

Survey of Genetic Genealogy

From Ethnicity to Visual Phasing

Full Disclosure

— — —

I have never had any financial, professional or personal ties with any of the DNA testing/matching companies or their employees.

- 23andMe
- AncestryDNA
- FTDNA
- GEDmatch
- MyHeritage DNA

Use these services!



Allow me to introduce myself...

...with my tree and my DNA.

 **Jason Lee**
1975-Living

 ADD RELATIVE

 **Ralph V Lee**
1915-1987

 **Timothy Lee**
1956-2010

 **Mildred Frances Butler**
1922-2010

 **Charles Eugene Smith**
1935-2013

 **Melinda Susan Smith**
1958-Living

 **Ella Faye Mullis**
1936-

 **Hugh Everett Lee**
1894-1966

 **Pearl Valenia Peeples**
1895-1978

 **Etsel Lee Butler**
1897-1979

 **Minnie Mae Mims**
1897-1938

 **Charles Otis Smith**
1899-1978

 **Elizabeth Salina Arnold**
1909-1997

 **Vernon Earl Mullis**
1918-1995

 **Opal Malinda Pierce**
1917-2010

 **William Newton Lee**

 **Sarah Ann Mallon**

 **David M Peeples**

 **Beady Youngblood**

 **James Thomas Butler**

 **Sarah Francis Archer**

 **Alexander Mims**

 **Penelope Waters**

 **John Willis Smith**

 **Mary Ann Lloyd**

 **Eli Colon Arnold**

 **Priscilla Alice Spivey**

 **Colonel Jefferson Mullis**

 **Camilla Lee Butler**

 **John Arthur Pierce**

 **Ruth Deen**

Mysterious & Interesting South Carolina Ancestry

Sarah Ann Mallon: ???

David M. Peeples: Hampton County ???

John W. Lloyd: Darlington, SC

Thomas Osgood: Essex, MA → Dorchester, SC
(1680-1736)

The Witches of East... Cooper?

BY SUZANNAH SMITH
MILES

SPECIAL TO THE MOULTRIE
NEWS

Going north on Highway 17, if you turn left on Fifteen Mile Landing Road at the SeeWee Restaurant, you'll find a marker indicating the spot where the Wappetaw Independent Congregational Church once stood. It reads: "This church was planted here in 1696 by a colony of 52 who came from New England and landed at Seawee Bay."

These earliest East Cooper settlers have long been a question mark to area historians. Records are scant. After sailing from Ipswich, Mass., in October 1696, they were shipwrecked on the North Carolina coast, rescued by a vessel sent by South Carolina's governor, John Archdale, and given land on the upper Wando River in the area the Sewee Indians called Wappetaw. Through early deeds, church records and wills, the late historian Petrona Royall McIver devised a list of their possible names. After that, the track largely went cold.



Suzannah Smith Miles

nation and at least five died in jail. Even elderly John Alden, Jr., the son of the Mayflower's famous John and Priscilla, was accused. The trials only came to a halt when accusations were being considered against the governor's wife, whose "crime" had been giving birth to a severely deformed child. Enough finally became enough.

The aftermath left Massachusetts in a state of rancor

Savage's Genealogical Register of early New England families. Savage states that Aaron and William Way, members of the Dorchester settlement on the Ashley River, were "active in the protest against the cruel hypochondria of the Rev. Samuel Parris," and thus moved to South Carolina.

Of those who settled at Wappetaw, one of the most familiar names is Whilden. Elias Whilden, Jr. (1799-

proved of Burroughs' more tolerant religious views, particularly the Reverend Parris and the Reverend Cotton Mather, the judge at the trials. Mather even suspected Burroughs of being (gasp!) a Baptist.

Accused by Ann Putnam and other girls who claimed Burroughs' tormented them in dreams and visions; Burroughs was arrested at his home in Maine and brought to Salem for trial.

been another. Murrell had also been a witness in the Burroughs case as well as the trial of one Sarah Murrell, likely a relation. Sarah was subsequently jailed in Boston where she spent 35 weeks chained in a dark, dank cell. She was 14-years-old.

Other Wappetaw settlers had witch trial connections. John Severance became unwittingly embroiled in the trial of his neighbor. John Hendrick's first cousins, John and Robert Pike, put their own lives on the line when they testified on behalf of the well-loved Mary Bradbury when she was tried as a witch. They were joined by members of the Murrell and Severance families and others who signed a petition for Bradbury's release. This was a brave but dangerous thing to do for many who had voiced opposition to the trials had ended up being accused, themselves.

The settlers at Dorchester on the Ashley River had similar experiences. Thomas Osgood, his wife, Susannah Lord and his sister, Lydia, not only signed the petition on behalf of Mary Bradbury,

erant laws toward religion in the world. No one was going to be put into stocks or branded for their religious beliefs in South Carolina. Or executed as a witch.

Some familiar, now traditional Lowcountry names may surprise. Boston silversmith Solomon Legaré came with the Wappetaw group. John Simmons and his wife, Anne, progenitors of the "two-M" Simmons family, came with the Dorchester group. Daniel Island settler Benjamin Singletary and his wife, Mary, likely arrived with the Wappetaw group. Today's Whitehall area on Highway 17 North comes from Wappetaw settlers George and William White.

Although the Wappetaw settlers never laid out a town like that at Dorchester, most became substantial planters and their landholdings ranged the length of the Wando River, encompassing areas we know today as Wakendaw, I'on, Brickyard, Palmetto Islands County Park, Dunes West and Park West. Members of the Murrell family eventually settled along the coast near Georgetown, remembered today by

My DNA Testing

Started with 23andMe for ethnicity...

Jason, explore your ancestry through your DNA.

[Overview](#)

[All Reports](#)

Ancestry Composition

Your DNA tells the story of who you are and how you're connected to populations around the world.

[View your ancestry composition](#)



YOUR ANCESTRY IN DETAIL



71.9%

British & Irish

[View report](#)



8.6%

French & German

[View report](#)



2.4%

Scandinavian

[View report](#)



Jason Lee

100%

European

99.4%

● Northwestern European 98.6%

● British & Irish 71.9% >

Greater Manchester, United Kingdom

County Dublin, Ireland

+15 regions

● French & German 8.6% >

● Scandinavian 2.4% >

● Broadly Northwestern European 15.8%

● Southern European 0.5%

● Spanish & Portuguese 0.4% >

● Broadly European 0.3%

Trace Ancestry

0.5% ▾

Unassigned

0.1% ▾

In the last 200 years, your ancestors may have lived in the following locations.

We found evidence of your recent ancestry in the following regions. Darker regions represent places where you have DNA in common with more people who report ancestry from that particular region. Because these results reflect the ancestries of individuals currently in our reference database, expect to see your results change over time as that database grows. [Read more in Scientific Details.](#)

British & Irish

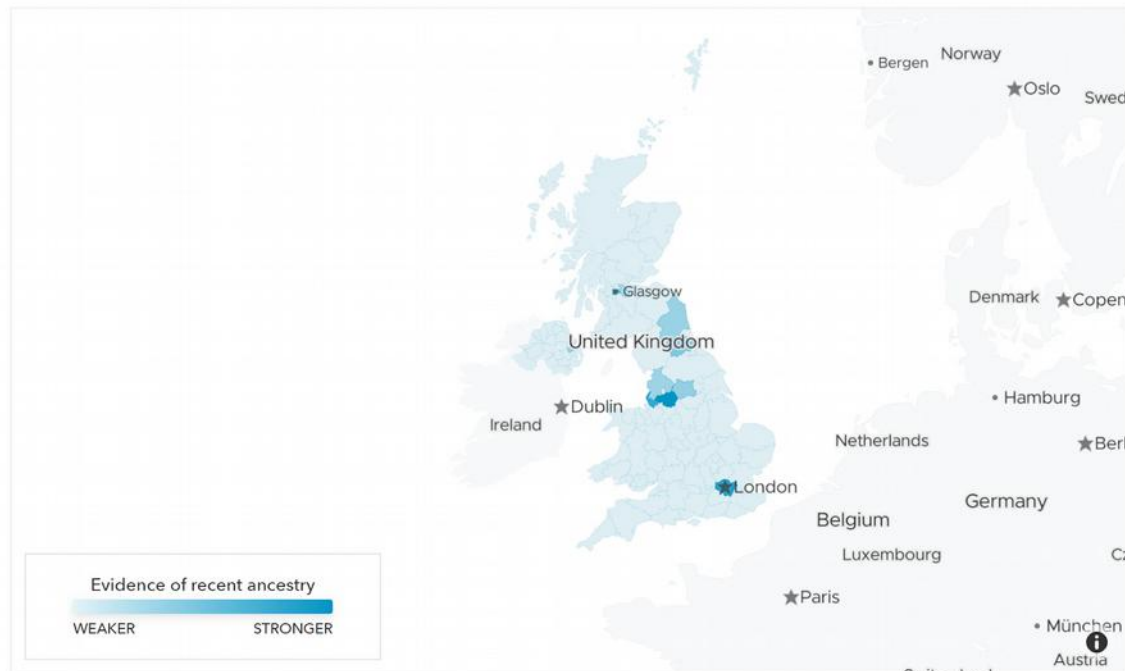
71.9%

United Kingdom

Highly Likely Match ^

The United Kingdom has 165 administrative regions, and we found the strongest evidence of your ancestry in the following 10 regions.

1. Greater Manchester
2. Greater London
3. Merseyside
4. Glasgow City
5. County Durham
6. West Yorkshire
7. Northumberland
8. Belfast
9. Lancashire
10. North Lanarkshire



Jessica Lee

100%

European

99.7%

Northwestern European 96.0%

British & Irish 39.9%

French & German 31.0%

Scandinavian 2.3%

Finnish 0.4%

Broadly Northwestern European 22.3%

Southern European 1.4%

Broadly Southern European 1.4%

Eastern European 0.9%

Ashkenazi Jewish 0.3%

Broadly European 1.0%

Sub-Saharan African 0.3%

West African 0.1%

Broadly West African 0.1%

Broadly Sub-Saharan African 0.2%

No Data Available



Get to Know Your Relatives with Finnish Ancestry

Start a conversation to learn more about your shared ancestry.



Ilkka Tammela

Predicted 4th Cousin

Has roots in Finland

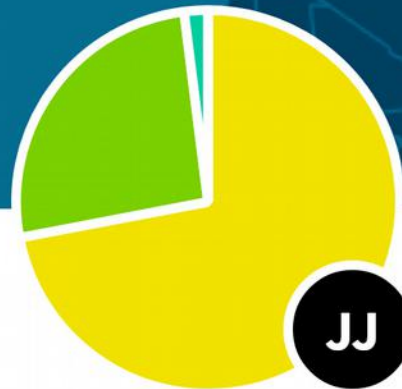


Jorma Kinnunen

Predicted 5th Cousin

Has roots in Finland

DNA Story



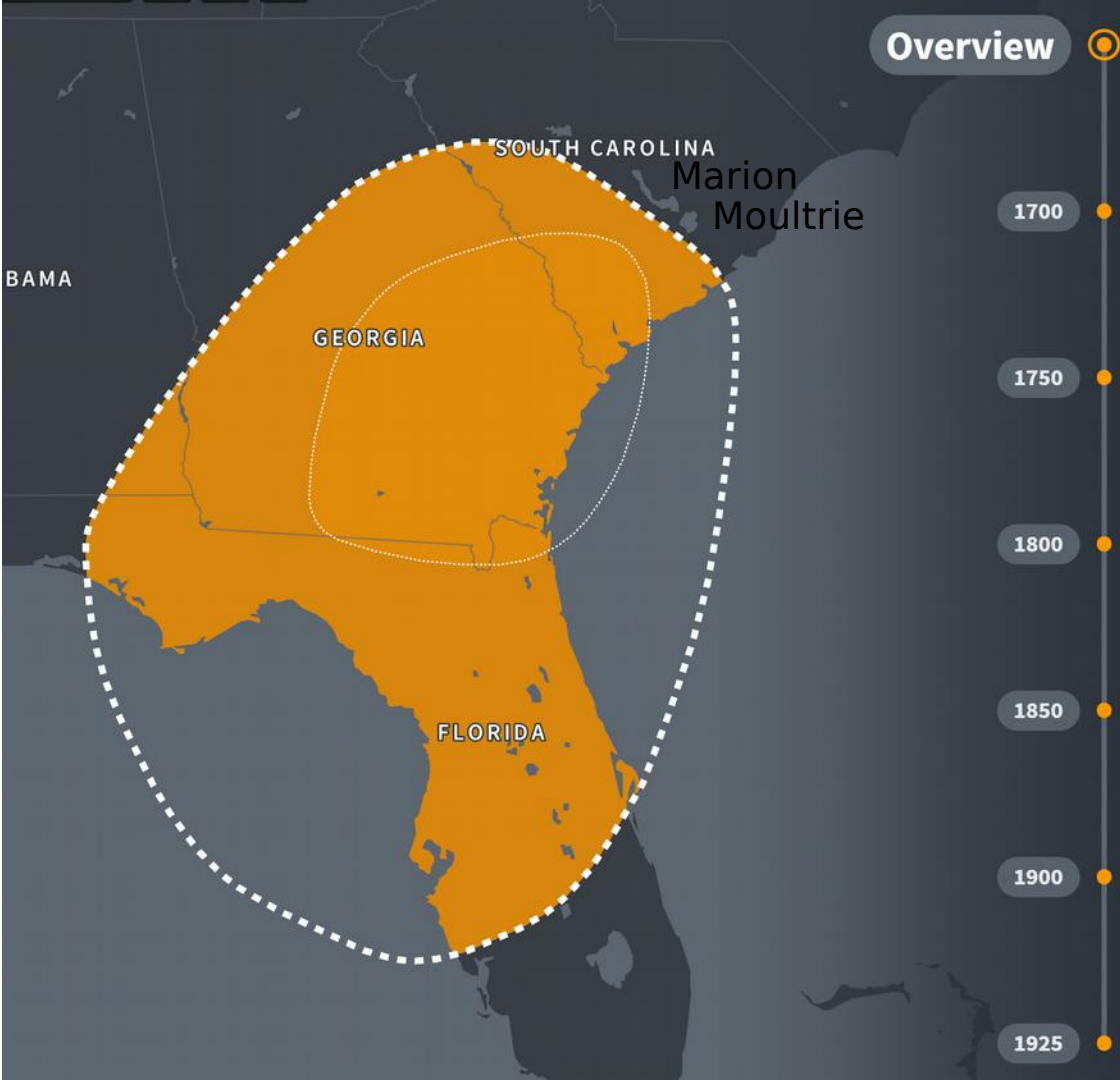
Ethnicity Estimate

 72% England, Wales, and
Northwestern Europe

 26% Ireland and Scotland

 2 Other regions

Overview



1700

1750

1800

1850

1900

1925



Ralph Daily / Flickr / CC BY 2.0 / Cropped



COMMUNITY

Georgia & Florida Settlers



302,335 AncestryDNA members

You, and all the members of this community, are linked through shared ancestors. You probably have family who lived in this area for years—and maybe still do.

Use the timeline to explore what their life might have been like.

The more specific places within this region where your family was likely from.

Southeast Georgia Settlers

Featured Matches

These are some of your matches who also belong to this community.

Many stop with ethnicity...

...but *matches* provide genealogical gold.

- Close matches (adoptees, NPEs)
- **Distant cousins (climbing UP the tree)**

Contacting matches: The Payoff

— — —

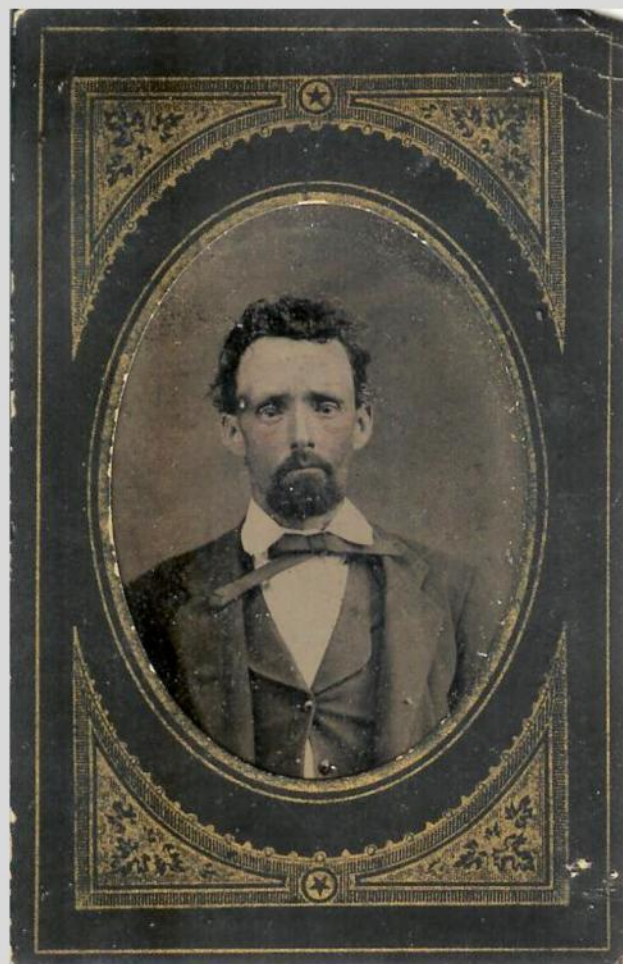
Two previously unknown first cousins

New family tree discoveries

New friends

New photos

New field trip ideas





John W. Lloyd (4th great grandfather)

BIRTH 1 APR 1830 • Darlington, SC

DEATH 12 DEC 1902 • Darlington, SC

Battle of Chickamauga (1863)

Field Trip!



Chickamauga and Chattanooga National Military Park

— — —



Distant cousins

— — —

- Shared match lists (location, branch of tree)
- Comparing with other family (half siblings, parents, etc.)
- cM values
- Chromosome browser information
- Special techniques (e.g., visual triangulation)

Visual Triangulation

Big picture with a few details

Focus on the big picture.

Details provided to support & illustrate.

Videos are available for later review.

Facebook and YouTube

Visual Triangulation

Making *INDIRECT* DNA comparisons.

Compare DNA matches at one company with DNA matches at another company!

Compare DNA matches with each other even when chromosome browser settings do not permit! (FTDNA)

Compare matches & sort matches by family line.

Backing up...

What is triangulation?

What is triangulation?

Looking at shared DNA & shared Ancestry to explore family relationships.

- **Shared DNA segments**

Segment Triangulation

1. Select a shared segment of DNA.
2. Look for other people who share the same DNA segment.
3. Look for ancestry shared by all of the people who share the segment.
4. Repeat for each shared segment.

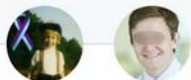
Example...

Spivey cousins (maternal)

23andMe

Now comparing DNA segments.

Select different relatives or friends to compare.



Jason Lee
and
Bobby

Half identical
72 cM
2 segments



Jason Lee
and
Sherry

Half identical
88 cM
4 segments



Jason Lee
and
Pam

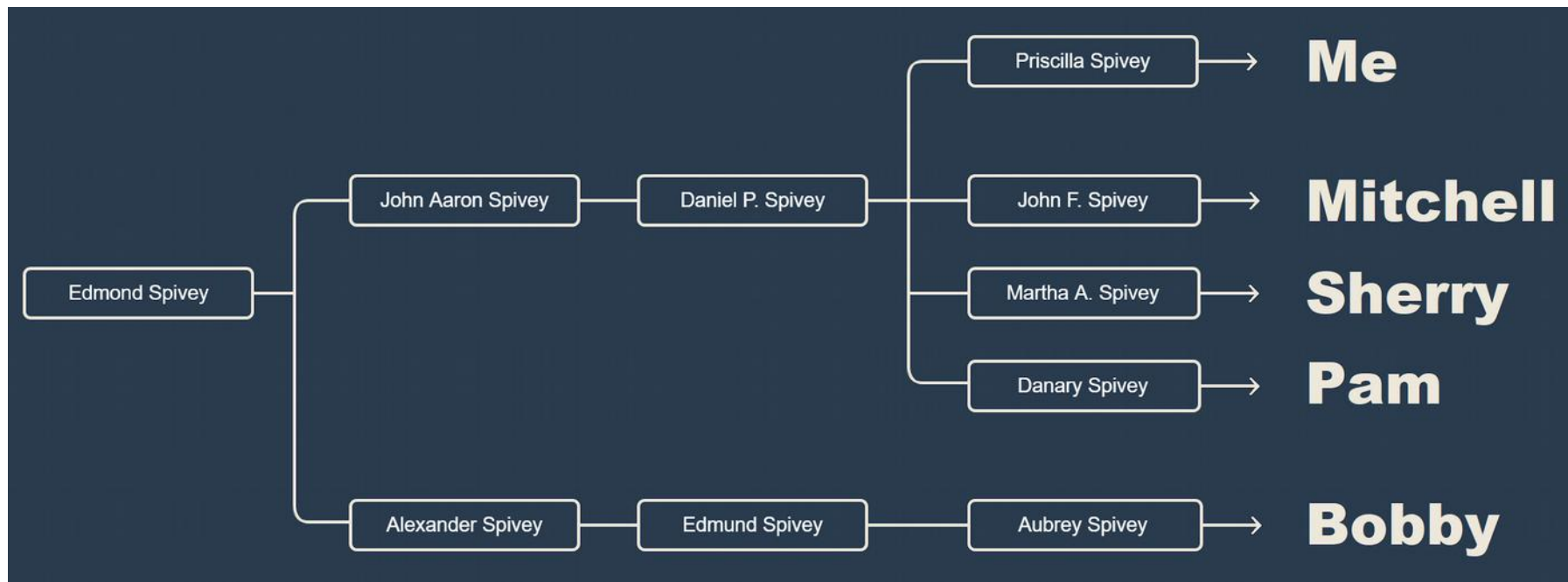
Half identical
94 cM
3 segments



Jason Lee
and
Mitchell Mendoza

Half identical
46 cM
1 segment





My triangulation video!

— — —

DNA Triangulation for Family History

Triangulation Challenges

Confirming mutually shared DNA

Confirming shared ancestry

Why confirm mutually shared DNA?

Because appearances can be deceiving.

Two groups of matches: maternal & paternal

— — —

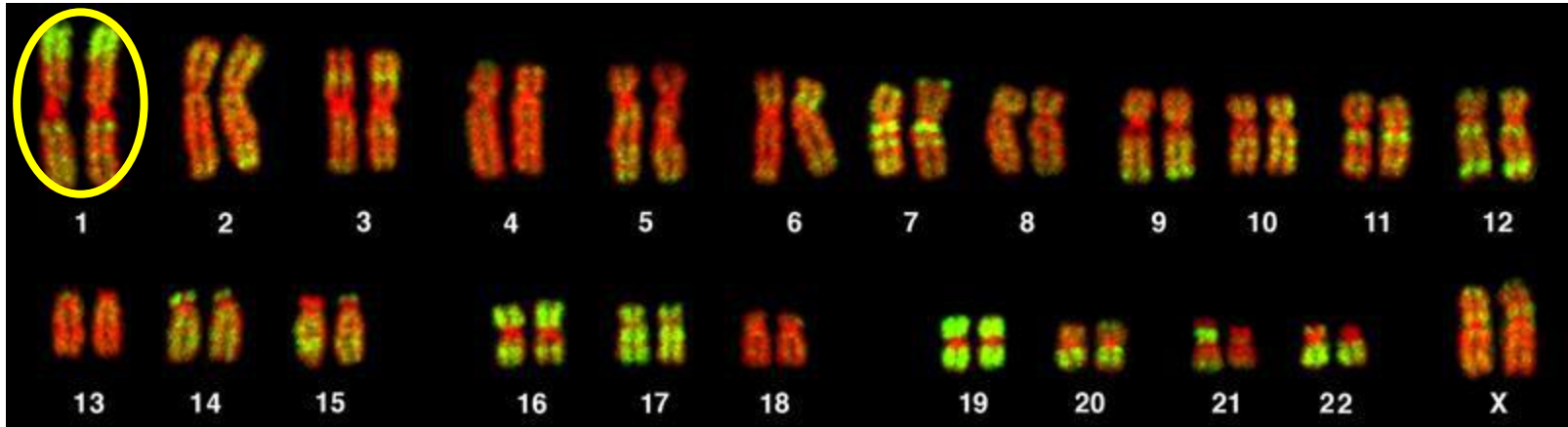
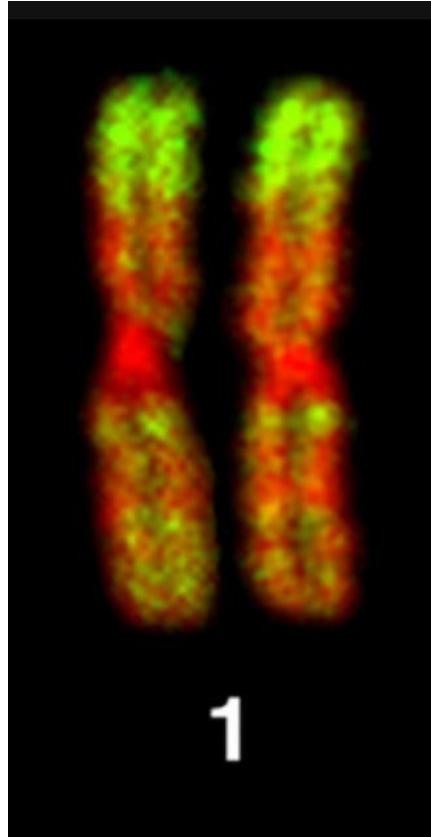


Image source:
<https://en.wikipedia.org/wiki/Gene>

Chromosome 1: Maternal and Paternal

Mom



Dad

Another Spivey segment?



to answer the questions:

1. Sort matches
2. Compare matches
3. Confirm connections

Sorting matches...

Test parents!

Test grandparents!

Test great grandparents!

Test other relatives!!!

Oldest generation always has a sorting problem!



Hugh Everett Lee
1894-1966



Pearl Valenia Peeples
1895-1978



Etsel Lee Butler
1897-1979



Minnie Mae Mims
1897-1938



Charles Otis Smith
1899-1978



Elizabeth S Arnold
1909-1997



Vernon Earl Mullis
1918-1995



Opal Malinda Pierce
1917-2010



Ralph V Lee
1915-1987



Mildred F Butler
1922-2010



Charles E Smith



Sorting & comparing matches

- **Chromosome browser** (23andMe, GEDmatch, MyHeritage, FTDNA, AncestryDNA)
- **Triangulation tools and features** (GEDmatch, 23andMe, MyHeritage, FTDNA, AncestryDNA)
- **Visual triangulation** (23andMe, GEDmatch, MyHeritage, FTDNA, AncestryDNA)



Make direct comparisons!

Whenever possible use...

Chromosome browsers

Triangulation tools

Direct comparisons not always possible!

Our cousins test at different companies!

Direct comparison between Cousin A only at FTDNA
and Cousin B only at 23andMe: **NOT POSSIBLE!**

Example...

New example: Cousin Graham Bennett

New match in May 2017 at FTDNA

No tree, no response but name + email address led to mom's obituary and other helpful info.

Cousin Graham Bennett

— — —

Shared ancestry:

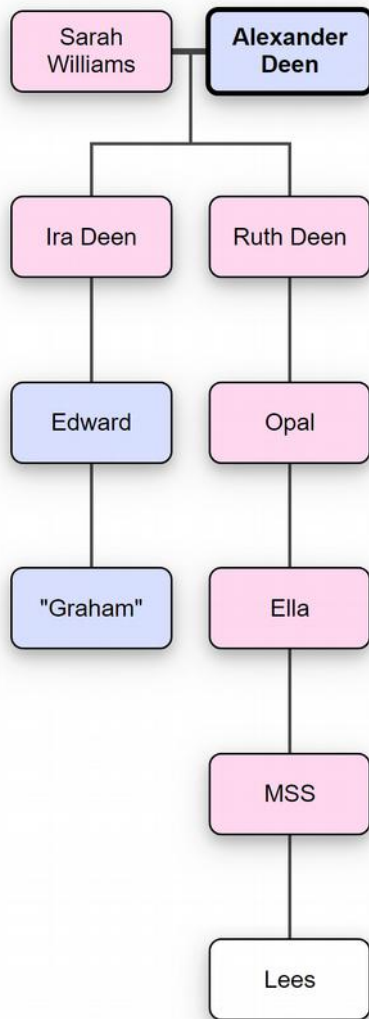
Alexander Hamilton Stephens Deen / Sarah Frances Williams

2nd cousins twice removed (maternal)

John Barber Waters / Martha Lanier

4th cousins once removed (**paternal**)

Graham



Graham

— — —

Shared DNA:

104 cM (sibling summation)

Mother's 2nd cousin once removed

Cousin Graham: Questions

Can we confirm Graham's tree with DNA match results?

Can we confirm the source of the shared DNA?

Is our paternal relationship contributing?

Can triangulation help?

Cousin Graham

Graham tested at **FTDNA**.

Many of my Deen cousins, including Graham's niece & aunt have also tested...**but only at 23andMe!**

Cousin Graham

Great match

Share great connections

Direct comparisons not possible!

Solution: Visual Triangulation!

Indirect (but VERY reliable) comparisons

Goal in this case: Compare FTDNA match results with 23andMe match results.

Solution: Visual Triangulation!



Needed: Other family member(s)



Two generations often preferable



Matching segment details required (chromosomes, positions)

Cousin Graham. DNA resources

FTDNA: Chromosome browser

103.8 cM

Chromosomes **3, 6, 10, 21**

Twelve of my close family members to be compared with
Graham and his close relatives.

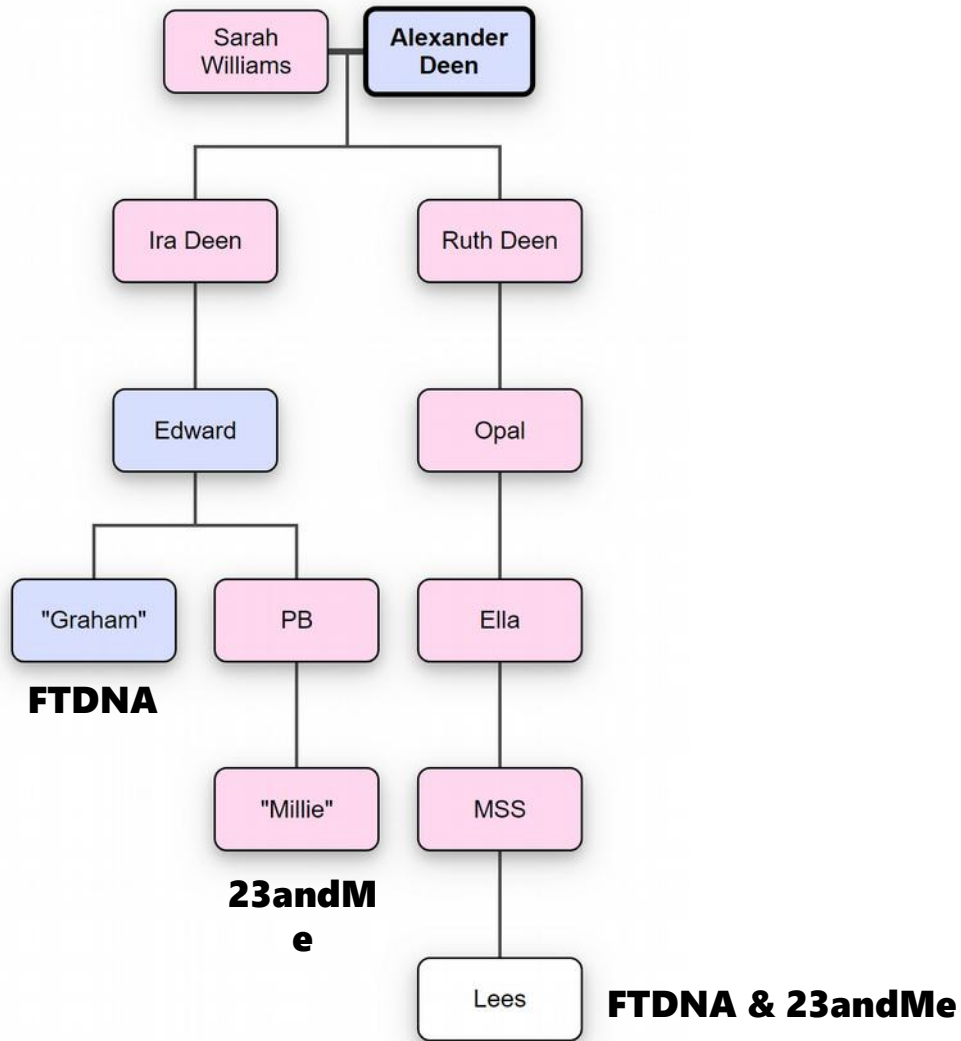
Family members compared

— — —

Me, siblings **2, 4, 5, 6, 7, 8**, my three children, nephew **E** and niece **B**.

Millie

— — —



Chromosome 3

— — —

Graham matches siblings **4, 6, 7, 8 and niece B** (FTDNA)

Graham's niece (Millie) matches sibs **4, 6, 7, 8 and niece B** (23andMe)!

Segment position **29,000,000 - 41,000,000**

Chromosome 3 , 2nd segment

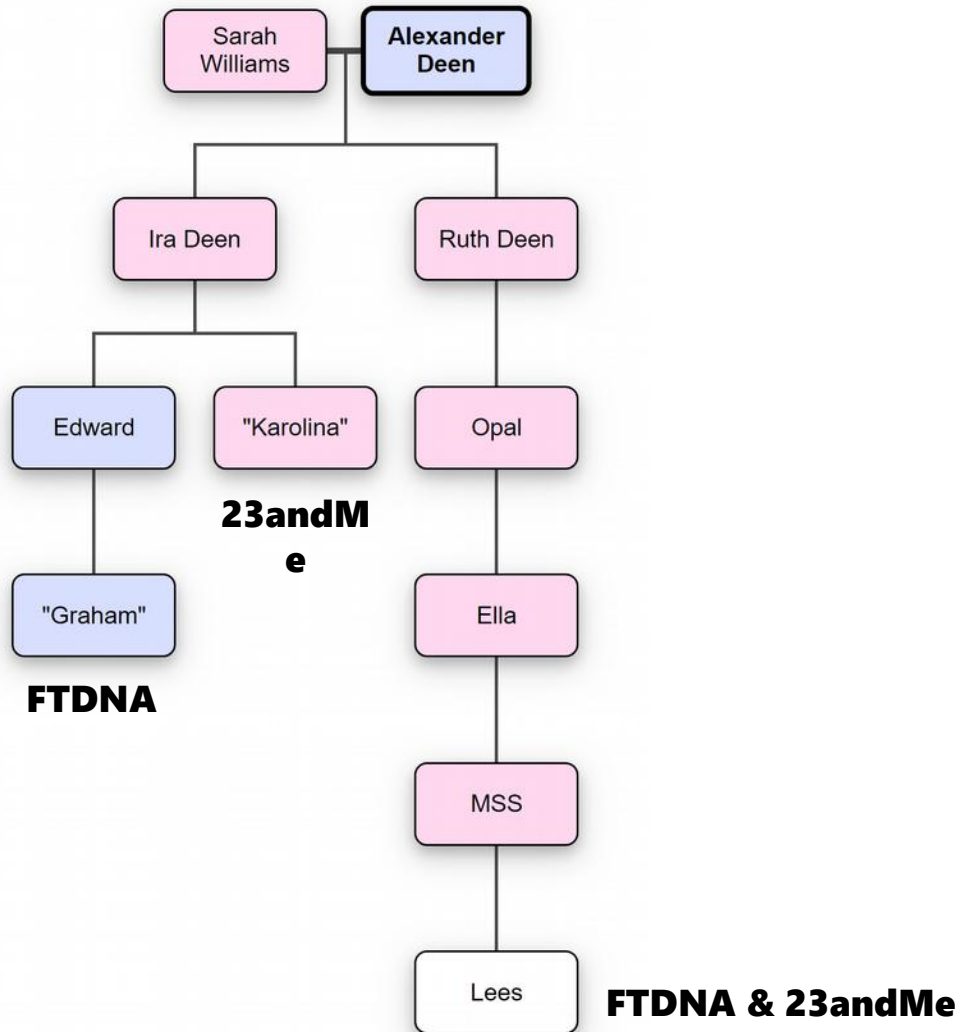
— — —

Graham matches **me**, siblings **4, 7, 8** & *all three of my kids* (FTDNA)

Millie matches **me**, siblings **4, 7, 8** & *all three of my kids* (23andMe)!

Segment position: **61,000,000 - 71,000,000**

Karolina



Chromosome 3, 3rd segment

— — —

Graham matches siblings **2, 4, 5, 7** & nephew **E** (FTDNA)

Graham's aunt (Karolina) matches sibs **2, 4, 5, 7** & nephew **E** (23andMe)!

Segment position **175,000,000 - 183,000,000**

Chromosome 6

— — —

Graham matches me, sibs **4, 5, 6, 8**, niece **B**, my **daughter** & my 2nd **son** (FTDNA)

Karolina matches me, sibs **4, 5, 6, 8**, niece **B**, my **daughter** & my 2nd **son** (23andMe)!

Segment position **150,000,000 - 167,000,000**

Chromosome 10

— — —

Graham matches me, sibs **5**, **7**, & my younger **son** (FTDNA)

Karolina matches me, sibs **5**, **7**, & my younger **son** (23andMe)!

Segment position **123,000,000 - 135,000,000**

Chromosome 21

— — —

Graham matches siblings **5, 6, 8** (FTDNA)

Karolina matches siblings **5, 6, 8** (23andMe)!

Segment position **25,000,000 - 29,000,000**

Observations

Graham (at FTDNA) and Millie (at 23andMe) both match **identical subsets** of my close family members on two segments on Chromosome 3.

Hypotheses

Graham and Millie match each other on Chromosome 3.

Graham and Millie triangulate with my family on those segments.

Graham & Millie triangulate as noted because of our shared ancestry on the Deen line.

Observations

Graham (at FTDNA) and Karolina (at 23andMe) match **identical subsets** of my close family members on several DNA segments (on Chromosomes 3, 6, 10 and 21.)

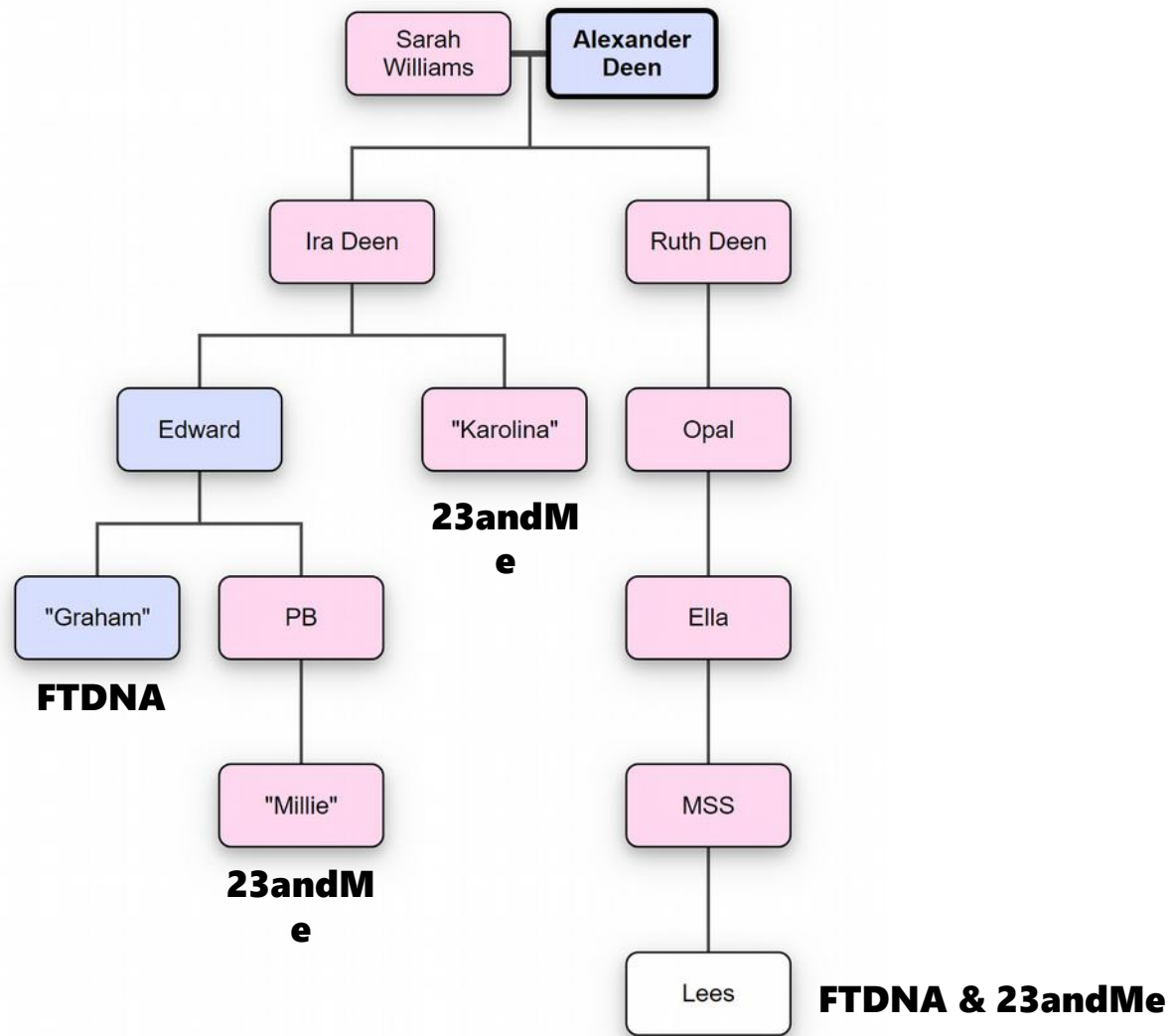
Hypotheses

Graham and Karolina match each other on Chromosomes **3, 6, 10 and 21**.

Graham and Karolina triangulate with my family.

Graham & Karolina triangulate on those chromosomes because of our shared ancestry on the Deen line.

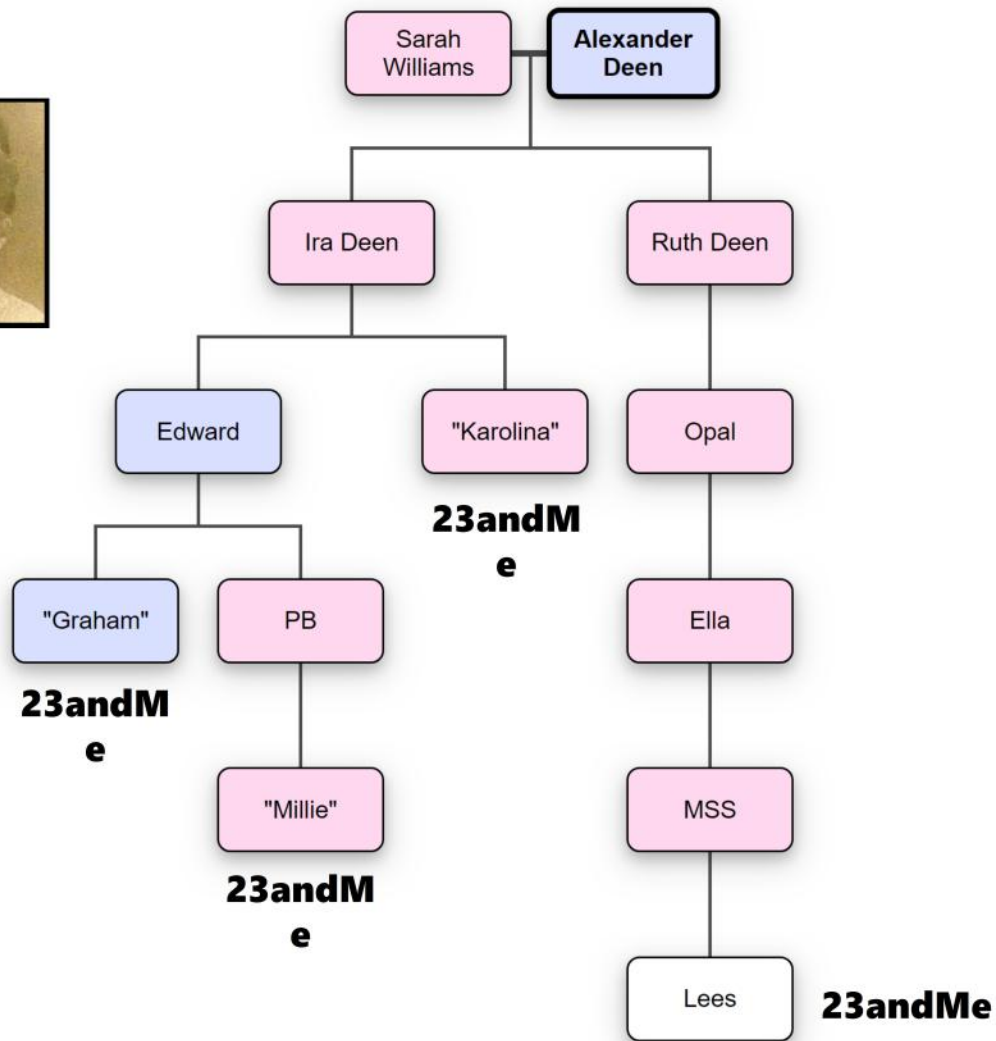
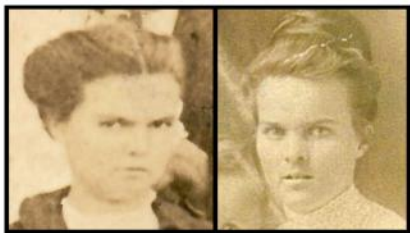
— — —



UPDATE: March 2019

Graham appeared as a match at 23andMe!

We usually don't get so lucky!

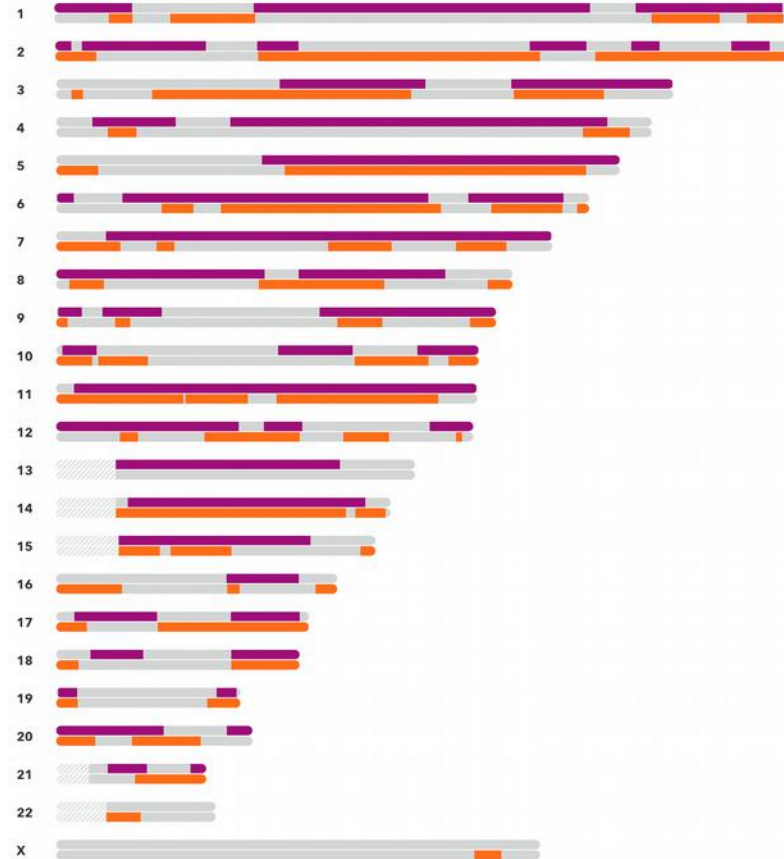


GB KW

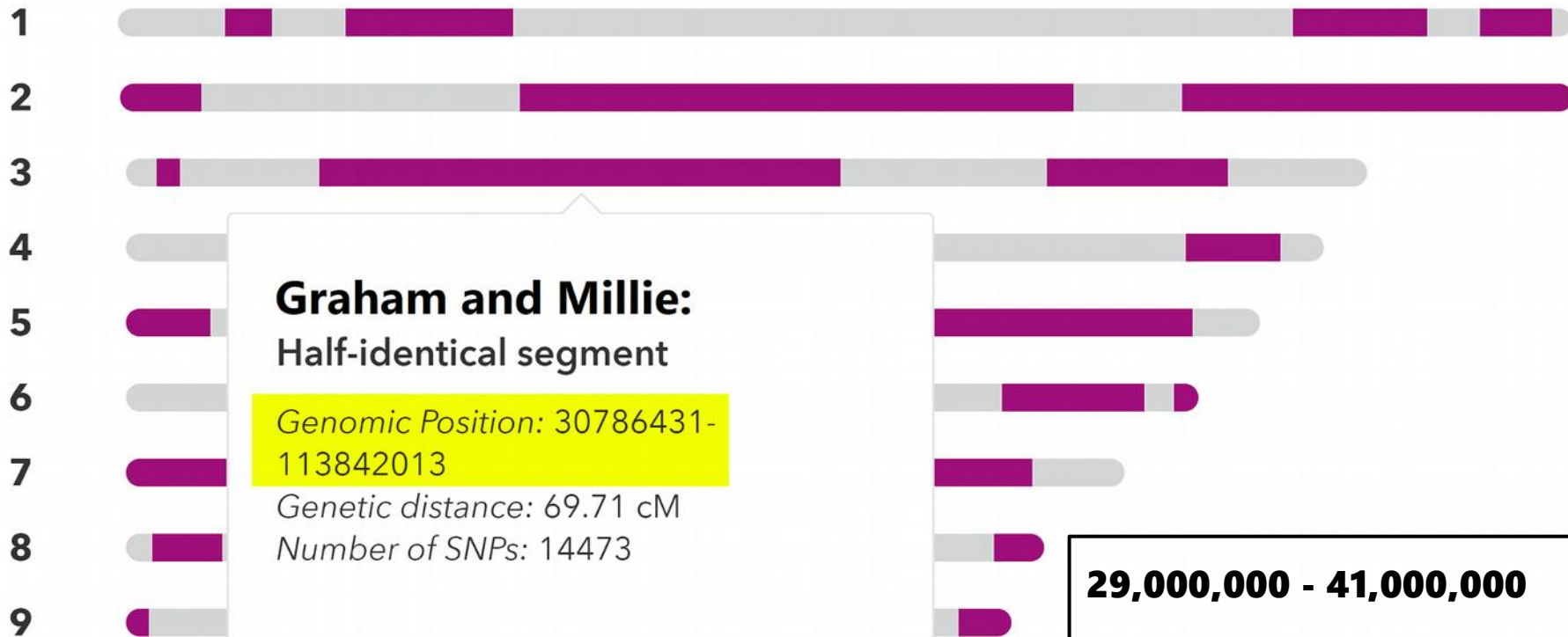
Half identical
2225 cM
44 segments

GB MS

Half identical
1772 cM
59 segments



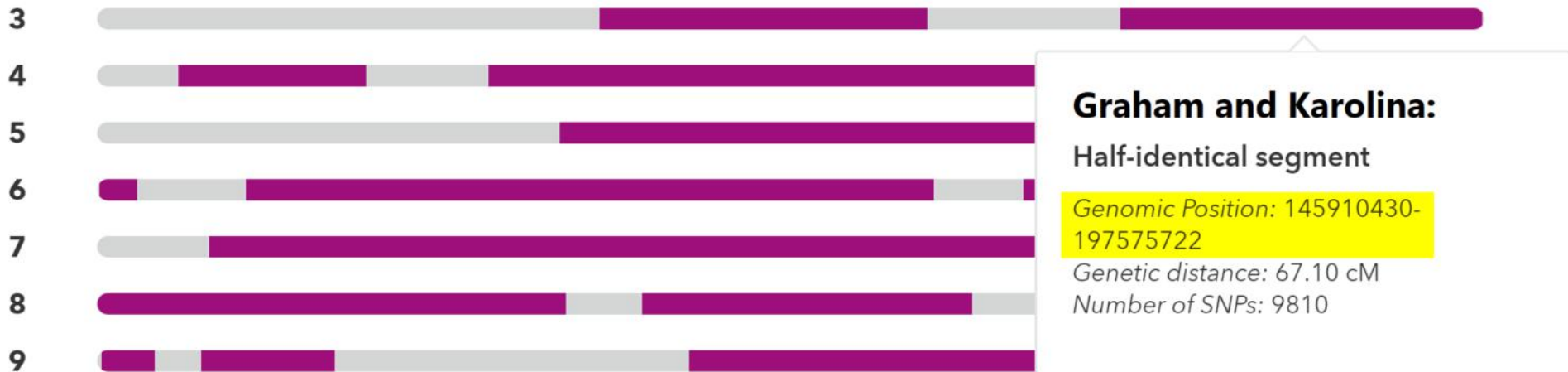
Chromosome 3 (Millie)



29,000,000 - 41,000,000

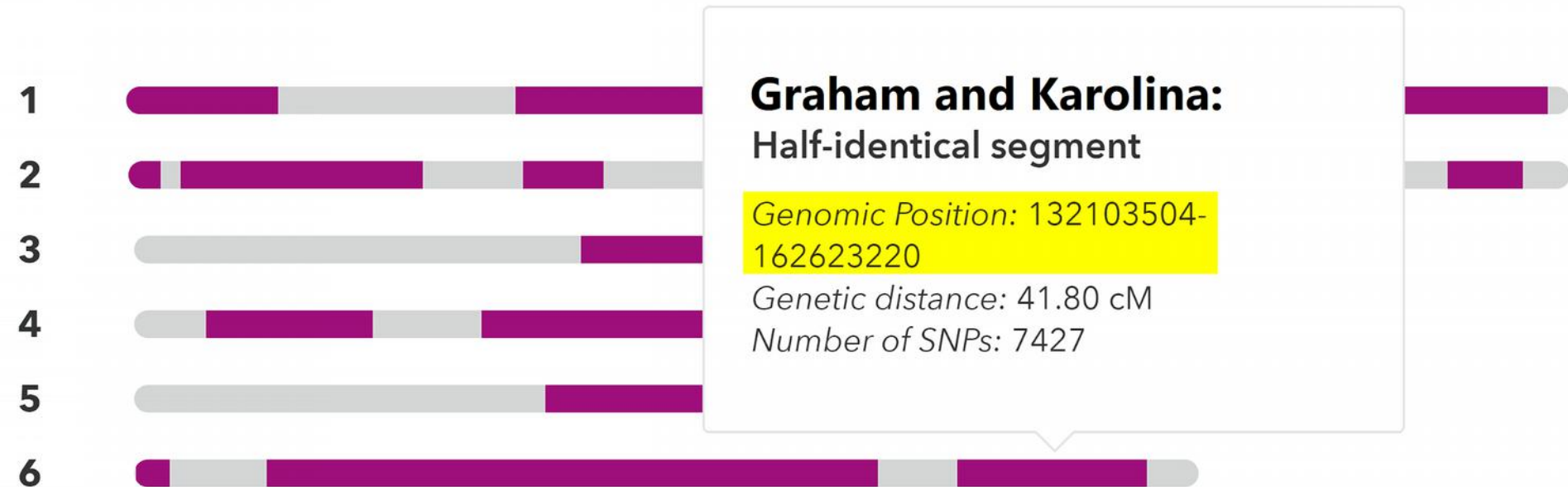
61,000,000 - 71,000,000

Chromosome 3 (Karolina)



175,000,000 - 183,000,000

Chromosome 6 (Karolina)



151,000,000 - 167,000,000

Chromosome 10 (Karolina)



Graham and Karolina:
Half-identical segment

Genomic Position: 115803981-
135349226

Genetic distance: 40.33 cM
Number of SNPs: 5141

123,000,000 - 135,000,000

Chromosome 21 (Karolina)

15



Graham and Karolina:
Half-identical segment

Genomic Position: 16568524-29122939

Genetic distance: 23.93 cM

Number of SNPs: 2986

21



25,000,000 - 29,000,000

Sib 4 and Graham's shared matches: Millie

You have 234 Relatives in Common™

Finding common relatives can help you piece together your family story.

Relative in common	You	Graham	Shared DNA
 Millie	3rd Cousin	Niece	Yes
 Hanz Julonsen	3rd Cousin	Distant Cousin	Yes
 Trudy	3rd Cousin	5th Cousin	No
 Marcia	3rd Cousin	4th Cousin	No



Sib 4
and
Graham

Half identical
47 cM
4 segments



Sib 4
and
Millie

Half identical
61 cM
4 segments



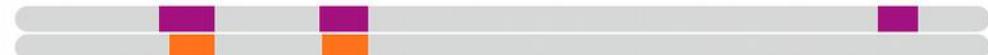
1



2



3



**Triangulation
confirmed**

Sib 4 and Graham's shared matches: Karolina

You have 234 Relatives in Common™

Finding common relatives can help you piece together your family story.

Relative in common	You	Graham	Shared DNA
 Dawn 	3rd Cousin	4th Cousin	Yes
 LB Laura 	3rd Cousin	2nd Cousin	No
 LP Laurie 	3rd Cousin	5th Cousin	No
 KW Karolina	3rd Cousin	Aunt	Yes



Sib 4
and
Graham

Half identical
47 cM
4 segments



Sib 4
and
Karolina

Half identical
77 cM
4 segments



1



2



3



**Triangulation
confirmed**

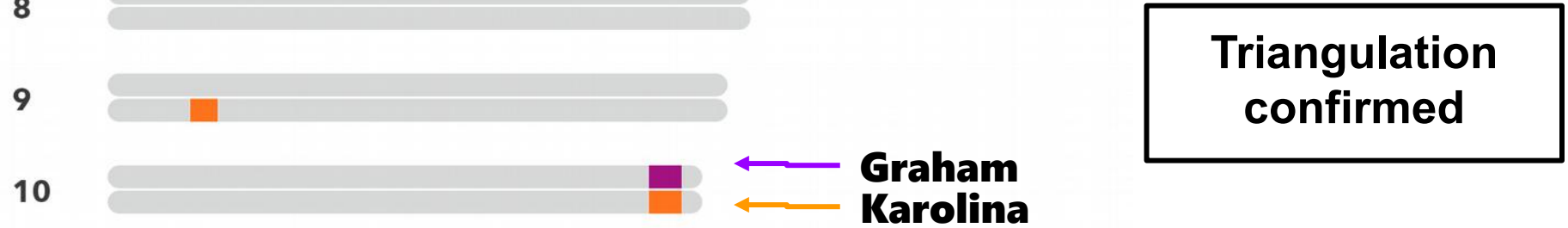
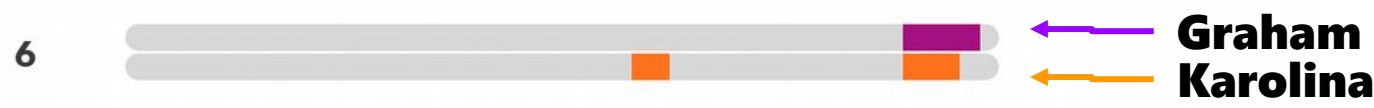
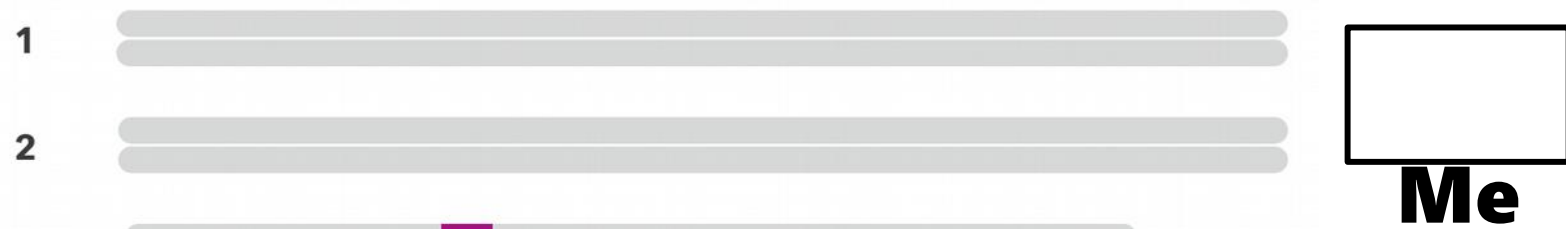
You have 266 Relatives in Common™

Finding common relatives can help you piece together your family story



Relative in common		You	Graham	Shared DNA
JW	Jessica	3rd Cousin	5th Cousin	No
	Dawn	3rd Cousin	4th Cousin	Yes
MS	Marcia	3rd Cousin	4th Cousin	No
	Victor	3rd Cousin	3rd Cousin	No
WE	William	3rd Cousin	4th Cousin	No
LB	Laura	3rd Cousin	2nd Cousin	Yes
MS	M	3rd Cousin	Niece	Yes
KW	Karolina	3rd Cousin	Aunt	Yes

Me



Chromosome 21

Triangulation tool not accessible.

Segment only 6.5 cM

Conclusion

Visual triangulation (VT) correctly predicted segments that Graham shares with Millie and Karolina.

VT correctly predicted triangulated segments, confirmed by direct comparisons.

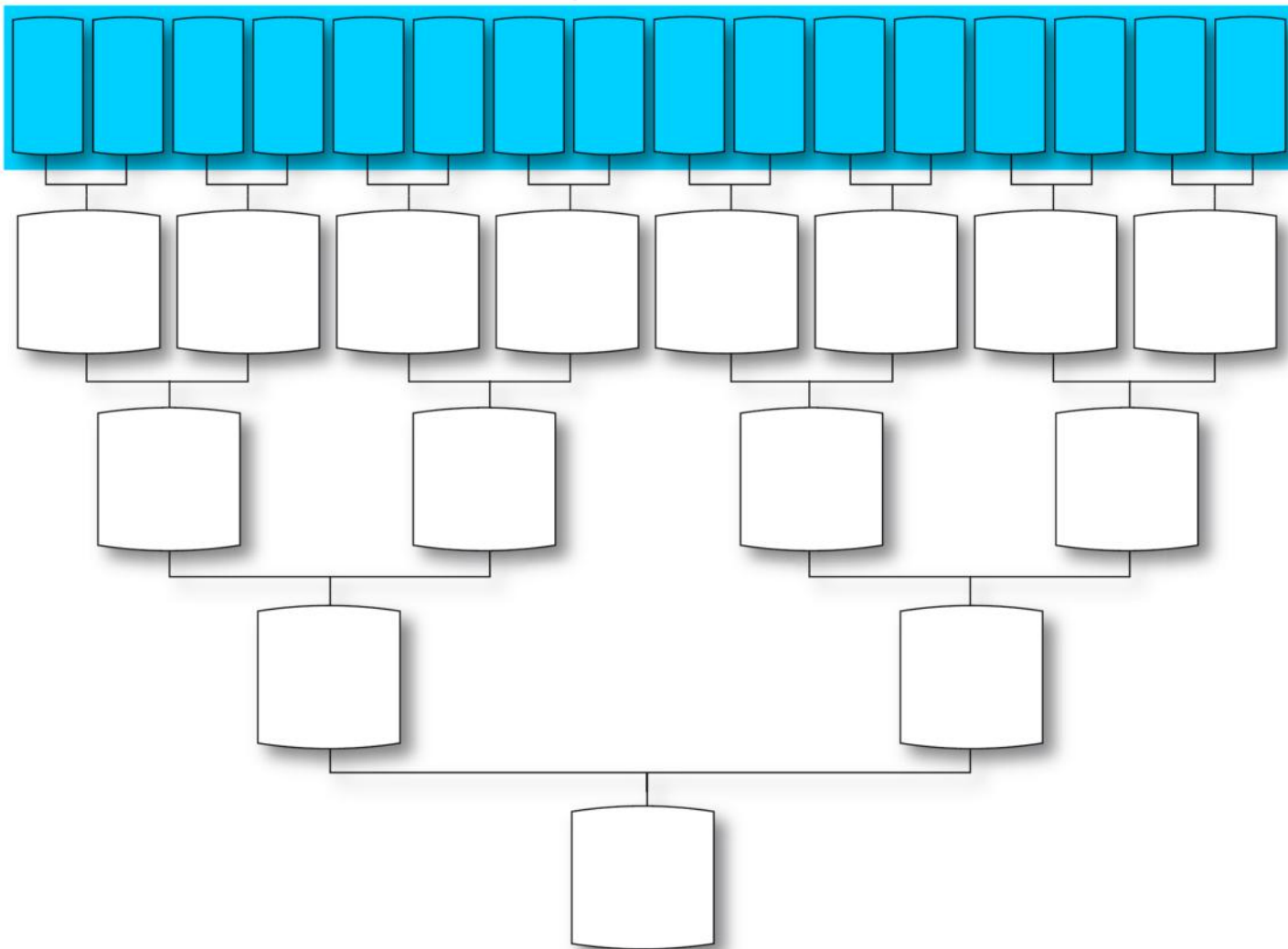
Discussion

— — —

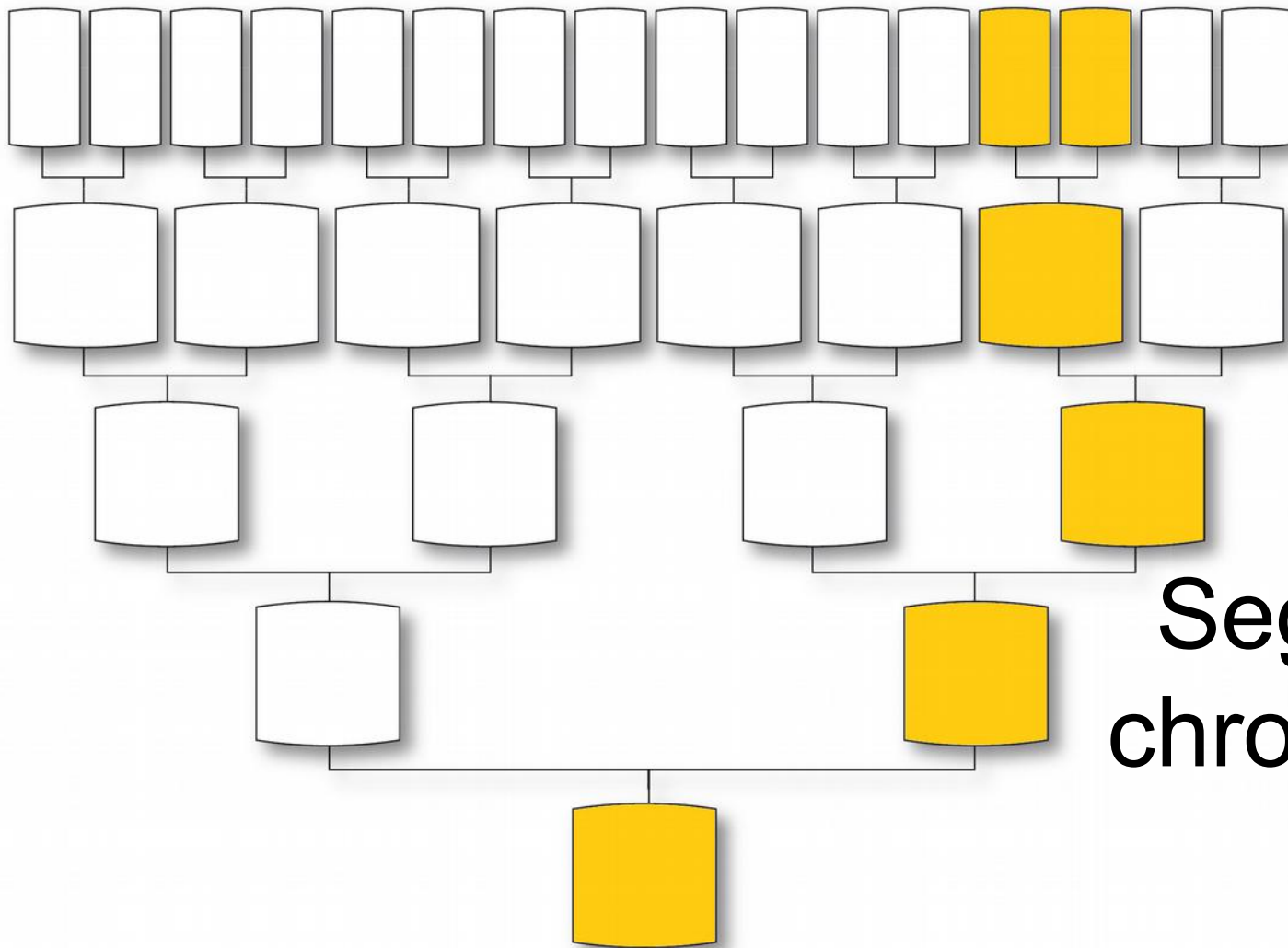
Don't lose sight of total centiMorgans (cM)

Total cM: predicts distance of relationship

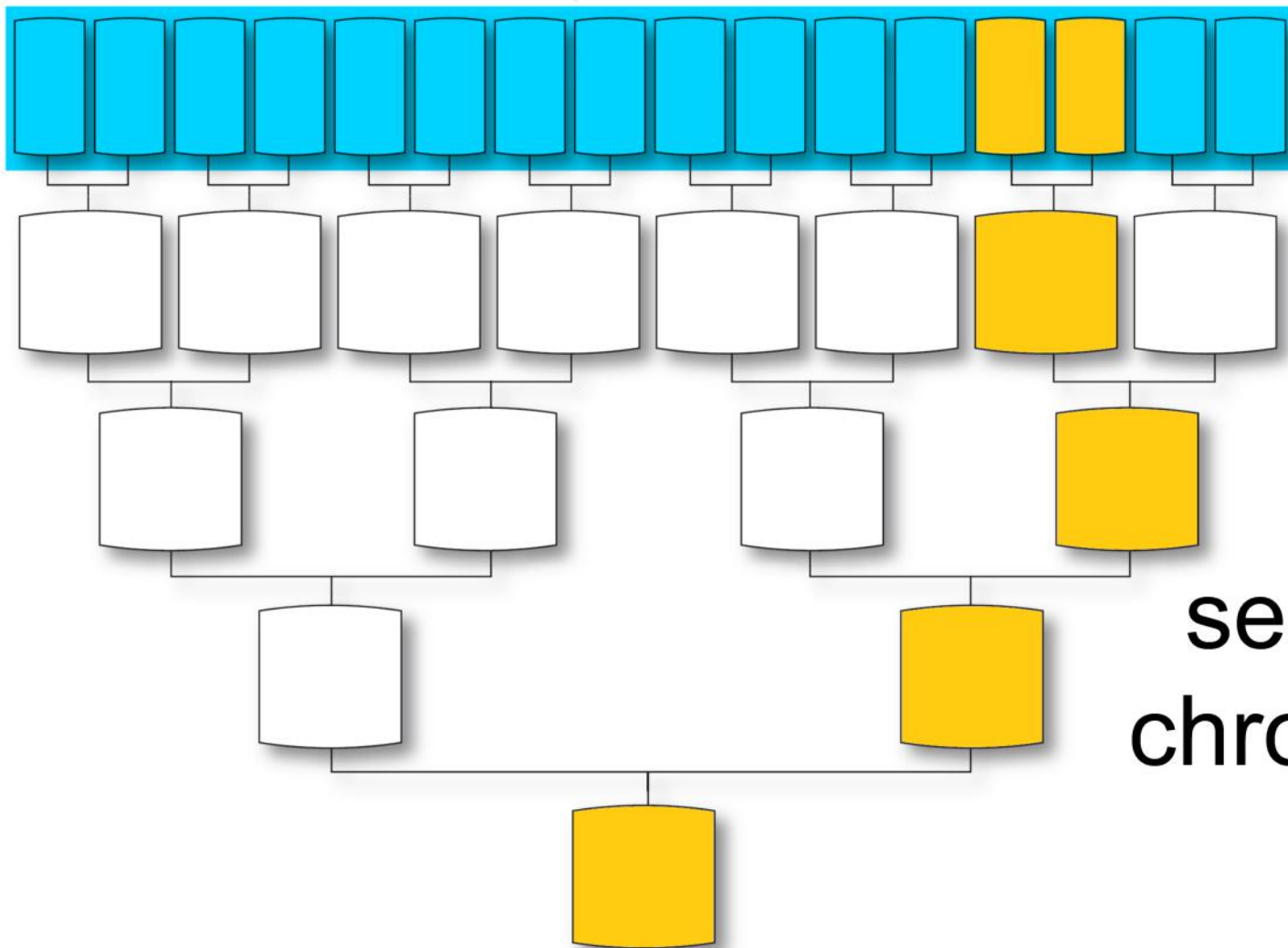
Location of shared segments tells you which branch to climb.



cM



Segments,
chromosome
S



cM,
segments,
chromosome
S

Discussion

VT can be done with **fewer** family members.

More family members → more complete picture

VT can be done with other groupings of family members.

Same data, different perspectives

My perspective: self, siblings, children, niece, nephew

Daughter's perspective: self, father, aunts/uncles, siblings, first cousins.

Graham's perspective: self, aunt, niece

Strategy

- If you don't seem to have the what you need to do VT, flip the perspective.
- Strategy: **23andMe, GEDmatch**

Discussion

Direct comparisons are still preferable.

Urge use of all databases (GEDmatch, MyHeritage DNA, FTDNA).

Discussion

Most of our matches will only be available in ONE database.

If we're lucky, that one database will be one with a chromosome browser.

Comparing these matches with matches with matches from **other databases** will only be possible with VT.

Discussion

VT helps to deal with chromosome browsers that don't allow you to compare your matches with each other (**FTDNA**, MyHeritage).

Comparisons allowed



Is visual triangulation reliable?

— — —

252 pairs of matches at 23andMe were chosen at random from chromosomes 1, 2, 3, 21, 22

All share 10 cM or more with me and 10 cM or more with my child.

Each member of each pair shares DNA with me & my child on a corresponding portion of the same chromosome.

All 252 pairs (100%) match each other.

Don't take my word for it...

Try VT for yourself.

Does VT work for you?

Do you see any problems?

Tell me what you think!

Questions



— — —

Chromosome 3: Sib 6 vs Sib 8 (BONUS SLIDE)

— — —

Chr	B37 Start Pos'n	B37 End Pos'n	Centimorgans (cM)	SNPs
3	61,495	4,260,946	13.1	1,618
3	29,114,031	59,112,888	25.5	5,843
3	64,477,004	71,808,566	9.6	1,819
3	114,132,816	192,093,975	89.9	15,593

Chr 3



Image size reduction: 1/42