-20 GGG
			3-6 G	4-11	5-21 GGG
				GG	5-22 GGG
				4-12	5-23 GGG
				GG	5-24 GGG
		2-4 Mgm	3-7 G	4-13	5-25 GGG
				GG	5-26 GGG
				4-14	5-27 GGG
				GG	5-28 GGG
			3-8 G	4-15	5-29 GGG
				GG	5-30 GGG
				4-16	5-31 GGG
				GG	5-32 GGG

Generation number.

Fractional contribution to you.

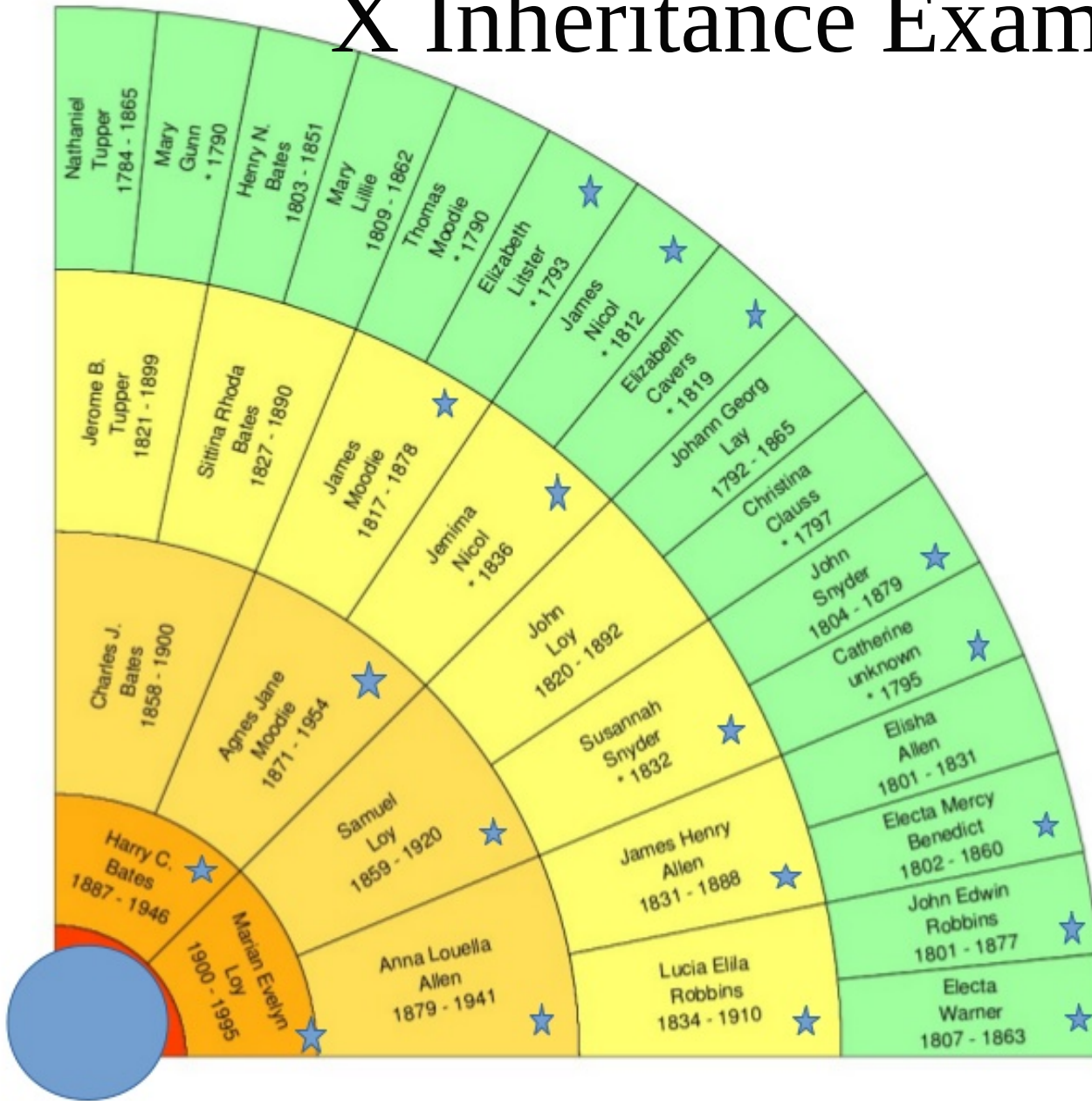
Years before present assuming 30 years per generation.



23rd Pair (XX, XY)

- Y Chromosome
 - Only from father to son
 - Changes faster than mtDNA
 - Only for tracing paternal line
- X Chromosome
 - Males get one chromosome from mother
 - Females get one from each parent (only one is active in a given cell)
 - Presents some interesting analytic opportunities

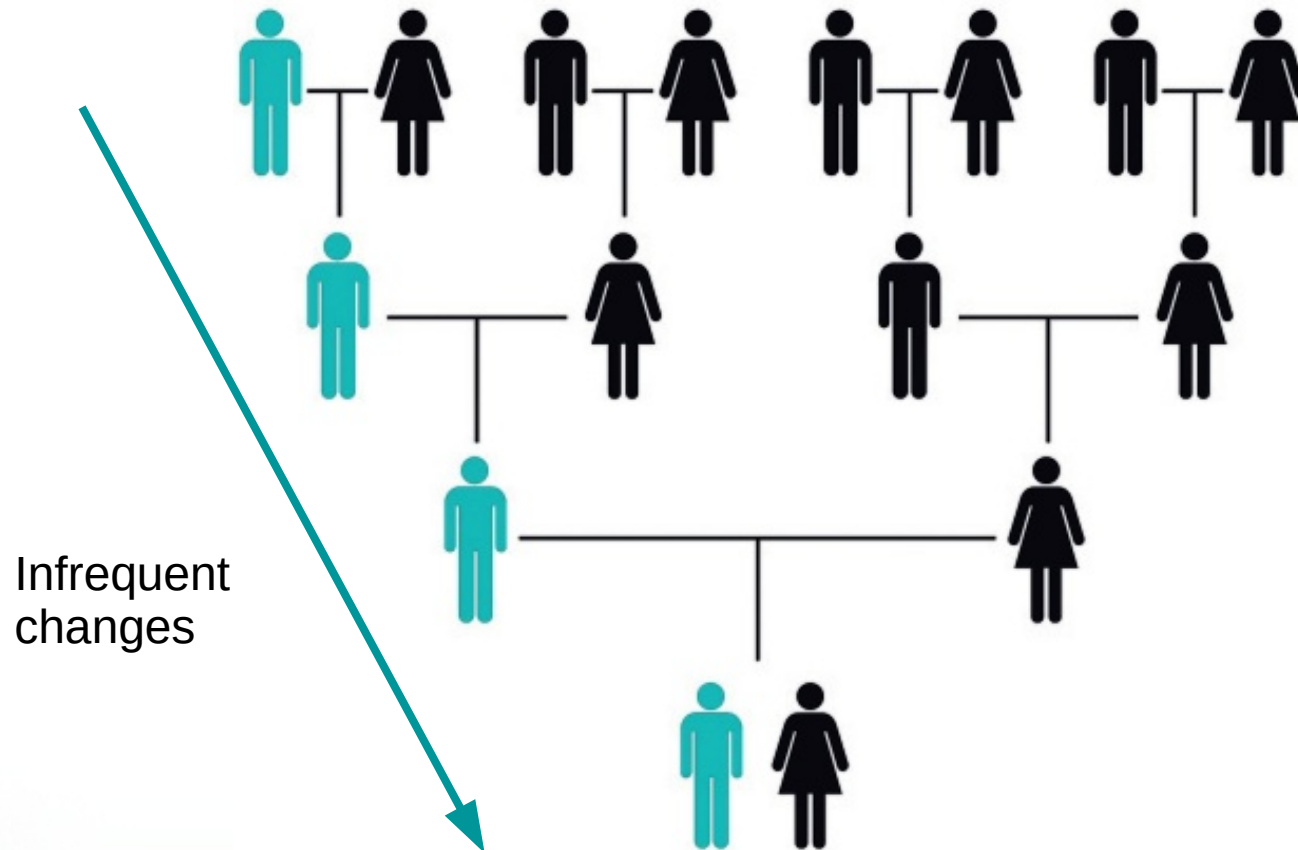
X Inheritance Example



Offers special analytic opportunities -

Daughters of the same father should have matching x chromosomes; males inherit x chromosome only from mother

Y Inheritance (paternal line)



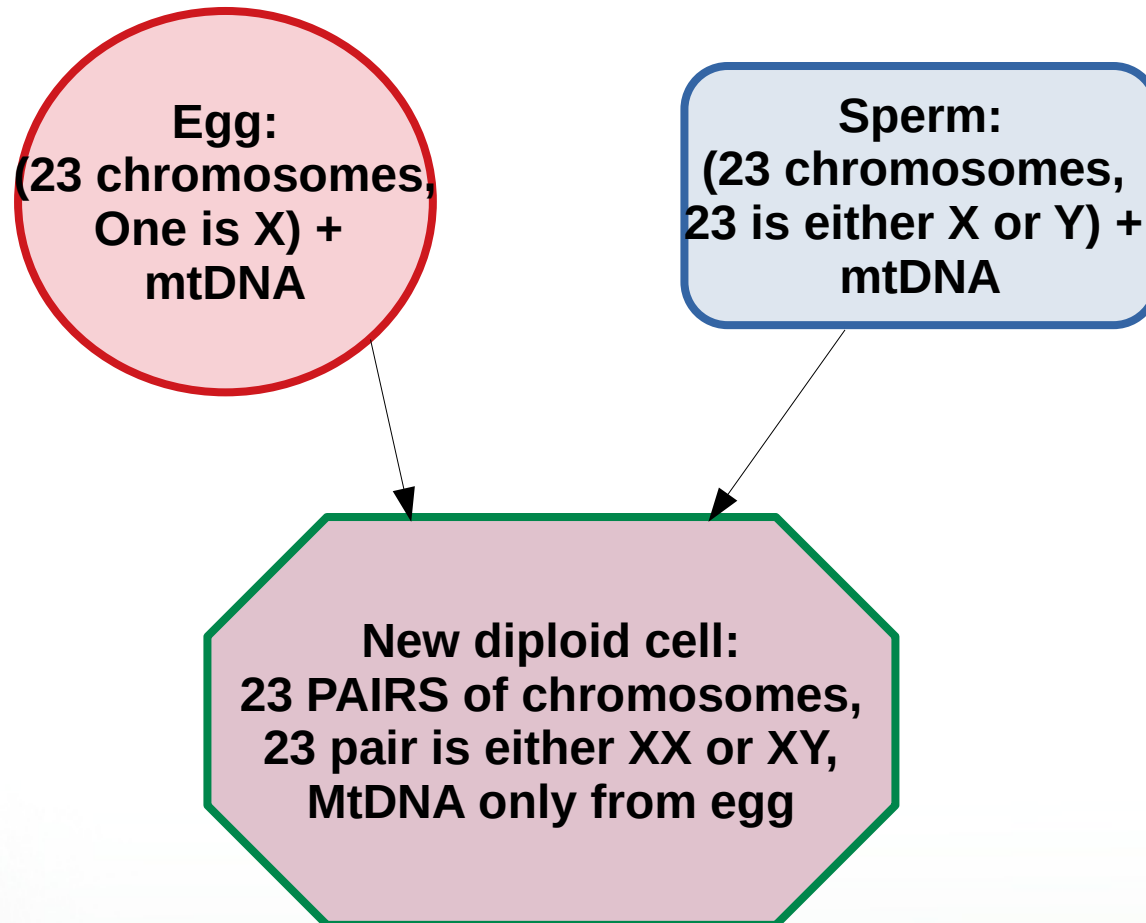
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Meiosis

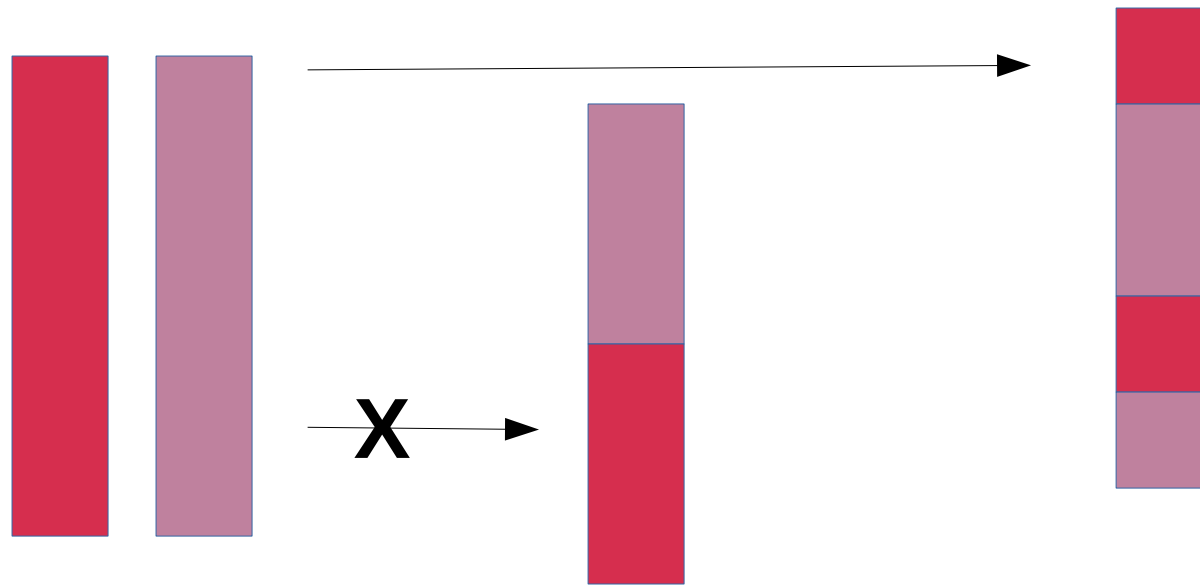
- Meiosis – one diploid cell creates 4 gametes
- Duplication of chromosome pairs to produce sister pairs
- Production of haploid cells
- Crossover (mixing mother and father traits) yields uncertainty in inheritance. (statistical processes)
- # of possible combinations is huge !
- This is why children of one pair of parents can be so different.

Haploid Cells (Gametes) and Diploid Cells



Crossover During Meiosis

(Homologous Recombination)



One Chromosome pair in "source" cell -

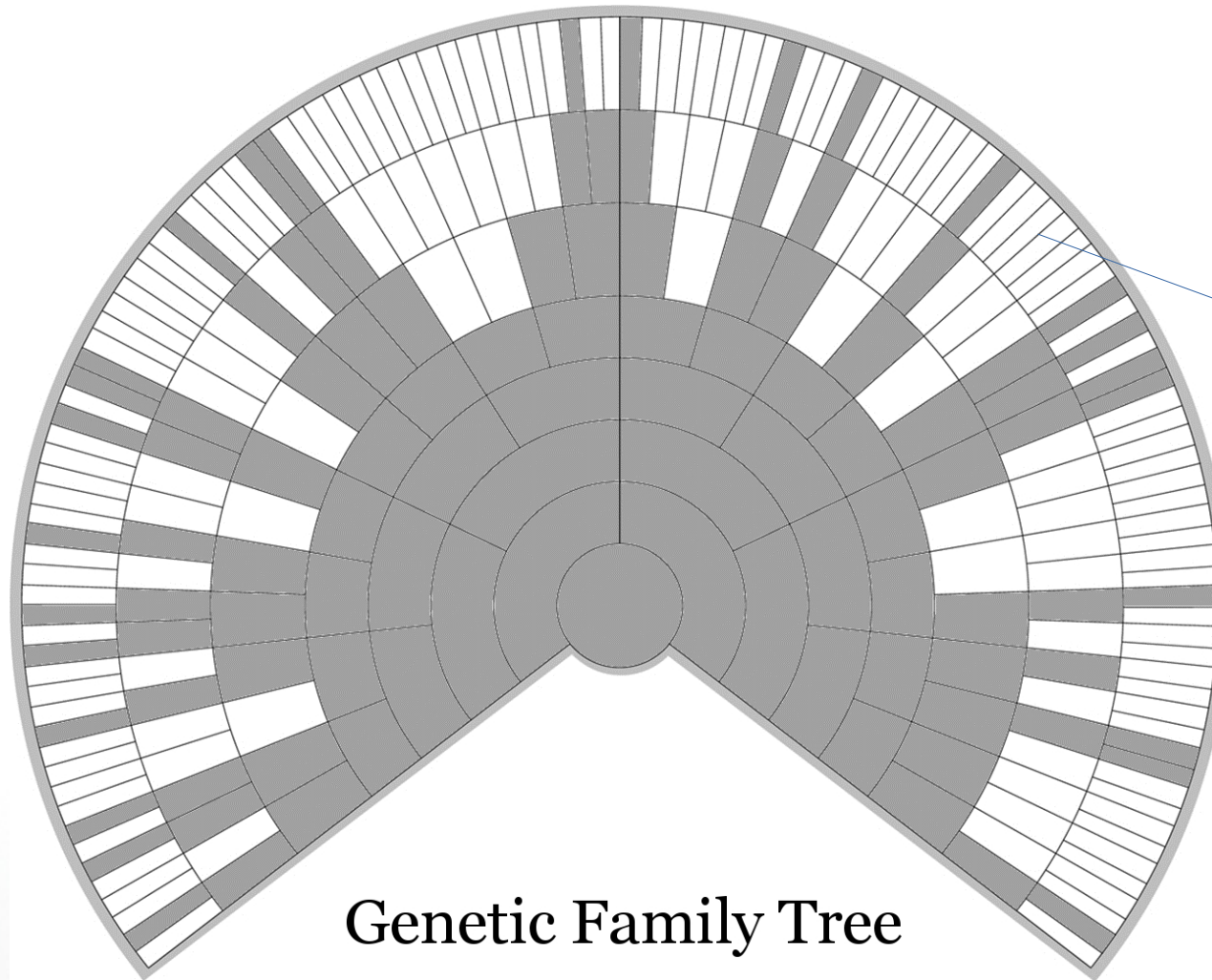
One from mother.
One from father.

Gamete: single chromosome if crossover did not have random aspects.

Gamete: single chromosome illustrating randomness. (4x, each different)

Inheritance is a Statistical Process

adapted from a graphic by Blaine Bettinger



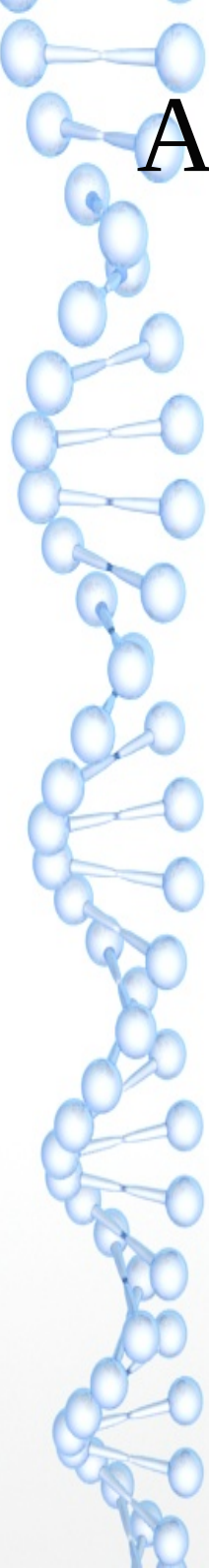
A “signal” can be lost.

Genetic Family Tree

Actual Composition of Autosomal DNA

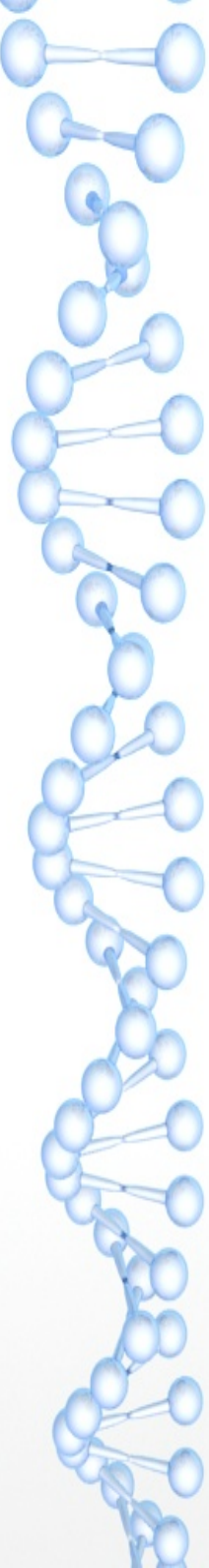
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				4-8 GG	5-8 GGG
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				4-19 GG	5-19 GGG
				4-20 GG	5-20 GGG
			3-6 G	4-21 GG	5-21 GGG
				4-22 GG	5-22 GGG
				4-23 GG	5-23 GGG
				4-24 GG	5-24 GGG
		2-4 Mgm	3-7 G	4-25 GG	5-25 GGG
				4-26 GG	5-26 GGG
				4-27 GG	5-27 GGG
				4-28 GG	5-28 GGG
			3-8 G	4-29 GG	5-29 GGG
				4-30 GG	5-30 GGG
				4-31 GG	5-31 GGG
				4-32 GG	5-32 GGG

Fractional contribution to your DNA. These are theoretical values. Actual values will differ because of the statistical effects induced by crossover during meiosis.

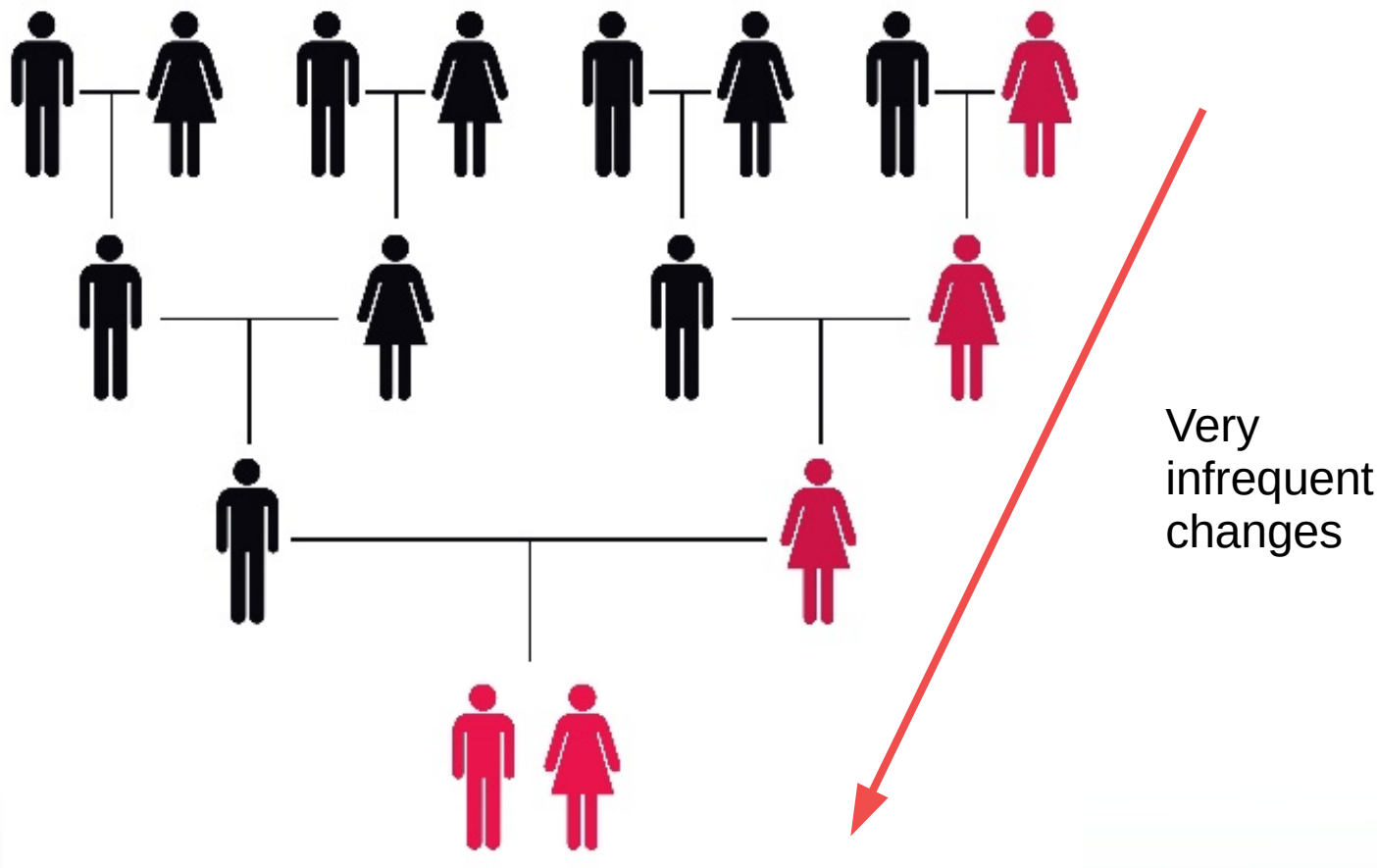


Mitochondrial DNA

- Small but important
- Outside the nucleus
- Comes from mother so can be used to trace maternal lineage
- Stable over many generations



mtDNA Inheritance



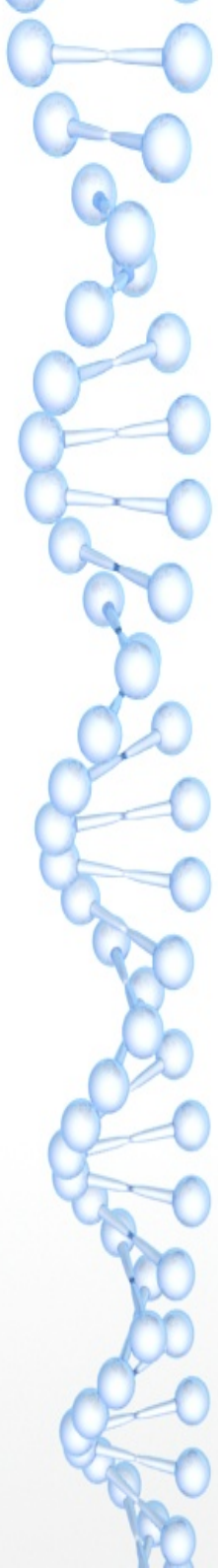
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Summary

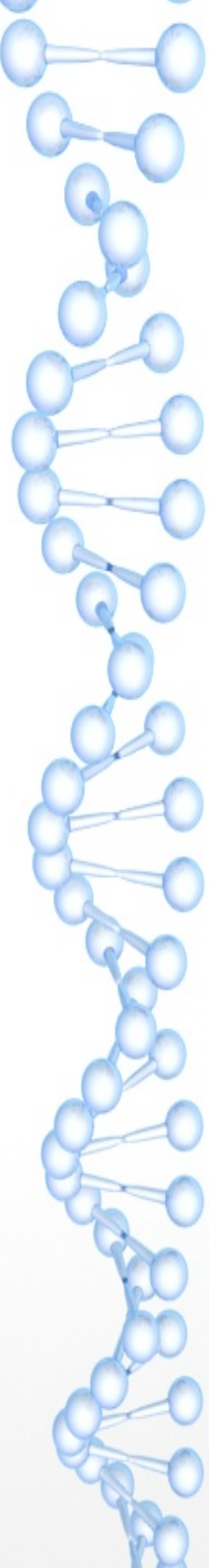
- Nuclear DNA
 - 23 pairs of chromosomes
 - One in each pair from father, the other from mother
 - 22 autosomal, 1 sex pair (X & Y)
 - Y passed down from father to sons (fairly stable)
 - Statistical processes for X and autosomal
- Mitochondrial DNA
 - Passed down from mother to all offspring
 - Very stable over time





Genetic Genealogy in Practice

- So what? How can DNA help me with Genealogy?
- Find cousins you did not know you had.
- Use to clarify/confirm ancestry.
- Biology does not obfuscate.
- There are practical limits to how far back in time you can detect a genetic “signal”.
- Understand the math.
- Have reasonable expectations
- This costs \$.
- https://en.wikipedia.org/wiki/Introduction_to_genetics



Genetic Testing

- Example Companies:
- www.23andme.com
- www.familytreedna.com
- www.africanancestry.com
- www.ancestry.com
- <https://www.myheritage.com>
- <https://www.livingdna.com/en-us> (emphasis on GB)
- How? \$? How much time?
- Comparison:
<https://www.smarterhobby.com/genealogy/best-dna-test/>

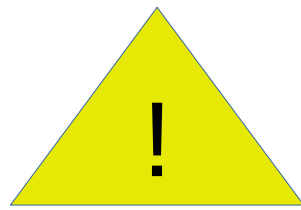


Transferring Test Results

- In some cases, you can test with one company and transfer raw autosomal data to another for matching.
- May cost less than testing at multiple places.
- Expand the universe of potential matches.
- See <https://www.yourdnaguide.com/transferring>
- Will receive raw data from elsewhere: familytreedna.com, livingdna.com, myheritage.com, gedmatch.org, . . .

What You Get

- List of Matches with others (autosomal, X, Y, mtDNA)
 - Ancestry.com – autosomal matches only
 - myHeritage - autosomal matches only
 - Familytreedna.com – matches based on all types of dna
 - 23andme.com – autosomal matches only, but reports some info about X, Y haplogroup, mt haplogroup
- Chromosome browsers (autosomal)
- “Smart matching” if a tree is also analyzed
- Ancestral admixture estimates
 - Be careful! Understand the shortcomings.
 - <https://familyhistorydaily.com/genealogy-help-and-how-to/understanding-dna-results/>
- Connecting with cousins
- The value of multiple participants (projects)
- Some companies will allow you to upload raw data from other companies. (e.g., FTDNA, MyHeritage)



Cautions

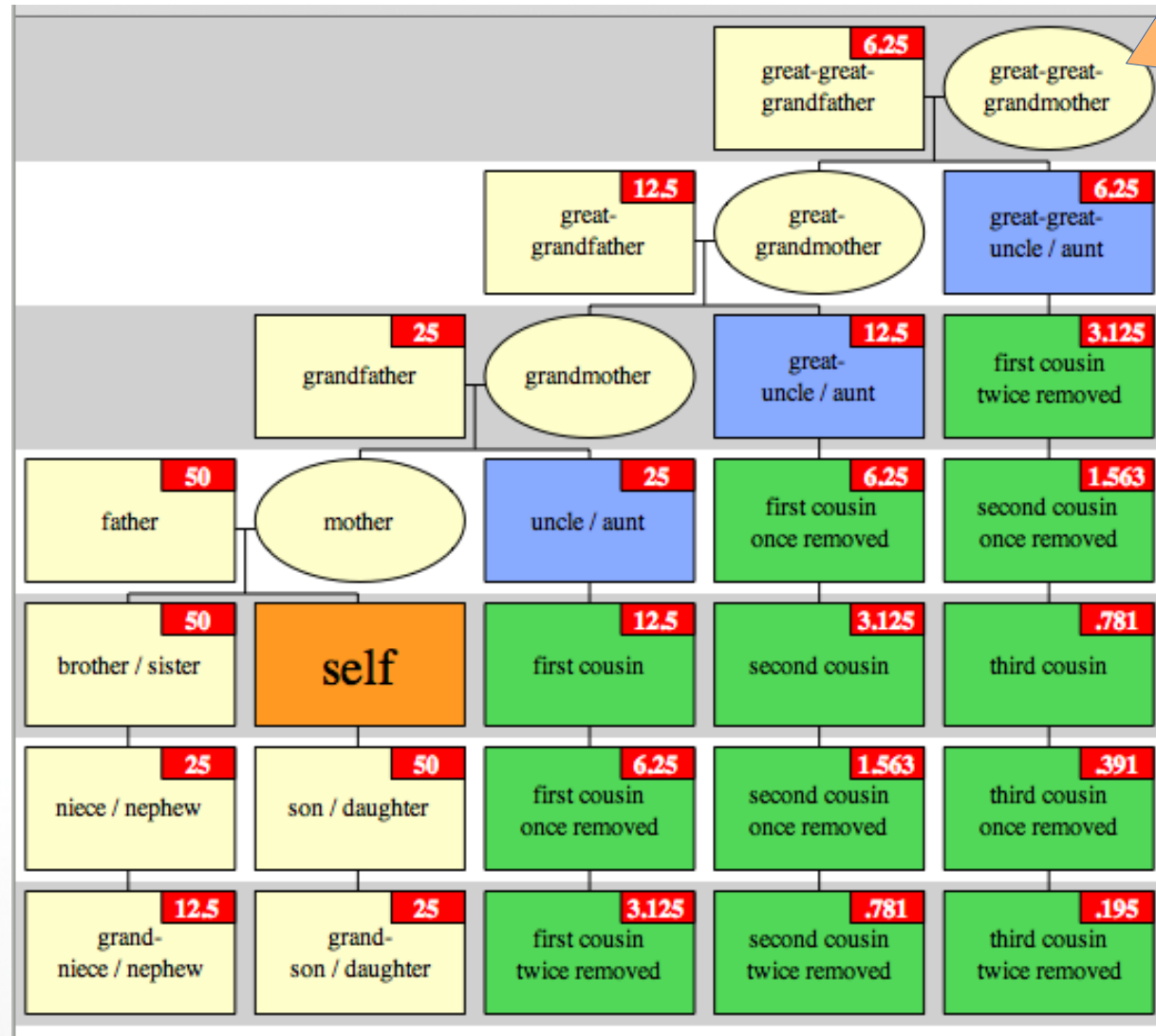
- Health/disease info not initiated by your doctor
 - Your health is more complicated than just your DNA
 - Your doc's eyes will roll
- Privacy concerns
 - Read the privacy agreements
 - You are probably protected against use by insurance companies.
 - Workplace testing has failed in the courts already.
 - Law enforcement uses.
- CBC Video: <https://youtu.be/Isa5c1p6aC0>
- "Science Versus" Podcasts (at gimletmedia.com):
 - <https://gimletmedia.com/shows/science-vs/8wh2mk/dna-kits-can-you-trust-them>
 - <https://gimletmedia.com/shows/science-vs/6nhgzk/race-can-we-see-it-in-our-dna>



Autosomal Matches (atDNA)

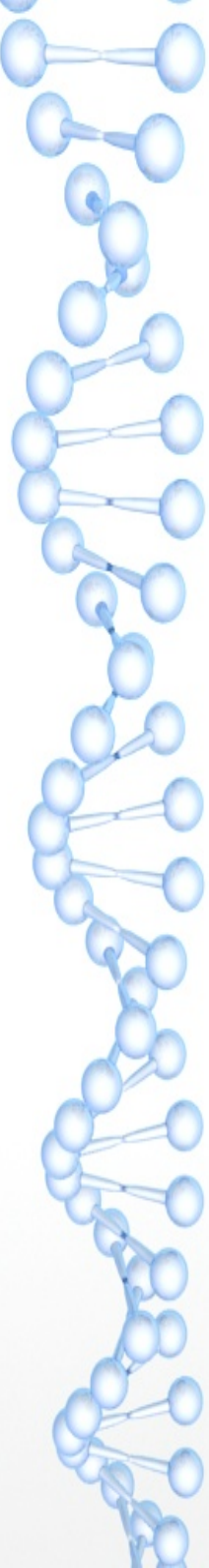
- Estimated amount of DNA in common
- Total amount versus number of segments on which chromosomes
- Shown quantitatively in % or cM (centiMorgans).
- There are 68 cM per shared %
- Concept of “distance” to a common ancestor. How many generations might have been required to yield the % match seen?
- Most recent common ancestor (MRCA)

Theoretical Autosomal Shared %



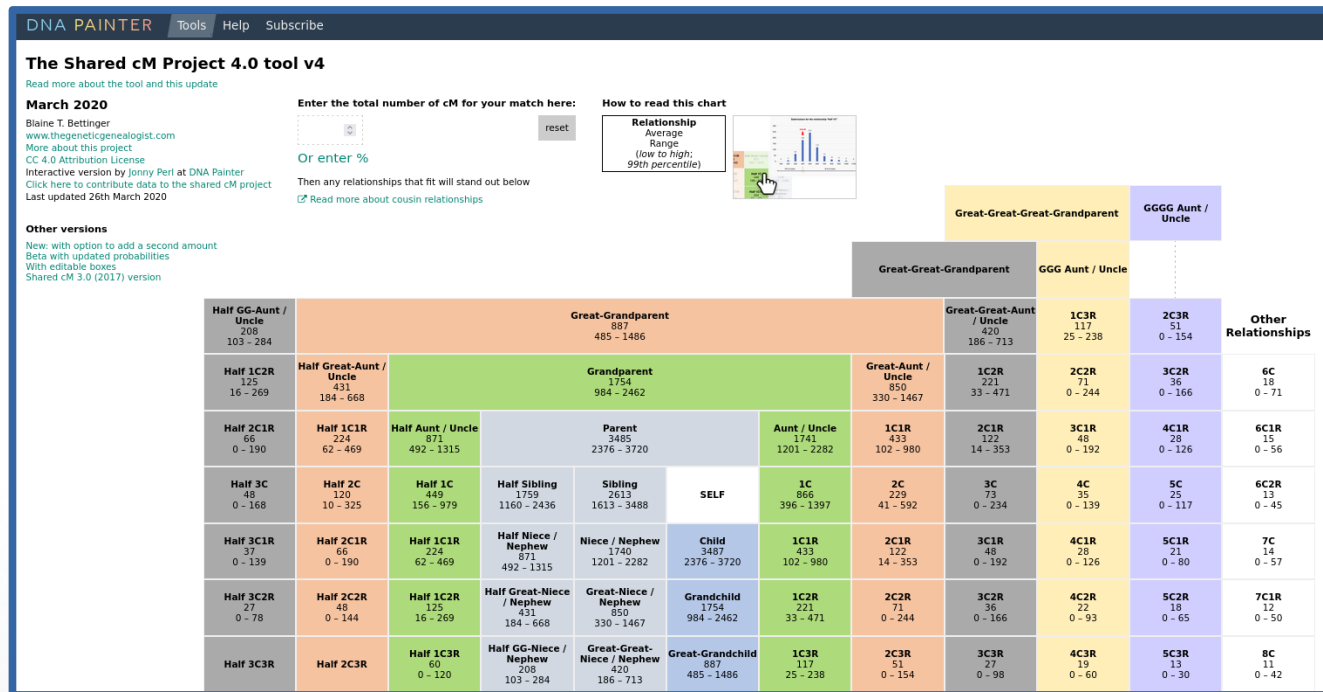
Common ancestors

Contemporaries



Expectation Values

- Based on real experience (cover later)
- Good way to visualize randomness effects
- See <https://dnapainter.com/tools/sharedcmv4>



Autosomal Matches - examples

Ancestry.com

Parent/Child
Shared DNA: 3,449 cM across 80 segments

Close Family-1st Cousin
Shared DNA: 1,797 cM across 78 segments

1st-2nd Cousin
Shared DNA: 850 cM across 43 segments

1st-2nd Cousin
Shared DNA: 669 cM across 33 segments

Match Date	Relationship Range	Shared Centimorgans	Longest Block	X-Match
11/21/2012	Father/ Son	3,380	267	X-Match
05/15/2017	1st Cousin - 2nd Cousin	530	56	
03/28/2018	1st Cousin - 3rd Cousin	282	54	X-Match
01/20/2017	2nd Cousin - 3rd Cousin	236	43	

Relationship

- Grandparent
- Grandchild
- Half sibling
- Aunt/uncle
- ★ Niece/nephew

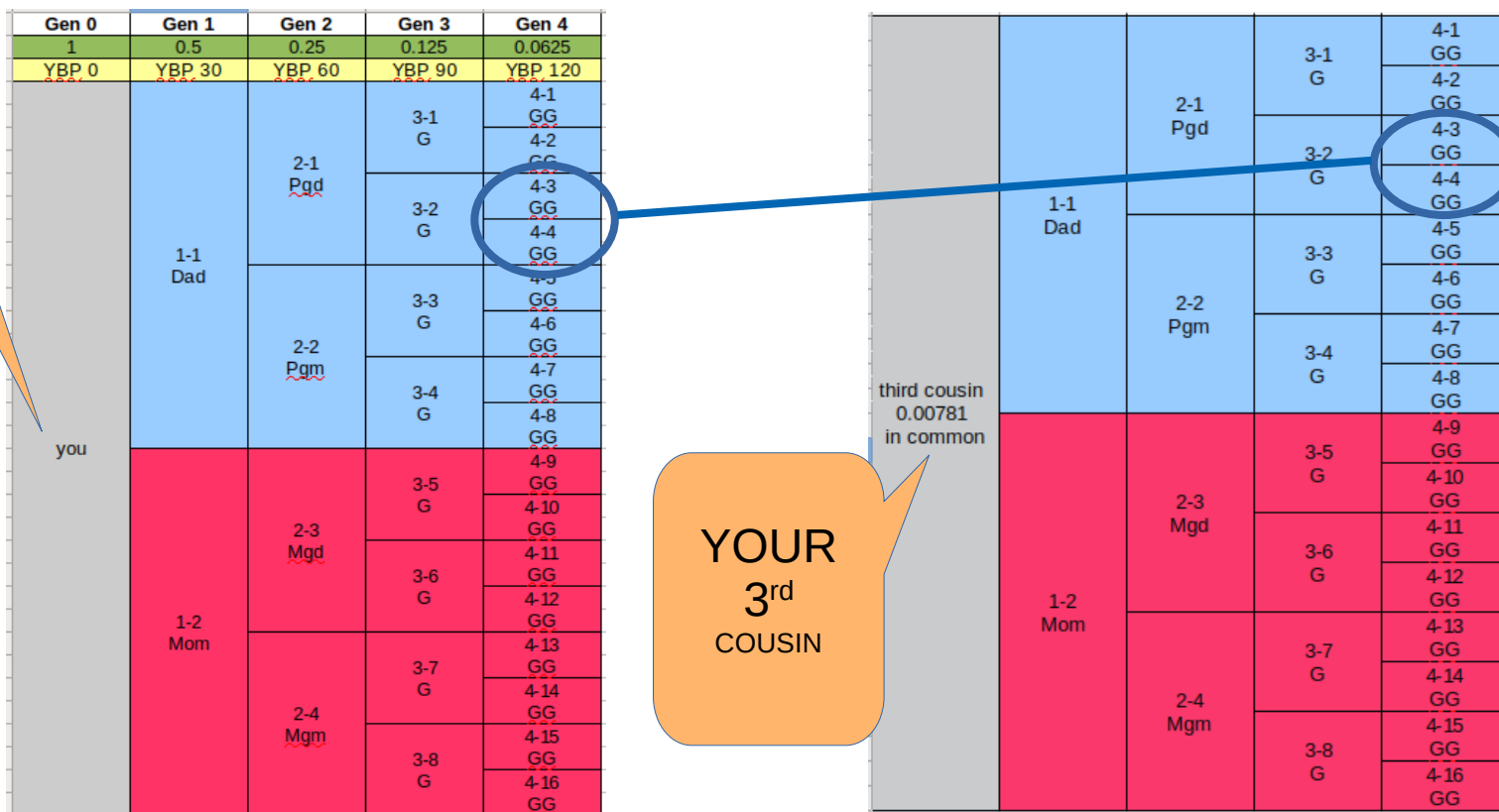
Familytreedna.com



Most Recent Common Ancestor (MRCRA)

- Challenge – can you find a person/couple on your pedigree chart in common with the person with whom you share DNA? Those are the MCRAs between you and your match (your genetic cousin). [note: Sometimes there may be multiple people/couples. Let's ignore that for now.]
- Following example. - Assume that your match (genetic cousin) is a contemporary. i.e., that he/she is the same number of generations distant from the common ancestor.

MRCAs - Third Cousin Example



All people not circled are different. The circled family is common between you and your 3rd cousin. Circled people in theory contribute 0.781% (0.00781) common DNA to you and your cousin. You and your cousin (each) probably had to wade through information about at least 30 people to find the commonality.



MRCRA – estimating formula

Here's a quick formula for estimating the number of generations back to your MCRA (most recent common ancestor).

MATH NOTE: generations = $0.5 - 0.7213 \cdot \ln(\text{shared fraction})$



MRCAs – Calculation Example

You have a match at the 0.4% (27 cM) level with someone. How far back in time did your most recent common ancestor live?

Hints:

Remember: $\text{generations} = 0.5 - 0.7213 \cdot \ln(\text{shared fraction})$

Solution:

0.4% is the same as a shared fraction of 0.004.

Using the equation above,

$\text{Generations} = 0.5 - 0.7213 \cdot \ln(0.004) = 4.48$

So, your most recent common ancestor was born about 4-5 generations before you. That is, it could be a gg-grandparent or a ggg-grandparent. If you were born in 1950 and you assume a generational duration of 30 years, then you are looking for someone born *around* 1800-1830.

Does your family tree go back that far, and do you have confidence in it at that point in time?

MRCAs – but wait!



What about the effects due to the statistical aspects of inheritance?

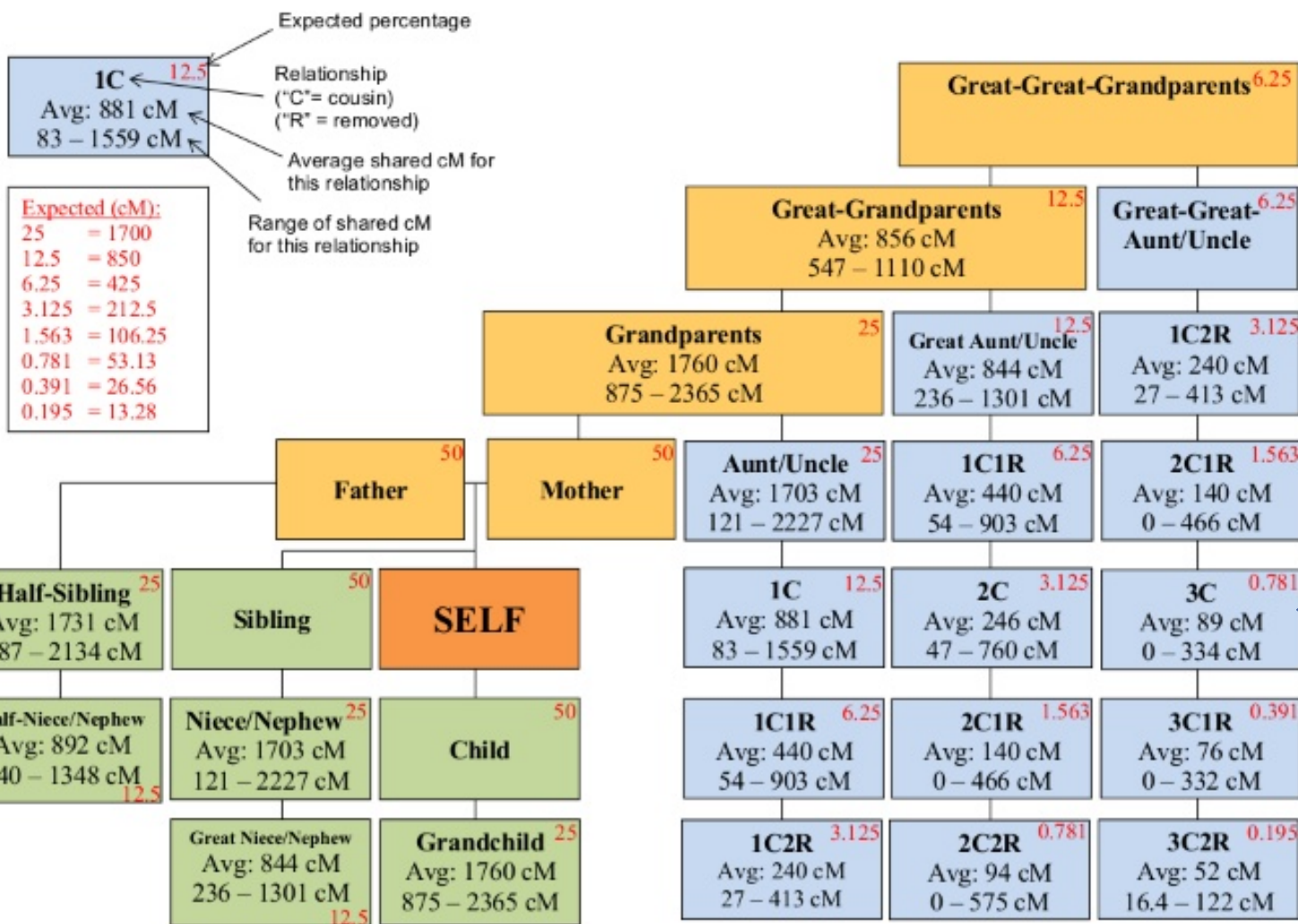
What about cousin marriages?

Shared Autosomal DNA (%)

From a diagram by Blaine T. Bettinger, copyleft CC-BY

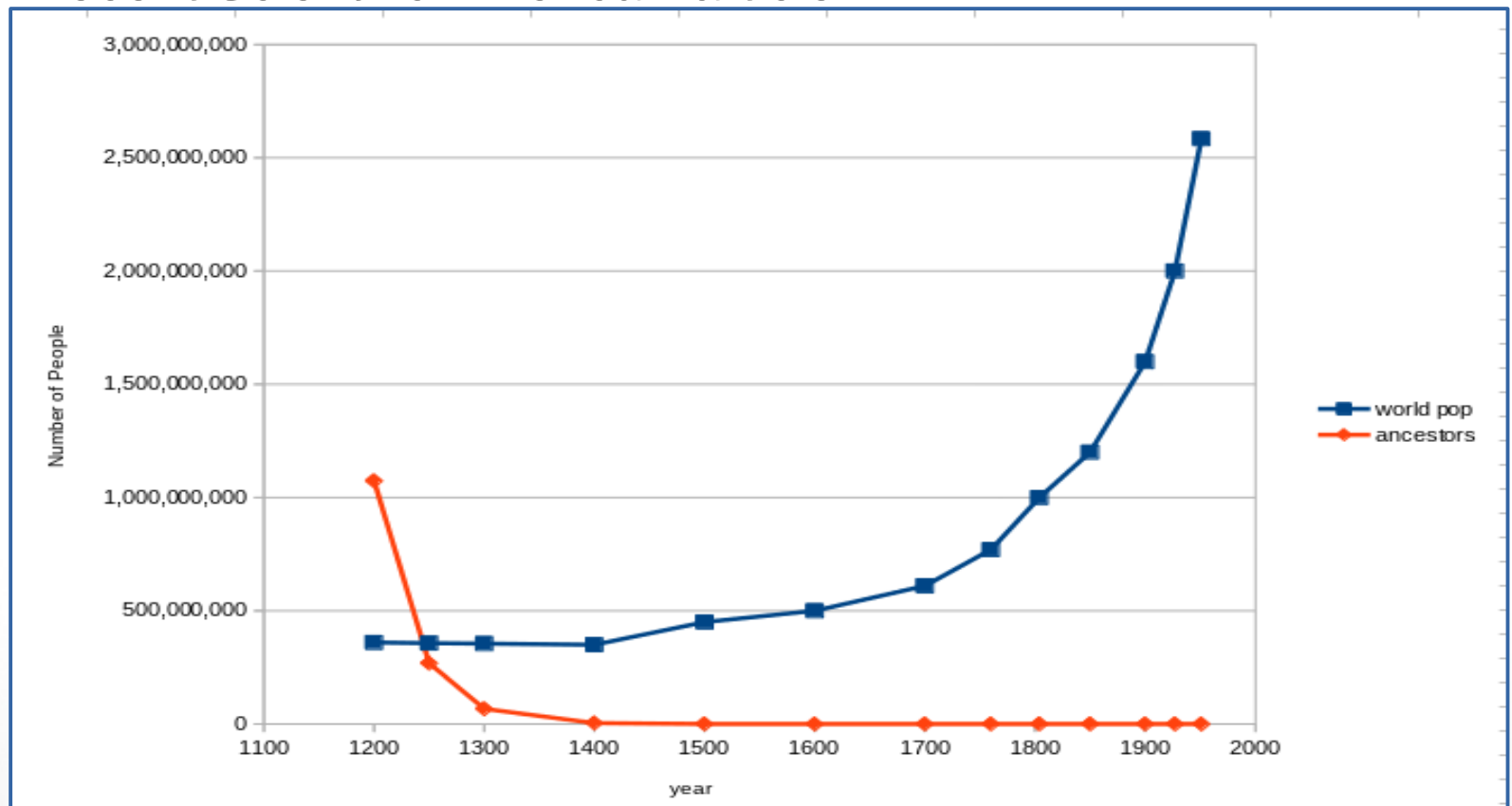
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See also: <https://dnainpainter.com/tools/sharedcmv4>



Cousins Marrying Cousins!?

- If you blindly assume that every generation of your pedigree consists of unrelated individuals, you are sure to be wrong at some point.
- Recent *Scientific American* article: [link](#)





Rules of Thumb

- The greater the amount in common, the greater the number of common segments, and the longer the common segments the better.
- Start by paying attention to matches with greater than about 0.4% (27cM) DNA in common.
- Common segments with lengths greater than 7-8 cM are the most likely to not be chance matches. (Again, you are playing a game of statistics)
- Have parents, 1st & 2nd cousins test as well to simplify analysis (if possible). Even sibling tests can help.
- Be ware of what you might find. Be considerate and respectful of privacy.

What about Y and mtDNA?

- These are not mixes like autosomal DNA!
- Both change with time.
- mtDNA changes very slowly & so can be used to reach farther back in time to a common maternal ancestor.
- Y DNA changes more quickly and is more fragile. Can be more easily used than autosomal DNA to trace a male line farther back in time.
- Testing can be useful in some situations.

y-DNA Matches Example

Concept of “distance” between two individuals. Familytreedna helps you interpret the matches with “TiP” reports. The example is for a distance of just 3 between testers. (I would be pretty sure to find a common ancestor IF our trees went back to the 15th century. OOF!)

Y-DNA TiP Report

In comparing Y-DNA 37 marker results, the probability that [REDACTED] and **Craig Rhombs** shared a common ancestor within the last...

COMPARISON CHART

Generations	Percentage
4	13.35%
8	50.31%
12	78.93%
16	92.6%
20	97.7%
24	99.35%

My tree goes back 9 generations (to a person born in the 1600s).

mtDNA Matches

- Guidance from familytreedna . . .
<https://www.familytreedna.com/learn/mtdna-testing/tell-closeness-relationship/>
- Based on analysis of “hypervariable” and “coding” regions.
- If you have a match, your common ancestor could have existed over a large time span!

Testing Level	Matching Level	Generations to Common Ancestor	
		50% Confidence Interval	95% Confidence Interval
mtDNA	HVR1	52 (about 1,300 years)	— NA*
mtDNAPlus	HVR1 & HVR2	28 (about 700 years)	— NA*
mtFullSequence	HVR1, HVR2, & Coding Region	5 (about 125 years)	22 (about 550 years)

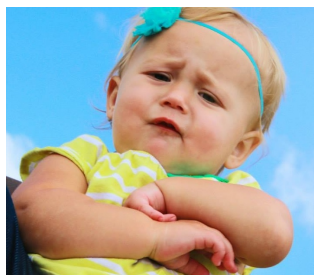
* The range of generations to a common ancestor at this level is too broad to calculate a 95% confidence period.

Examples

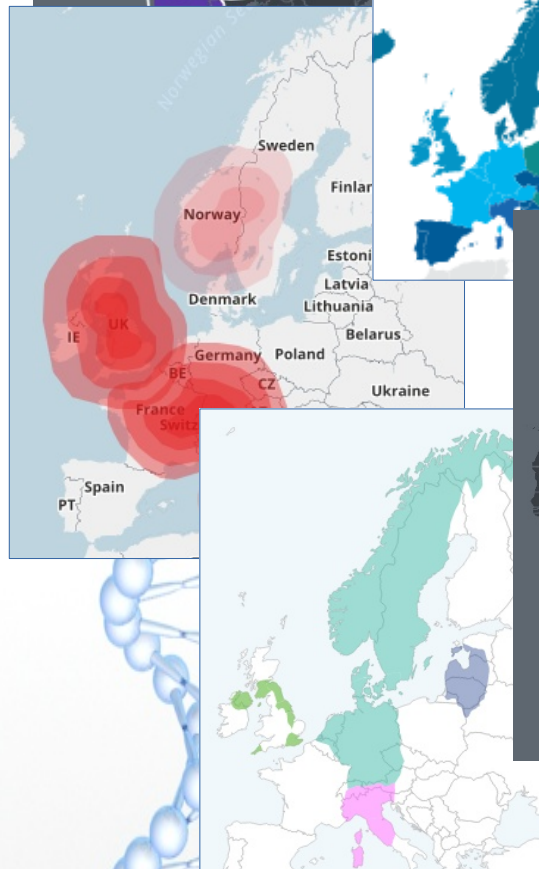
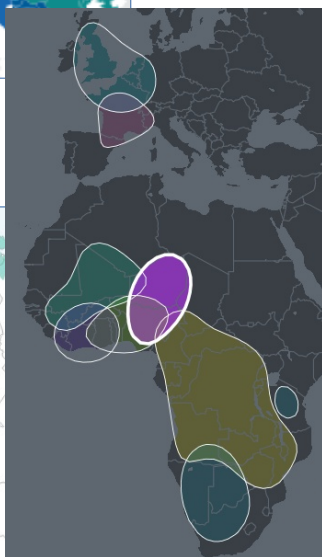
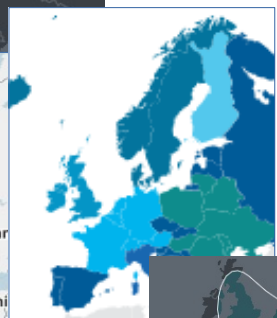
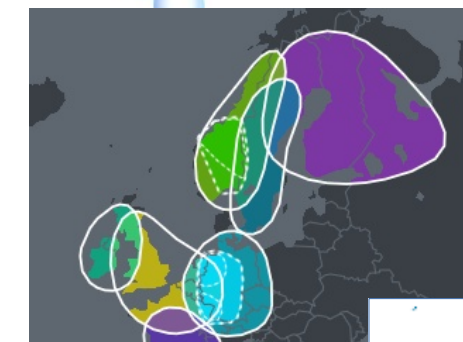
www.Familytreedna.com

- www.Ancestry.com
- Features to look for . . .
 - Autosomal Genetic matches list
 - Common matches
 - Chromosome browser
 - Note the power of an analysis that combines DNA matching and a family tree!
 - Origins (admixture) estimate
 - Y matches
 - X matches
 - Joining groups

Admixture Estimates = Confusing!??



- Marketing and sales expectations
- Looking back past where your tree probably reaches
- Biology is more complicated than locations in your tree
- Your mixture will differ from that of your sibling's!
- Your ancestors may have been from areas where there was "high traffic"
- Calculations and sample groups vary according to testing company
- See <https://youtu.be/Isa5c1p6aC0> and [https://www.newshub.co.nz/home/opini on/2021/05/dna-ancestry-tests-are-they-telling-the-truth-that-s-questionable-genetic-anthropologist.html](https://www.newshub.co.nz/home/opinion/2021/05/dna-ancestry-tests-are-they-telling-the-truth-that-s-questionable-genetic-anthropologist.html)



2024



Family Tree DNA – Family Finder Matches

Family Finder Matches ? Help

All Matches Detail View Table View Search All

All (631) Paternal (0) Maternal (385) Both (0) Filter Export CSV


Name	Ancestral Surnames	Relationship Range	Shared DNA	Longest Block	X Match	Y Haplogroup	mt Haplogroup	Actions
[Redacted]	Allen, Alling, Andrews, Atwater, Ball, Barker,...	Parent/Child MOTHER	3557	284	181	–	X2b-T226C	[Icons]
[Redacted]	–	1st Cousin, Great/Half Uncle/Aunt/Niece...	1131	144	0	R-M269	–	[Icons]
[Redacted]	/ Captal, Ávalos, Abendaño, Abarca,...	1st Cousin - 3rd Cousin, Great/Half Uncle/Aunt...	320	40	0	–	B2a4a	[Icons]
[Redacted]	–	1st Cousin - 3rd Cousin, Great/Half Uncle/Aunt...	318	58	0	–	U5b1b1a	[Icons]
[Redacted]	–	1st Cousin - 3rd Cousin, Great/Half Uncle/Aunt...	287	37	0	–	–	[Icons]
[Redacted]	–	2nd Cousin - 4th Cousin	138	38	0	–	–	[Icons]
















Family Tree DNA – common matches

Family Finder Matches ? Help

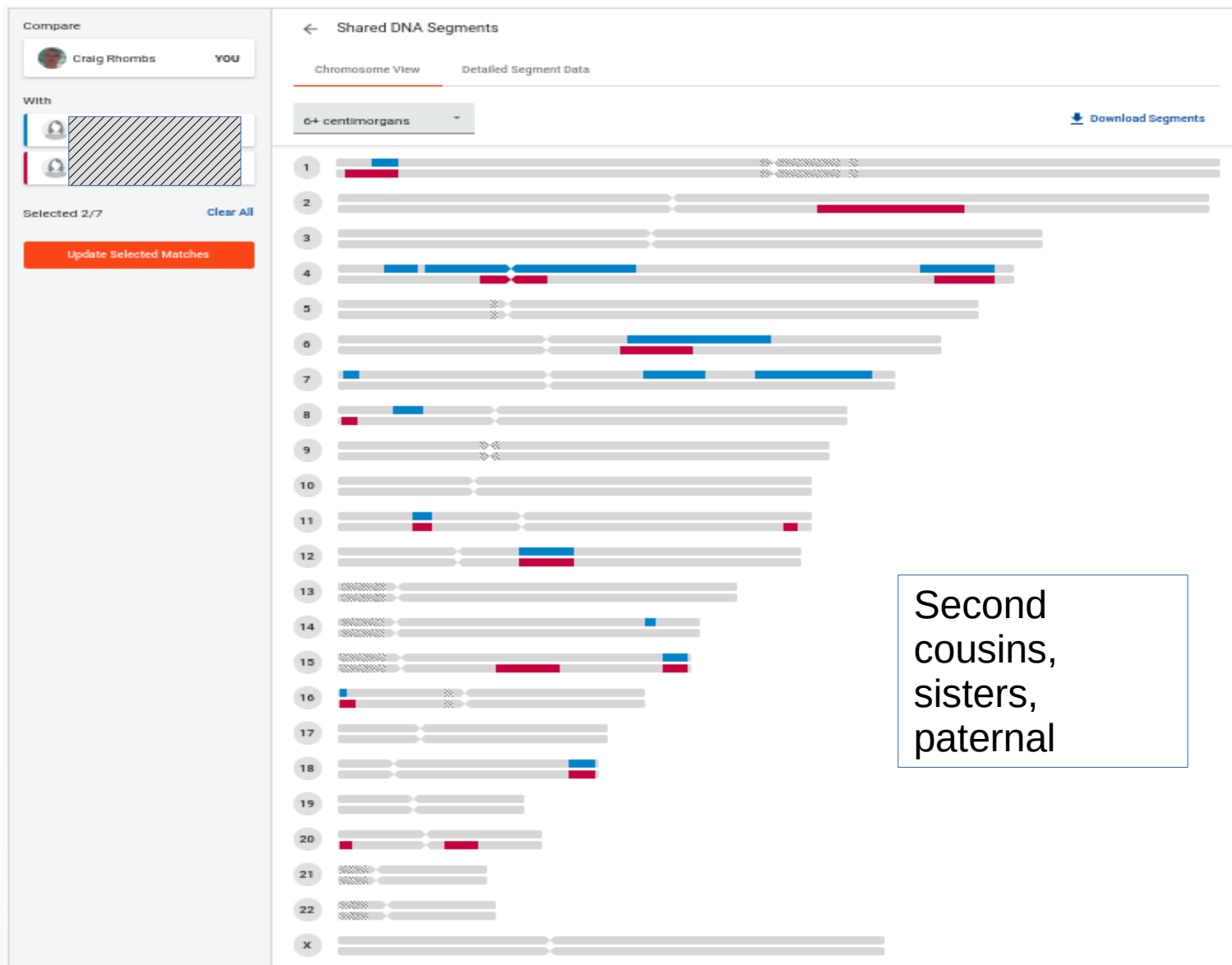
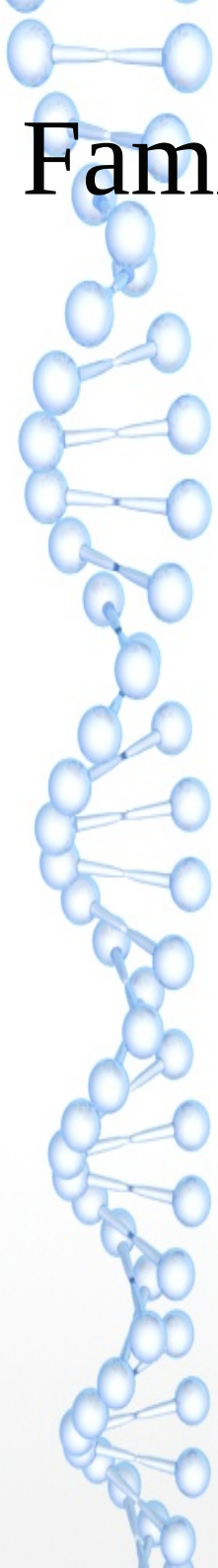
All Matches Detail View Table View Search All

All (20) Paternal (0) Maternal (0) Both (0) Filter Export CSV

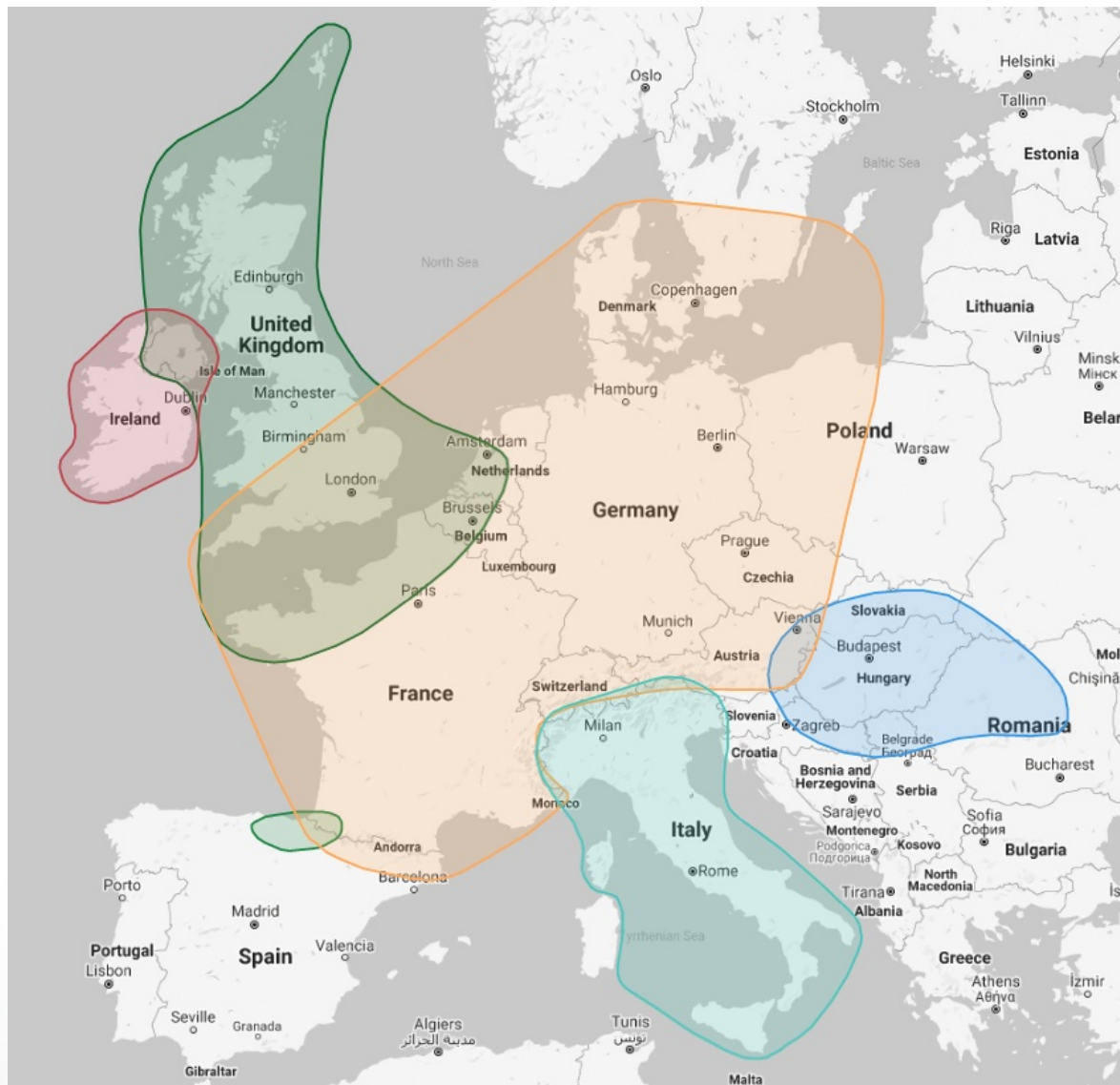
×  [Redacted] 20 Matches In Common | Not In Common

Name ⓘ	Ancestral Surnames ⓘ	Relationship Range ⓘ ↑	Shared DNA ⓘ	Longest Block ⓘ	X Match ⓘ	Y Haplogroup ⓘ	mt Haplogroup ⓘ	Actions ⓘ
[Redacted]	–	1st Cousin, Great/Half Uncle/Aunt/Niece... Assign Relationship	1131	144	0	R-M269	–	  
[Redacted]	–	1st Cousin - 3rd Cousin, Great/Half Uncle/Aunt... Assign Relationship	287	37	0	–	–	  
[Redacted]	–	2nd Cousin - 4th Cousin Assign Relationship	121	54	0	–	–	  
[Redacted]	–	2nd Cousin - 4th Cousin Assign Relationship	69	36	0	–	–	  
[Redacted]	–	2nd Cousin - 4th Cousin Assign Relationship	67	24	0	R-M269	–	  

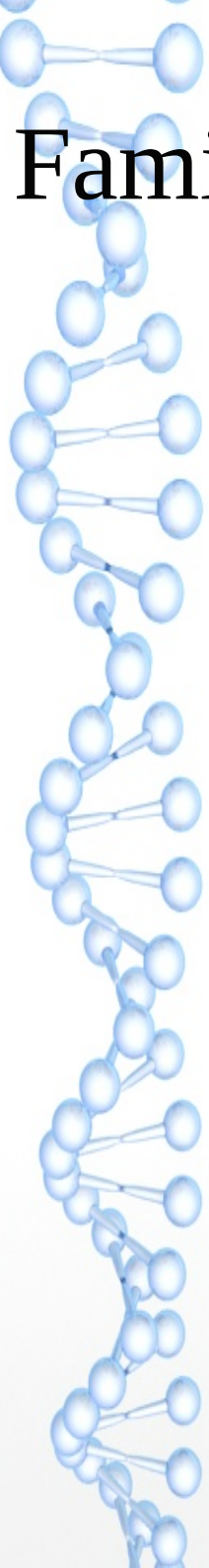
Family Tree DNA – Chromosome Browser



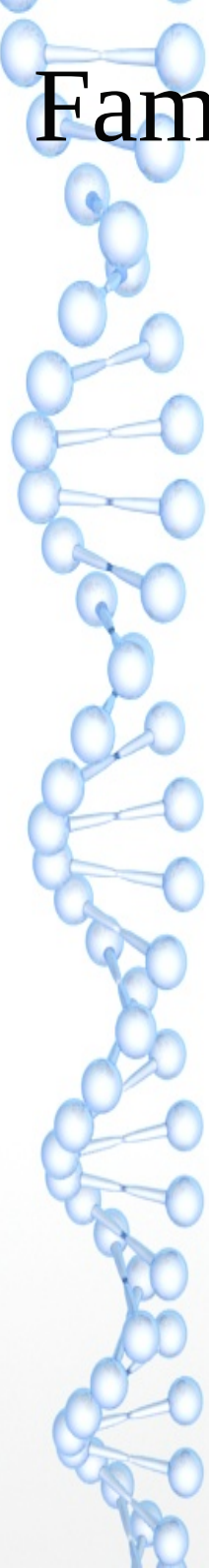
Family Tree DNA – Family Finder “origins”



WORTHLESS!



Family Tree DNA – Family Finder “ancient origins”



Entertaining!

Family Tree DNA – Y DNA info.

Y-DNA Matches

[? Help](#)

[Detail View](#) [Table View](#)

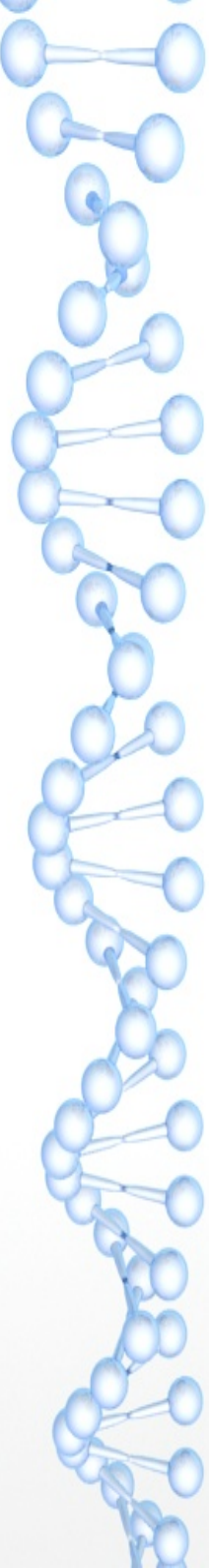
Search

All

111 Markers 67 Markers **37 Markers (6)** 25 Markers (1) 12 Markers (54) [Filter](#)

[Export CSV](#)

Name i	Markers Tested i	Genetic Distance i ↑	Big Y STR Diff i	Y Haplogroup i	Paternal Country of Origin i	Paternal Earliest Known Ancestor i	Actions i
	1 to 67	3 steps	Not Available	R-M269	Unknown Origin	John Frank Rice, b. 1809 and d. 1879	Family Message Profile
	1 to 111	3 steps	Not Available	R-M269	United States	John Townsend, b. 1798 d.	Family Message Profile
	1 to 37	4 steps	Not Available	R-M269	Scotland	Lewis JACK, abt. 1780. from Avoch	Family Message Profile
	1 to 67	4 steps	Not Available	R-M269	United Kingdom		Family Message Profile
	1 to 37	4 steps	Not Available	R-M269	Wales		Family Message Profile
	1 to 700	4 steps	Not Available	R-M269	United Kingdom	Rees HUGHES, Sr. b. ca 1625, d. ca 1698	Family Message Profile



Family Tree DNA – mtDNA info.

mtDNA Matches

[? Help](#)

FILTER MATCHES

Show Matches For: Regions: Matches Per Page:

Last Name Starts With: (Optional) New Since: [Run Report](#)

HVR1, HVR2, CODING REGIONS - 197 MATCHES Page: 1 2 3 4 5 6 7 8 of 4

Genetic Distance ⓘ	Name ⓘ		Earliest Known Ancestor ⓘ	mtDNA Haplogroup ⓘ	Match Date	
1	<div style="background-color: black; width: 100%; height: 100%;"></div>	FMS		X2b-T226C	8/10/2020	
1		FMS		X2b-T226C	12/13/2019	
1		FMS		X2b-T226C	10/4/2019	
1		FMS FF		X2b-T226C	4/25/2019	
1		FMS FF		Mary Sanford, b. 1723	X2b-T226C	3/5/2019
1		FMS FF		Dorothy Cook	X2b-T226C	6/29/2018
1		FMS		X2b-T226C	5/11/2018	
1		FMS FF		X2b-T226C	3/22/2018	
1		FMS FF		Clarinda Clark	X2b-T226C	10/9/2017
1		FMS FF		X2b-T226C	5/22/2017	
1		FMS		Bertha Mae Stewart b 1901 d 1979	X2b-T226C	5/12/2017
1		FMS FF		Catherine Wells Hall, b. 1801, d. July 5, 1872	X2b-T226C	12/13/2016

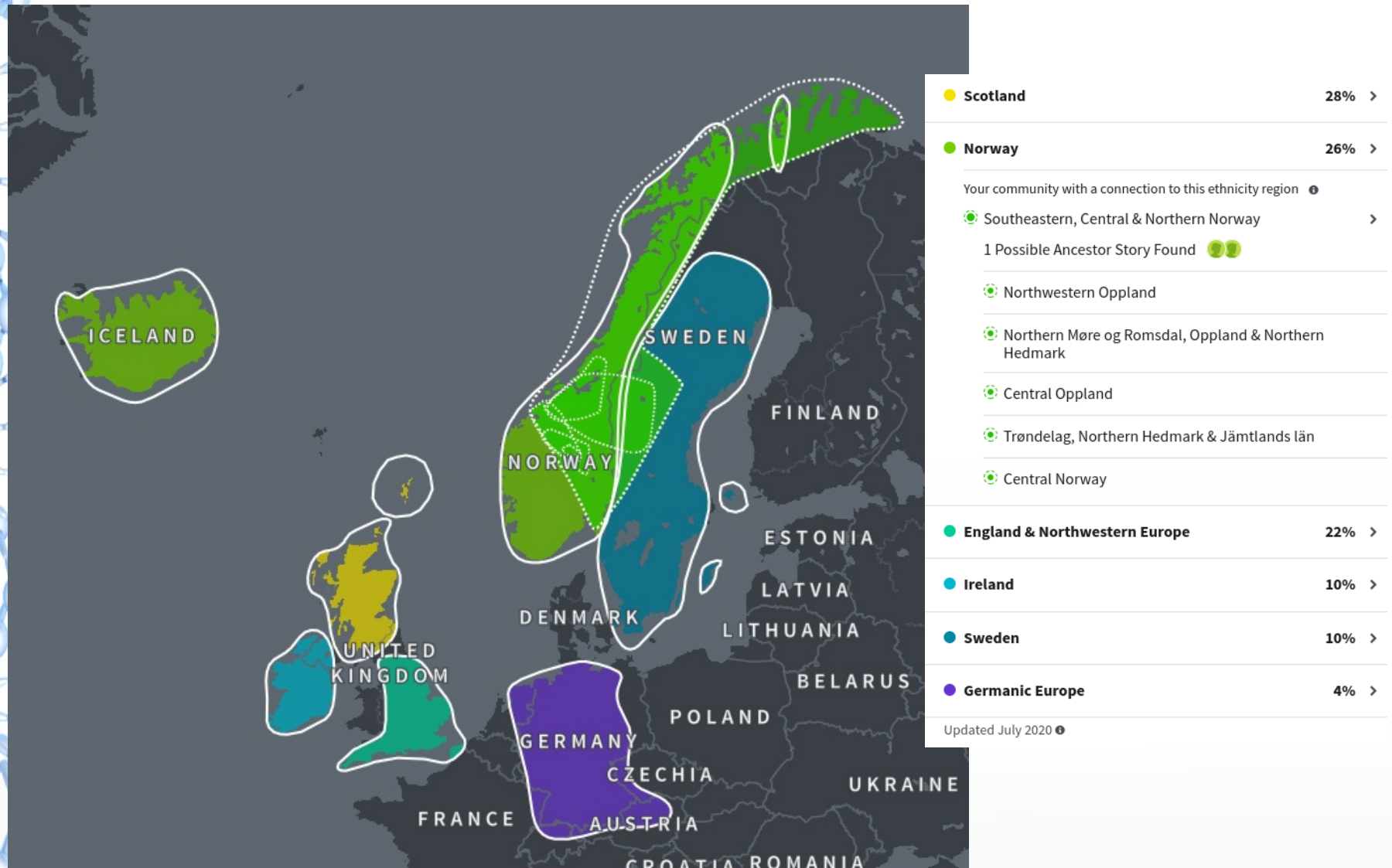


Ancestry.com Autosomal DNA

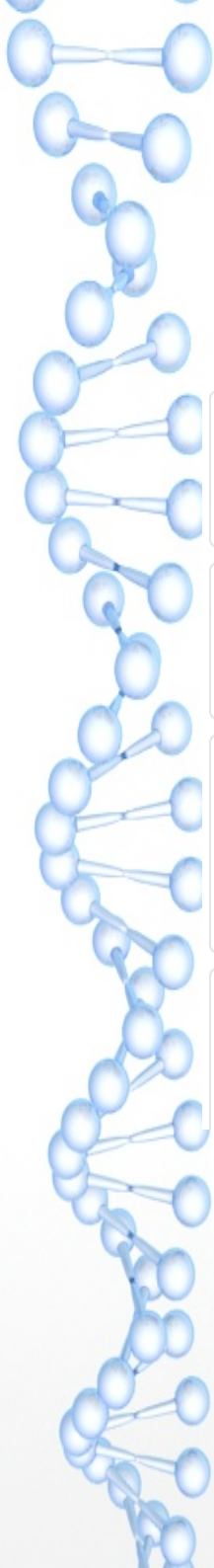
The screenshot displays the Ancestry.com Autosomal DNA interface, organized into three main sections:


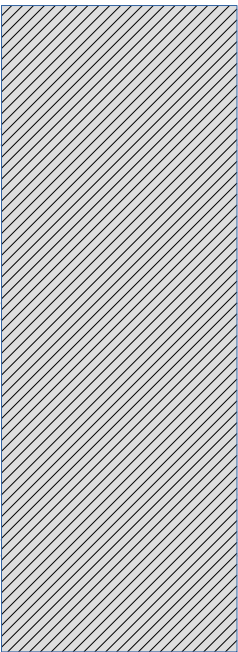



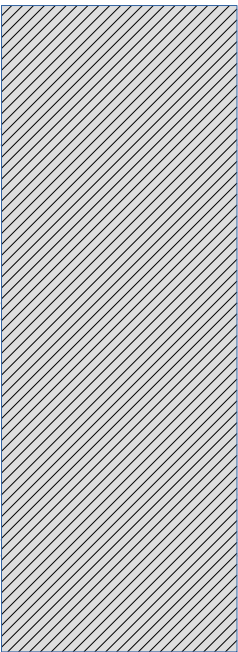



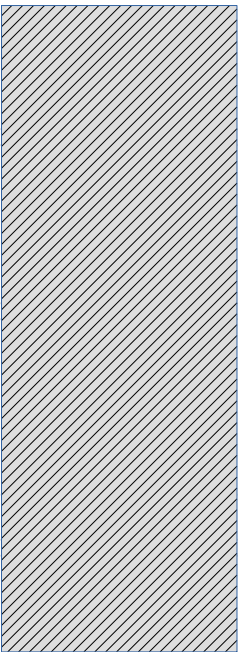




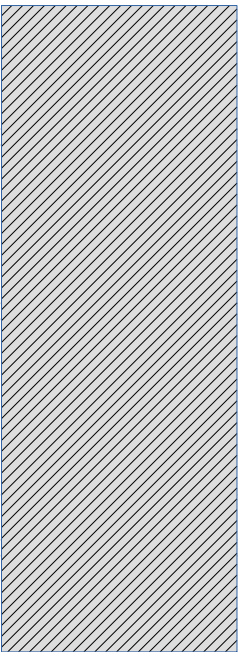

- DNA Story:** Features a world map and a pie chart for the **Ethnicity Estimate**. The estimate includes 28% Scotland (yellow), 26% Norway (green), and 4 Other regions (purple). A 'CR' icon is visible on the pie chart. Below the chart, it says "Discover the places, history, and cultures that shaped who you are today—using just your DNA." A green button labeled "Discover Your DNA Story" is at the bottom.
- DNA Matches:** Shows a grid of eight profile photos of various people. Below the photos, it displays "64 Starred matches" (indicated by a star icon) and "975 4th cousins or closer" (indicated by a person icon). A green button labeled "View All DNA Matches" is at the bottom.
- ThruLines™:** Features a diagram of overlapping circles representing shared ancestors. Below the diagram, it states: "ThruLines uses Ancestry trees to suggest how you may be related to your DNA matches through common ancestors." A green button labeled "Explore ThruLines" is at the bottom.

Ancestry.com – “ethnicity estimate”





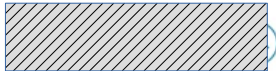
Ancestry.com – dna matches



		2nd – 3rd Cousin 286 cM 4% shared DNA	 Public linked tree 1,624 People  Common ancestor	Do you recognize them? Yes Learn more 
		2nd – 3rd Cousin 261 cM 4% shared DNA Mother's side	 Unlinked Tree	Do you recognize them? Yes Learn more 
		2nd – 3rd Cousin 245 cM 4% shared DNA	 Public linked tree 152 People  Common ancestor	Do you recognize them? Yes Learn more 
		2nd – 3rd Cousin 239 cM 3% shared DNA Mother's side	 No Trees	Do you recognize them? Yes Learn more

Ancestry.com – details

You and 

2nd – 3rd Cousin | Mother's side
2% shared DNA: 124 cM across 7 segments

[Add relationship](#) [Message](#)

[Add to group](#) [Add note](#)

2nd – 3rd Cousin 152 cM 2% shared DNA Mother's side	Unlinked Tree	Do you recognize them? Yes Learn more
2nd – 3rd Cousin 140 cM 2% shared DNA Mother's side	Public linked tree 4,082 People	Do you recognize them? Yes Learn more
	No Trees	Do you recognize them? Yes Learn more
	Tree unavailable	Do you recognize them? Yes Learn more

Trees Ethnicity Shared Matches

How are you and Ellen Law related?

Common Ancestors

According to Ancestry member trees, these are the common ancestors that connect you and Ellen Law. View a common ancestor to see the relationship path that connects you.

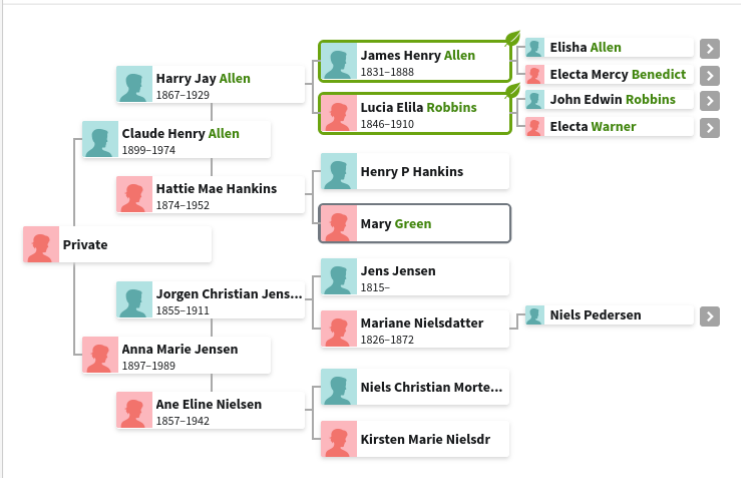
Ellen Law could be your 2nd cousin 1x removed through:

James Henry Allen
2nd great-grandfather
1831–1888
[View Relationship](#)

Lucia Elila Robbins
2nd great-grandmother
1834–1910
[View Relationship](#)

Linked Tree 622 People

Some of the public tree linked to Ellen Law's DNA results. Surnames that appear in both your tree and this tree are marked in green.



Ancestry.com – ThruLines

[Back to all ThruLines](#)

Provided

ThruLines™ for James Moodie

ThruLines uses Ancestry® trees to suggest that you may be related to 9 DNA matches through James Moodie.

[Relationships](#) [List](#)

 **James Moodie**
2nd great-grandfather
1817-1878

 **James Moodie**
Half great-granduncle
1855-1923

 2 DNA Matches

 **William Moodie**
Great-granduncle
1862-1944

 3 DNA Matches

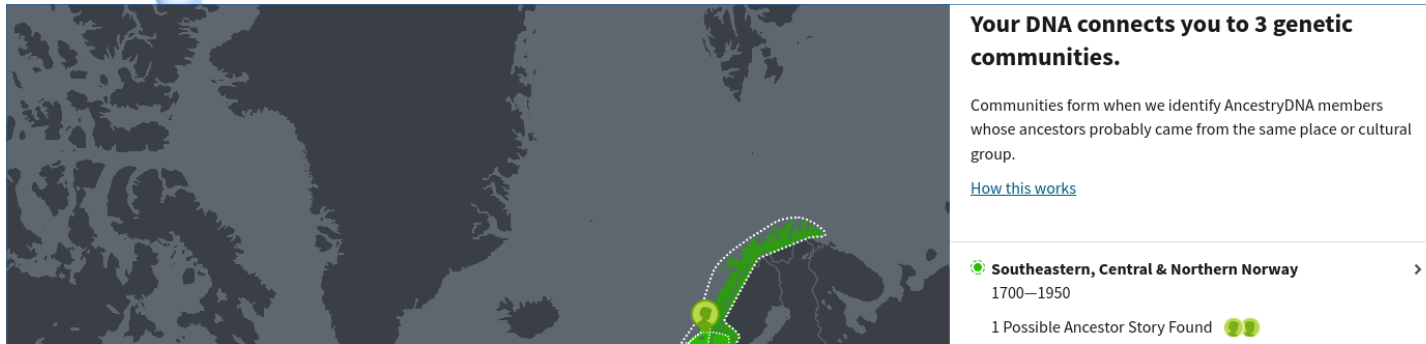
 **Elizabeth Moodie**
Great-grandaunt
1868-1954

 3 DNA Matches

 **Agnes Jane Moodie**
Great-grandmother
1871-1954

 **Harry C. Bates**
Maternal grandfather
1887-1946

Ancestry.com – genetic communities



- Useful to help you visualize possible regions where your ancestors lived in the time from 1750-1850 (approx.)
- Explain methodology -
 - <https://dna-explained.com/2017/03/28/genetic-communities/>
 - <https://www.ancestry.com/cs/dna-help/communities>
 - <https://www.ancestry.com/cs/dna-help/communities/whitepaper>
- Formed from study of a couple million individuals with dna results and pedigree charts. Found clusters (about 300), created reference dna characteristics summary for each, then analyzed all ancestry members with dna tests to see what clusters they might be associated with.
- Uses: hints for passing through brick walls, confirmation of your research, etc. (use with caution and expect the analysis to change with time.)

Resources

- Local interest groups like . . . <https://www.mngs.org/Interest-Groups>
- ISOGG (International Society of Genetic Genealogy) . . .
https://isogg.org/wiki/Autosomal_DNA_testing_comparison_chart and
https://isogg.org/wiki/Wiki_Welcome_Page and
https://isogg.org/wiki/Beginners'_guides_to_genetic_genealogy
- If you get really “cranked up” on this kind of analysis, consider uploading raw data to GEDMATCH . . .
<https://www.gedmatch.com/login1.php>
- DNA Painter (graphical tool & related video)
<https://dnapainter.com/>
<https://youtu.be/wyjcJxywTZI>
- Phasing; reconstruct genome of untested relative
<https://www.maps-phasing.com/>
<https://www.borlandgenetics.com/>

More Resources

- The Leeds manual analysis method for making sense of matches by forming clusters of related individuals.

<https://www.danaleeds.com/the-leeds-method/>

- Take-offs on this type of analysis (\$). Sometimes referred to as auto-clustering. Must upload matches (from myheritage, 23andme, or familytreedna).

- <https://www.myheritage.com/>

- <https://www.dnagedcom.com/>

- <https://geneticaffairs.com/>

- CeCe Moore

- <https://thednadetectives.com/>

- The McGuire Method

<https://thegeneticgenealogist.com/2017/03/19/guest-post-the-mcguire-method-simplified-visual-dna-comparisons/>

References

- Trace Your Roots with DNA, Smolenyak and Turner.
- The Genetic Genealogist: <https://thegeneticgenealogist.com/>
- The Family Tree Guide to DNA testing and Genetic Genealogy, Blaine T. Bettinger, c.2016, ISBN-13: 978-1440345326.
- The Invisible History of the Human Race, Christine Kenneally, c.2014, ISBN 978-0670-02555-8.
- A long story of a quest:
https://maisonneuve.org/article/2021/04/12/genetic-mapping/?src=longreads&mc_cid=7aa42afeba&mc_eid=80b7342473&hsmi=122491487&hsenc=p2ANqtz-8yLR13w1wOuT6Zu6CR413oVAjh0wIVACui7WIFsmTS6l7Si-VWY25FSINQfJpjYhv3rKxR0fD2nMSD7FLLZIXiATYtUA
- Essentials of Genetics, Klug and Cummings
- The Lost Family - How DNA Testing Is Upending Who We Are, by Copeland, Libby (<https://hclib.bibliocommons.com/v2/record/S109C5996780>)

A Final Thought . . .

from Christine Kennealy in The Invisible History of the Human race . . .

"DNA tells us that we are creatures of chance and fate and that no one has quite the same mix of the two in his or her life. We think of ourselves as essentially whole, but when we look at our genome, we see that we are composed of many fragments stuck together. Many of our bits have different histories, and they each bring different probabilities into our lives.

...

Your genome is just the first hand that life deals you. How you play it is up to you."

Thank you!

Go get 'em and have some fun.

