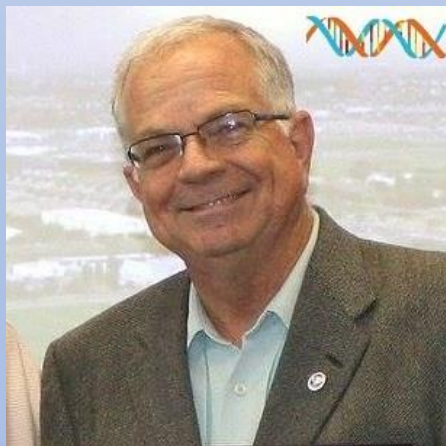




# Mysteries of DNA

Red Mountain Library,  
Mesa



Ken waters  
@familytreeaz

<http://familytreeaz.com/presentations>



November 2023

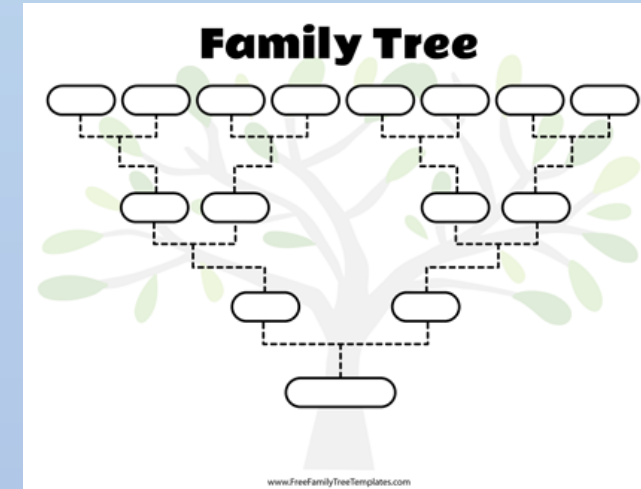
All slides and handouts can be found at:  
<http://www.familytreeaz.com/Presentations/>



QR Code: take photo to  
open to presentations

# We all know about the good of taking DNA tests

- Find living cousins
- Help validate and expand your family tree
- Assist adoptees or those with unknown parentage to discover their relatives, including parents
- Get an **estimate** of your “ethnicity”
- Learning health aspects including possible susceptibility to genetic disorders
- For some, helping to identify unknown victims as well as perpetrators such as the Golden State Killer



## Science

[News Home](#) [All News](#) [ScienceInsider](#) [News Features](#)

[HOME](#) > [NEWS](#) > [ALL NEWS](#) > [WE WILL FIND YOU: DNA SEARCH USED TO NAB GOLDEN STATE KILLER CAN HOME IN ON ABOUT 60% OF WHITE AMERICANS](#)

NEWS | SCIENCE AND POLICY

### We will find you: DNA search used to nab Golden State Killer can home in on about 60% of white Americans

Researchers call for limiting how ancestry databases can be used to protect privacy

# But, are there any downsides....?

- Remote possibility of your test aiding investigators to identify criminals in your extended family
- Discovering an indication of a possible genetic defect that could lead to worrying concern
- And, the big one:
  - Uncovering family secrets !!!

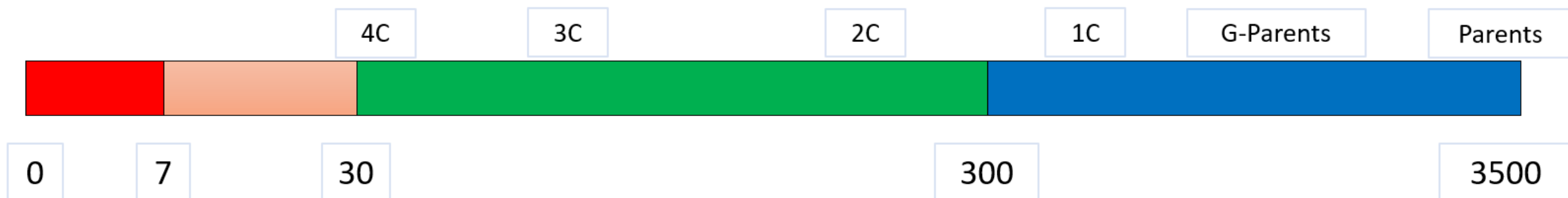


# Focusing on family secrets

- Most family secrets involve either what is sometimes referred to as an “NPE” – non-paternal event, or also, not parent expected
  - A close family line based on surname(s) that is not recognized
  - An indication that a known sibling is, in reality, a half-sibling---sharing only one parent rather than two
  - Many instances of a surname in close DNA matches that is not recognized

# Before We Start -- centiMorgans

- “Closeness” is measured in centiMorgans
- Match strength can be anything from 0 centiMorgans up to 3500
- Most useful range for working your tree is 30 to 300 cMs
- Below 30 might be more distant and may be more likely to be possible multiple cousin (related in 2+ ways)
- Above 300 should be in your “already known” list of close relatives
  - Of course----that is not ALWAYS the case!



A couple of examples I have come across

# Matches at ~1800 cMs

- The Shared centimorgan project states that there's a 100% chance that an 1800 cM match must be one of:

- Grandparent or Grandchild

Difference of 2 generations

- Aunt, Uncle, Niece, or Nephew

Difference of 1 generation

- Half Sibling

Same generation, hence nearly the same age

Enter the total number of cM for your match:

or enter %

Then any relationships that fit will stand out below

[Click here for a shareable link to the cM amount above](#)

**Most distant common ancestors**

Assuming no [pedigree collapse](#) or [endogamy](#), and that you're related in just one way, the furthest back you might need to go to find common ancestors for a match of 1800cM is Grandparent level.

*The connection may be closer. Also, depending on your family, this match could be a close younger generation relative, such as the descendant of your sibling.*

Relationship probabilities (based on stats from [The DNA Geek](#))

👉 Click on any relationship to view a histogram

New: [View these relationships in a tree](#)

100%	Grandparent	Aunt / Uncle	Half Sibling
	Niece / Nephew	Grandchild	
~ 0%	** Sibling		

\*\* this set of relationships is just within the threshold for 1800cM, but has a zero probability in [thednageek's table of probabilities](#)

Source: <https://dnainter.com/tools/sharedcmv4>



# Matches at ~1800 cMs

- One DNA case I manage on Ancestry has 8 matches that appear in a known match-level, around 1800 centiMorgans
- Two are known or presumed aunts, one generation away from test-taker
- 6 of them appear to all be about the same age, or same generation

???

???

Known Aunt

Presumed Aunt

???

???

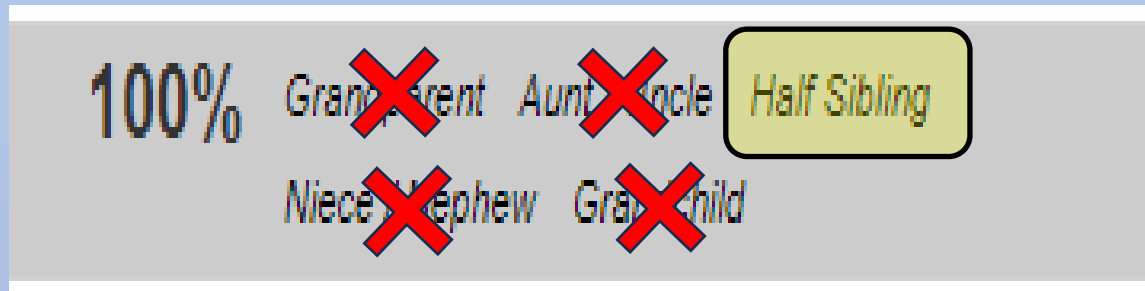
???

???

The screenshot shows the 'DNA Matches' interface on Ancestry. At the top, it says 'View [DNA]' and 'All matches'. Below that are filter options: 'Unviewed', 'Common ancestors', 'Notes', 'Trees', 'Shared DNA', and 'Groups'. A search and sort bar is also present. The main content is a list of matches under the heading 'Close Family'. Each match entry includes a profile picture, a relationship label (e.g., 'Close Family - 1st Cousin'), shared DNA information (e.g., '1,890 cM | 27% shared DNA'), a 'Public linked tree' with a person count, and a 'Do you recognize them?' section with 'Yes' and 'Learn more' buttons. The matches are: 1. 1st Cousin, 1,890 cM, 27% shared DNA, Paternal side, 17 People in tree. 2. 1st Cousin, 1,857 cM, 27% shared DNA, Paternal side, 7 People in tree. 3. 1st Cousin, 1,819 cM, 26% shared DNA, Maternal side, 400 People in tree, Common ancestor. 4. 1st Cousin, 1,799 cM, 26% shared DNA, Maternal side, Unlinked Tree. 5. 1st Cousin, 1,682 cM, 24% shared DNA, Paternal side, 878 People in tree. 6. 1st Cousin, 1,672 cM, 24% shared DNA, Paternal side, Unlinked Tree. 7. 1st Cousin, 1,653 cM, 24% shared DNA, Paternal side, 18 People in tree. 8. 1st - 2nd Cousin, 1,237 cM, 18% shared DNA, Paternal side, 6 People in tree.

# Matches at ~1800 cMs

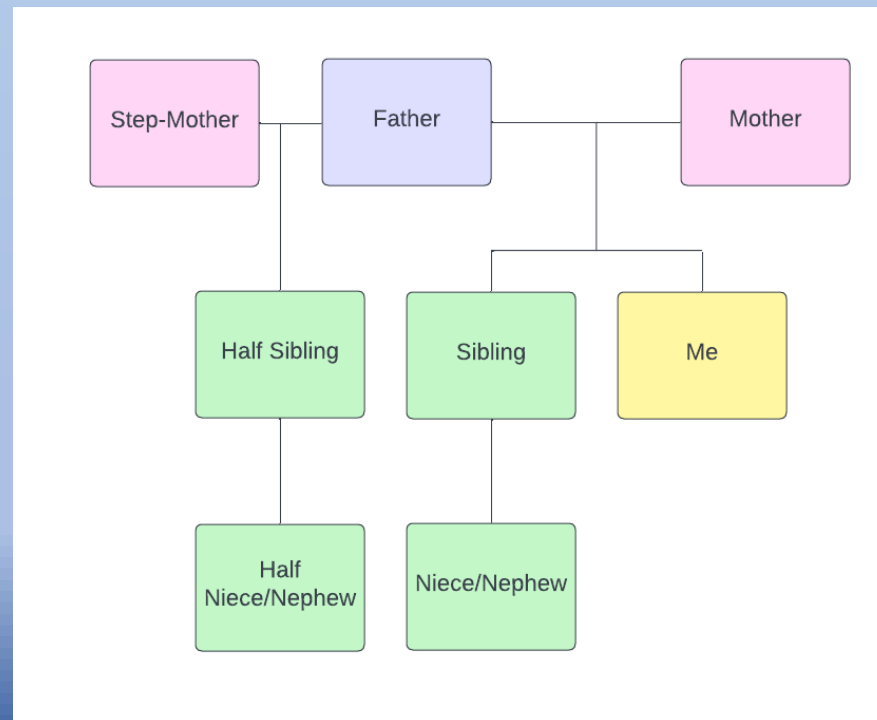
- Careful analysis seems to indicate all but 2 of the matches are all in the same general age range
  - Eliminate 2-generation differences
  - and then 1-generation differences



- So, most likely these matches are all half-siblings of each other

# Half-Siblings

- Share only one parent rather than two
- Common when there's a divorce of child-bearing parents and a remarriage resulting in more children



# What could cause so many half-siblings...?

- A philanderer

**philanderer** - To engage in many love affairs, especially with a frivolous or casual attitude. Used of a man. It derives from Greek (sátyro) for the mythical woodland creature that was well-known for its debauchery. The female equivalent is far more recognizable, nymphomaniac. May 24, 2011




English Language & Usage Stack Exchange


<https://english.stackexchange.com> › questions › what-is-a... ⋮

- Could there be another, more plausible explanation...?


# What could cause so many half-siblings...?


- Donor Conception

Donor conception is **when a child is conceived using donated sperm, eggs, or embryos**. The child is known as a donor-conceived person. 

Donor conception can help with conception when one or both partners in a heterosexual couple are infertile. It can also help women without a male partner and lesbian couples build families. 

The biological parent who donated sperm or eggs are not legally recognized as parents and do not appear on the birth certificate of the donor-conceived person.

Donor insemination is when a woman is inseminated with the sperm of a man who is not her husband or partner. The cost of donor insemination can range from \$300 to \$4,000. 

Most gamete donors in the U.S. are paid or financially compensated. 

# Donor Conception

- First known was in 1884 in Philadelphia
- Became more standardized in the 1940s and 1950s
- Common practice in the 1970s was to assure that there will be full anonymity the donor with the recipient not knowing the identity of the donor
- Of course, the age of DNA testing has largely removed that veil of secrecy!

Use of Donated Sperm by U.S. Women of Reproductive Age

Year(s)	Low Estimate	95% CI
1995	170,701	[ 106,577 - 234,825 ]
2002	97,224	[ 26,404 - 168,044 ]
2006-2010	47,223	[ 9,377 - 85,068 ]
2011-2013	37,385	[ 7,735 - 67,034 ]
2013-2015	132,660	[ 14,590 - 250,731 ]
2015-2017	440,986	[ 108,458 - 773,513 ]

Source: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6765402/>

# Following up on this case...

- After uploading the DNA kit for the subject to My Heritage I discovered several more half-siblings in the same age range
- Through communication with several of them I was able to get a few, sparse details from heavily redacted adoption records that they shared
- Putting the few clues together I was able to “most likely” identify who the donor of all these people was
  - The donations (as inferred from the birth dates) seemed to occur while he was a resident at a medical college
- He is currently (or recently was) an MD specializing in fertility for women!!!

And, NO, no contact was ever attempted nor ever will be.  
His anonymity will remain until and if someone chooses to follow up

# Final note on this

- One of the matches I reached out to responded back to me



- In reality it was the match's mother who responded
- She told me she couldn't provide any further information and stated that her daughter was not aware of the circumstances of her birth

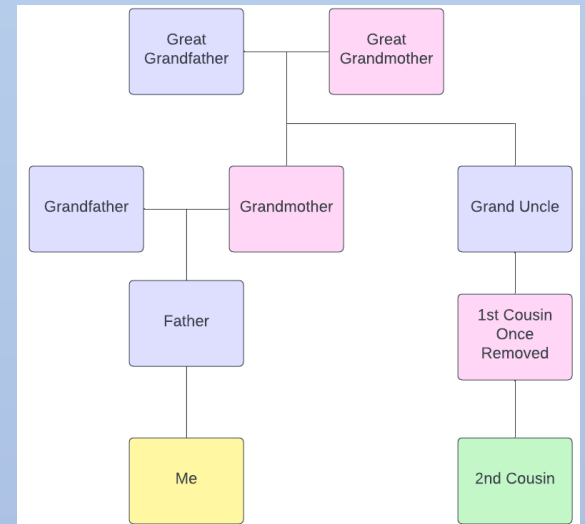




# Story of 3 second cousins

- I have personally tested with all 5 of the main DNA testing companies
- Two companies, Ancestry and 23andMe do not allow uploads from other companies, so, to get in their database one has to test with them
- On 23andMe I discovered over a period of time 3 apparent likely 2<sup>nd</sup> cousins (based on same generation)

Reminder: 2<sup>nd</sup> cousins share great-grandparents

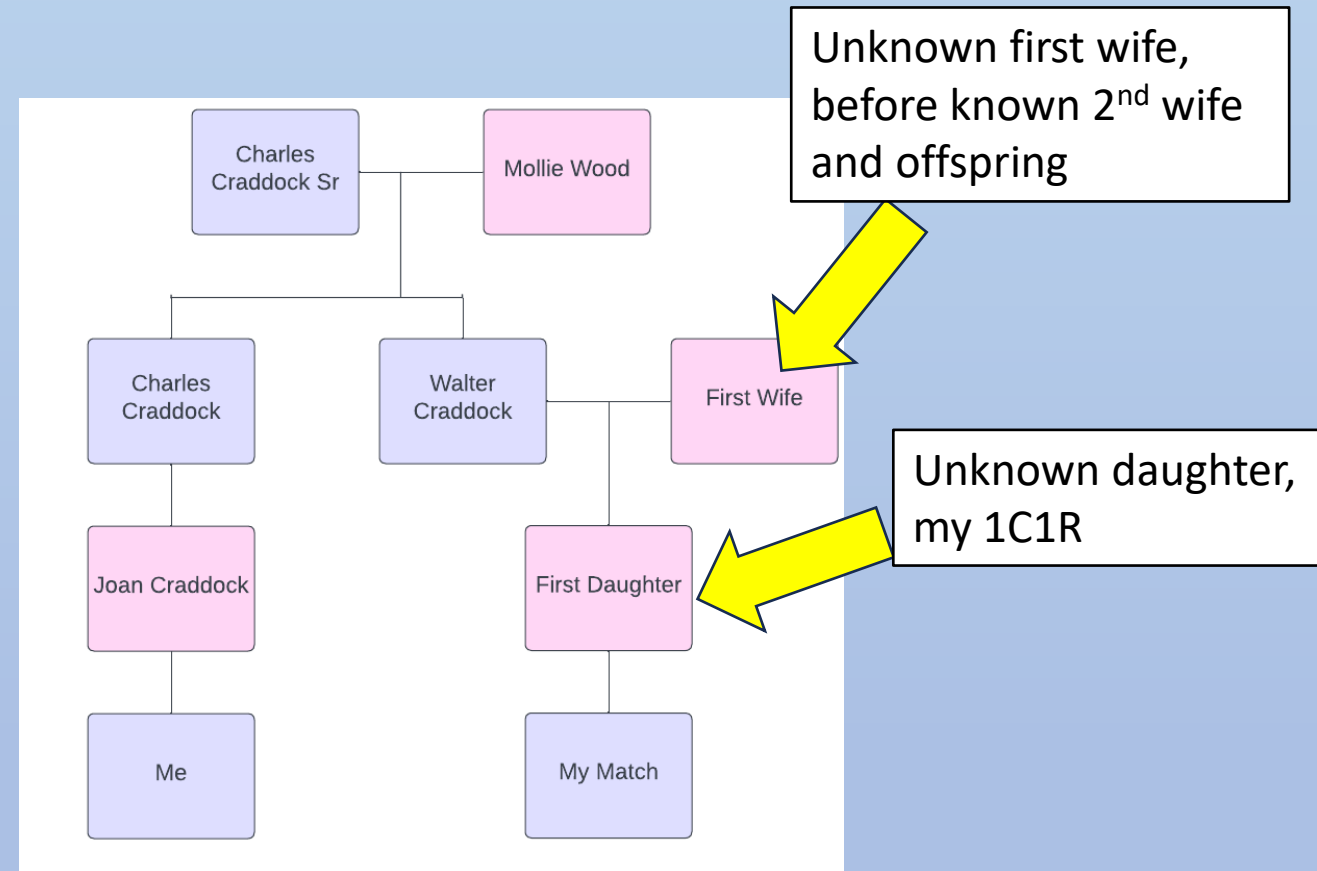


## 3 Likely 2<sup>nd</sup> cousins

- All were male and all had surnames that I did not recognize
- Using shared matches in 23andMe I was able to roughly locate the common ancestral line for each
- What could be the reasons for having 3 2<sup>nd</sup> male cousins whose surnames I do not recognize?
  - Adoptee – possibly the most likely explanation
  - NPE?
  - Unknown close line?

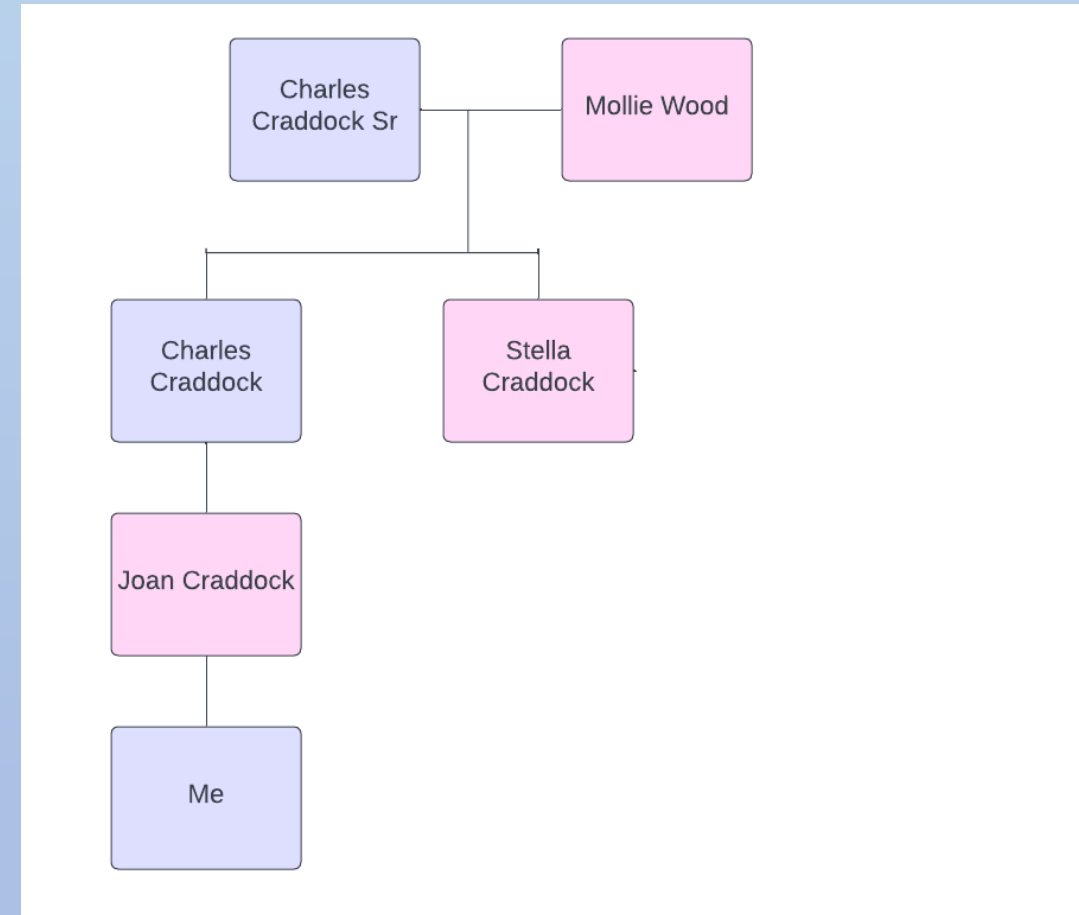
# Cousin #1

- Appeared to descend from a sibling of my grandfather
- He shared enough information with me that I was able to figure out his grandfather Walter was my grand uncle



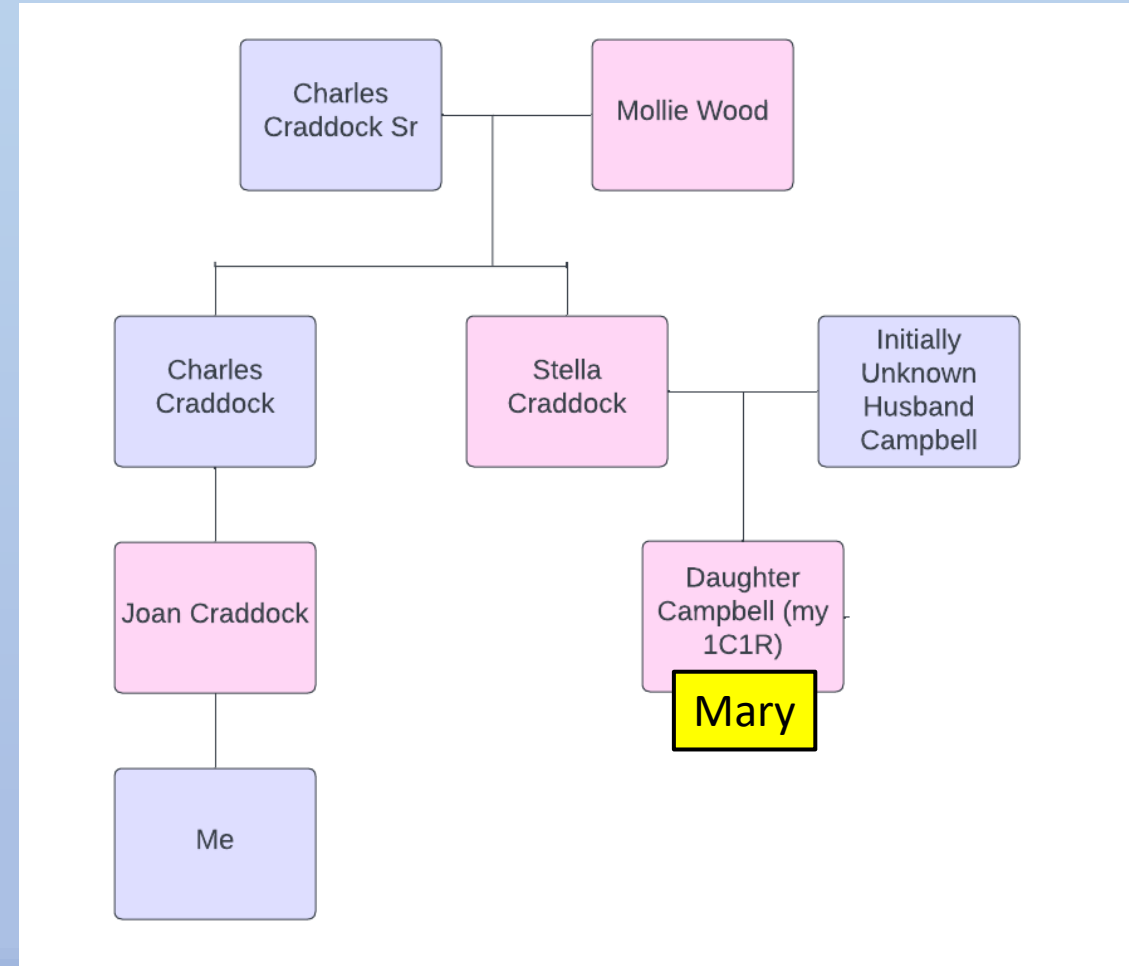
# Cousin #2

- He shared with me that he did not know his parents --- He was adopted
- Through shared matches I was able to determine that he must descend from another of my grandfather's siblings
- I had him test at Ancestry and using shared matches from there I determined that he descended from my grand aunt Stella Craddock



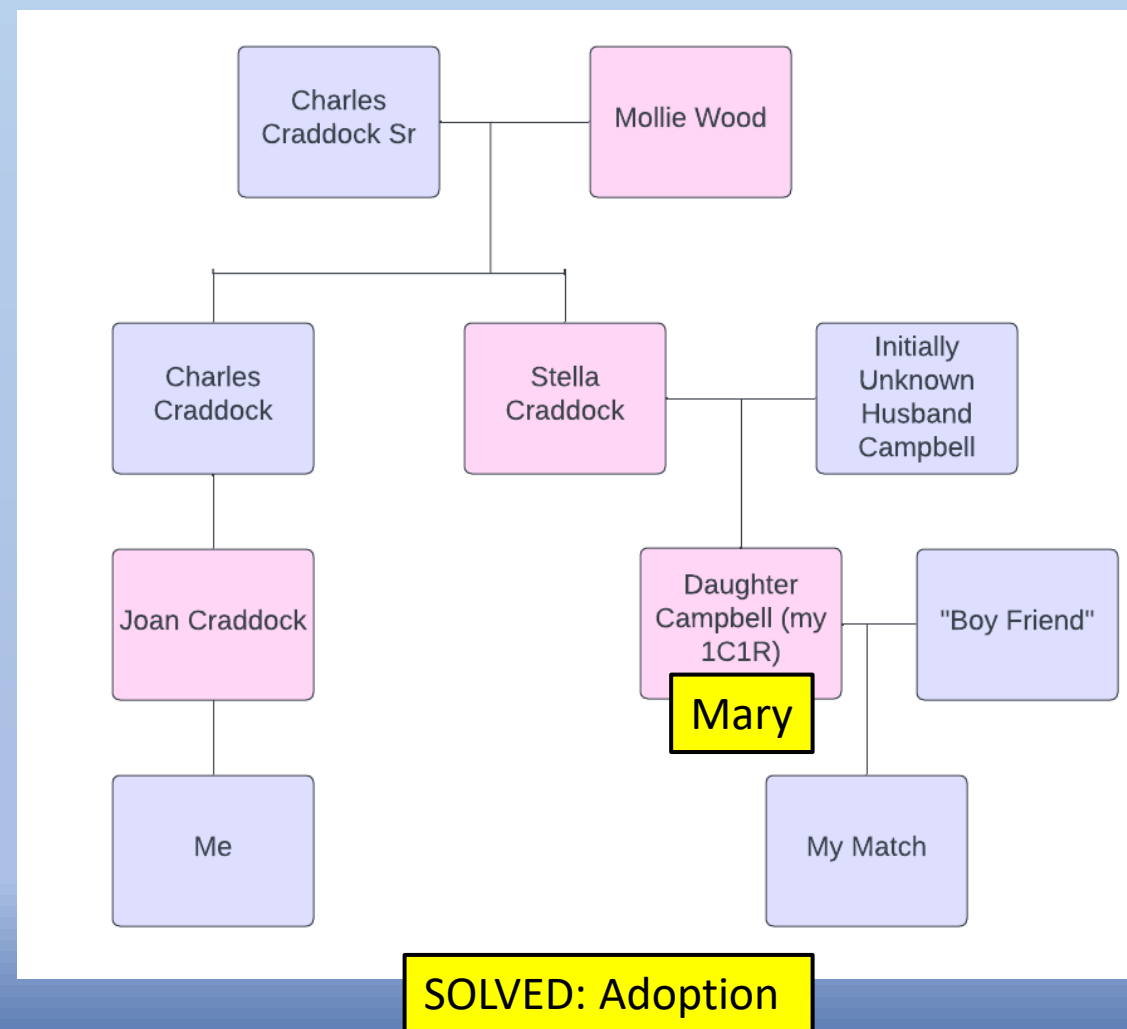
# Cousin #2

- Stella pretty much fell off the radar once she hit 20
- She married early and left the area and so without having a marriage license and knowing her new married name I could not track her down
- Finally, one day, Ancestry added some marriage records for the state of Washington that ID'ed her and her new name
- One of her children was a daughter, Mary



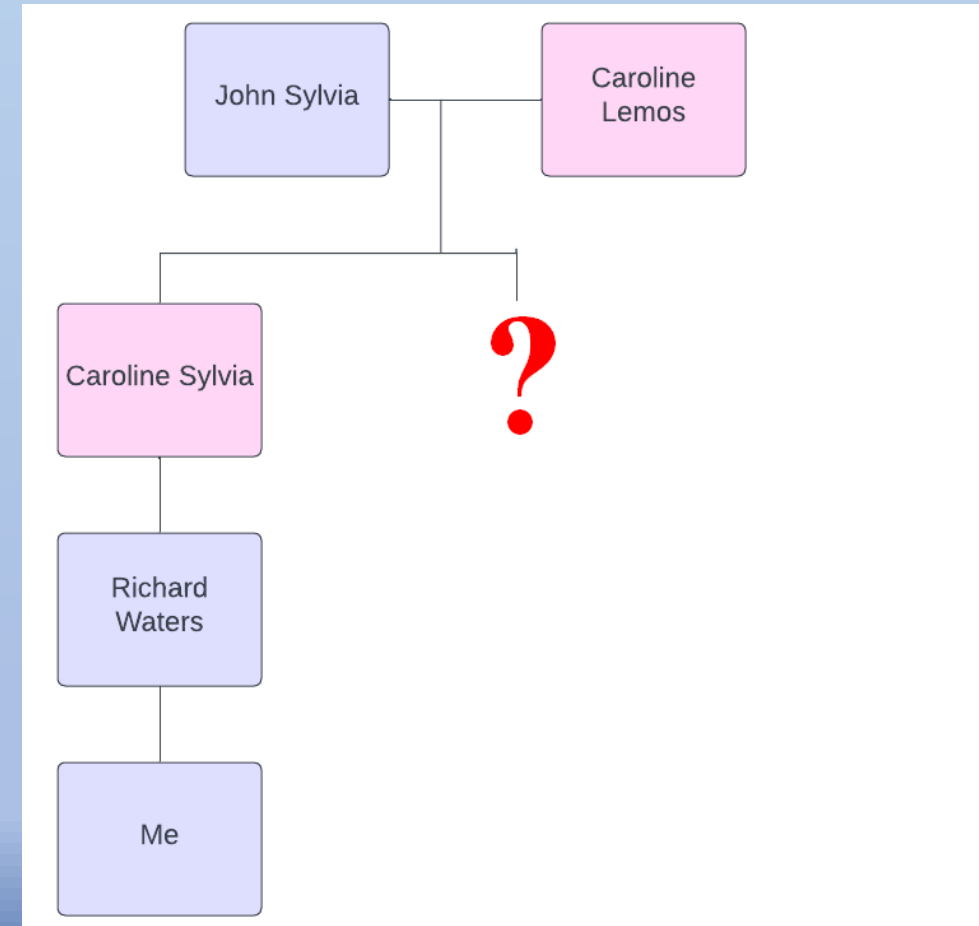
# Cousin #2

- I already had a tested confirmed 2<sup>nd</sup> cousin Michelle, daughter to Mary so I had him test at Ancestry
- Michelle passed along some interesting information that her mother told her that she had a baby boy out of wedlock and put him up for adoption
- I knew he had to be either a half-brother to Michelle or a 1<sup>st</sup> cousin
- The DNA would decide that.
- He turned out to be Michelle's half-brother, confirming they both had Mary as their mother



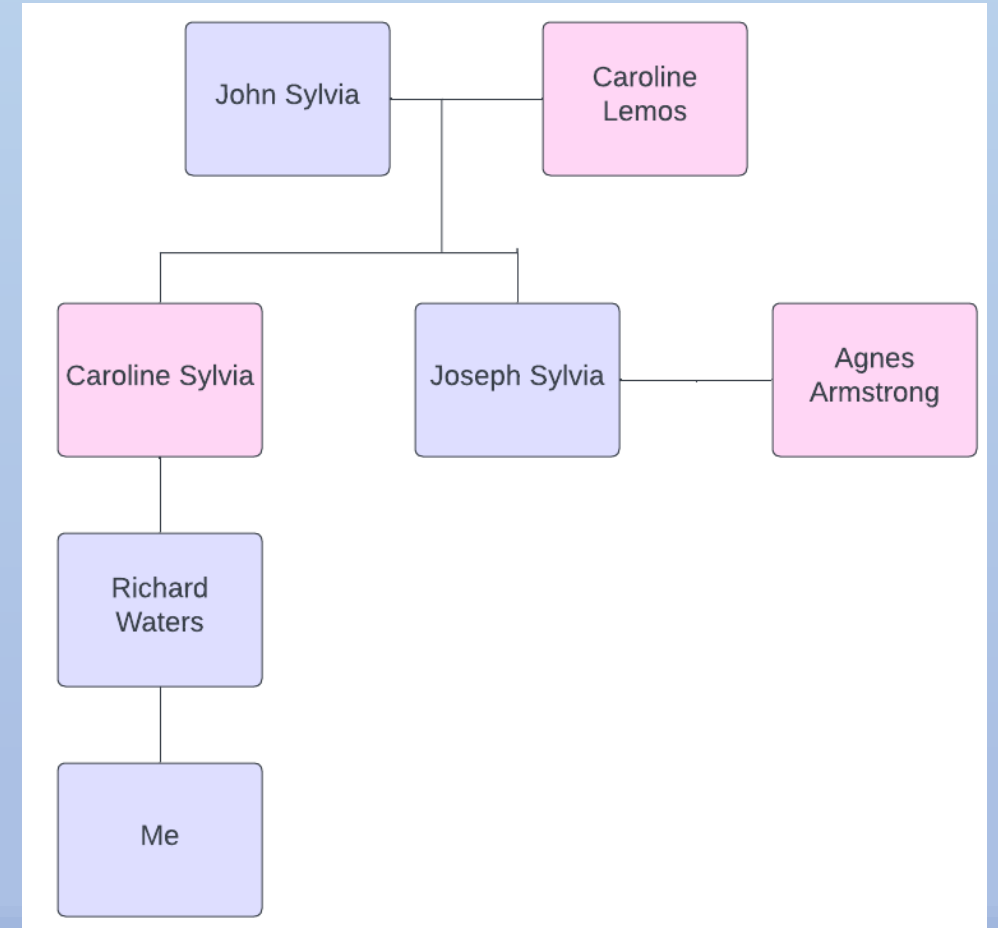
# Cousin #3

- Once again, an unrecognized surname
- He shared that he was born in a home for unwed mothers in Texas and had no information about his parents
- Through shared matches on 23andMe I determined that he must descend from a sibling of my paternal grandmother, Carrie Sylvia
- Carrie had 10 siblings [gulp!] so I had a lot of work to do with this one



# Cousin #3

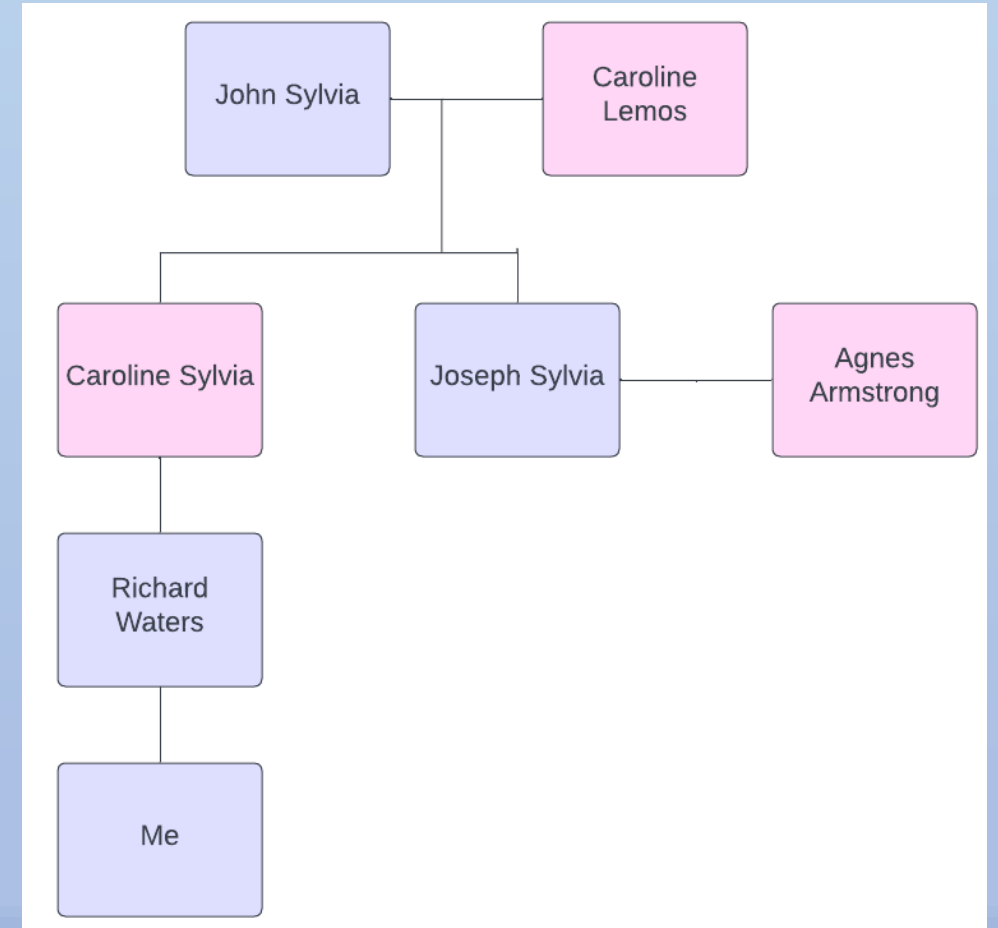
- I used a combination of ages and locations to narrow down to 3 possible grandparents for him
- Through process of elimination I determined that his grandfather must be Joseph Sylvia





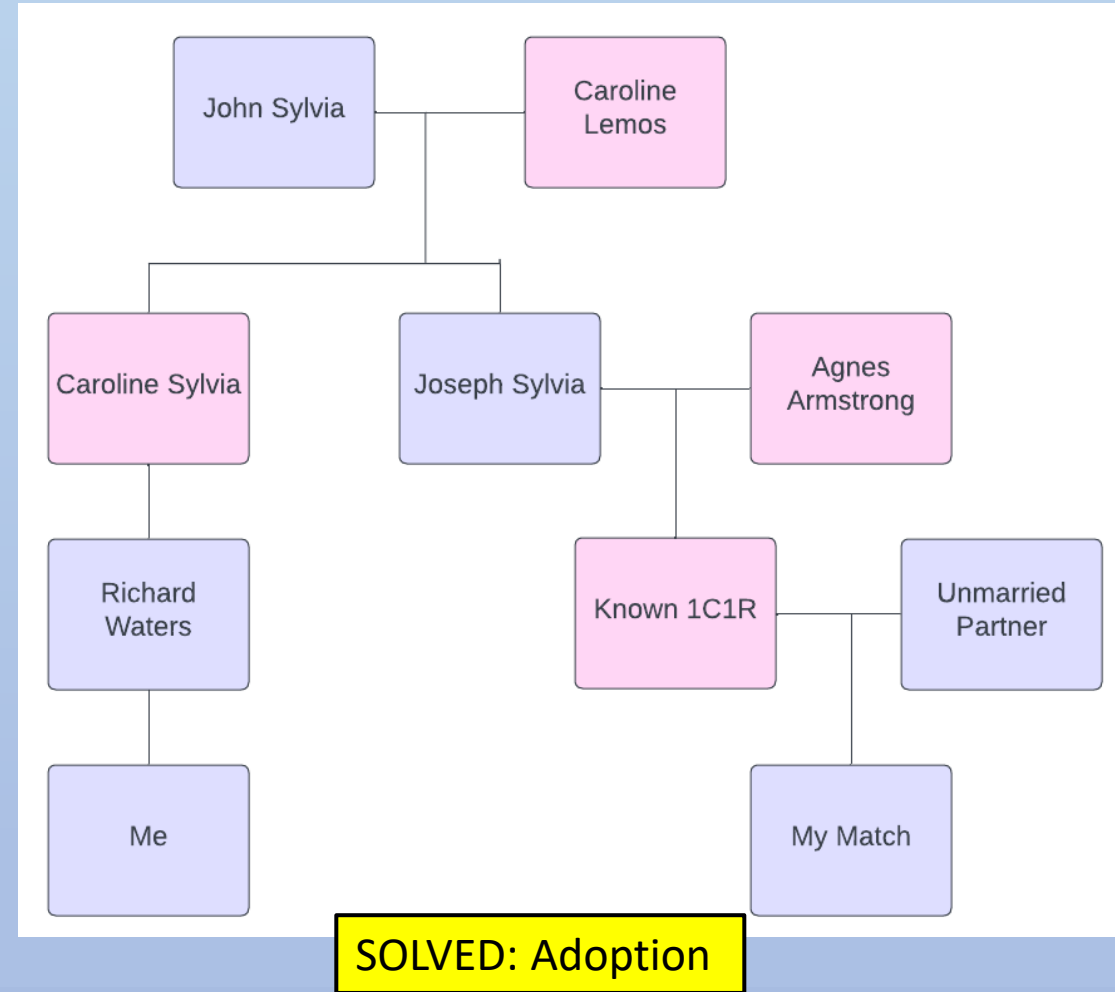
# Cousin #3

- Joseph had 2 daughters
- One, interestingly enough, was already a Facebook friend and known to me
- I knew that my cousin's mother must have been one of them



# Cousin #3

- Through some networking with Joseph's daughter's family I discovered that there were some stories of her having been sent away to Texas to have a baby out of wedlock !!!
- With a little more work I was able to determine the identity of the still-living father as well



Final result: my cousin discovered both of his living parents and was able to meet both of them in person!

# Lastly....

- The ultimate surprise that could dramatically change your life and your family relations forever:
- Discovering that a parent (typically father) is not who you expected

HUFFPOST PERSONAL

## A DNA Test Showed My Father Wasn't My Father. Here's Why I'm Glad.

I didn't really believe it was possible that my 90-year old dad wasn't my father, but I asked him if he'd take a DNA test "just for fun."



By B.K. Jackson, Guest Writer

Apr 22, 2019, 08:30 AM EDT | Updated Jul 3, 2019



LEAVE A COMMENT



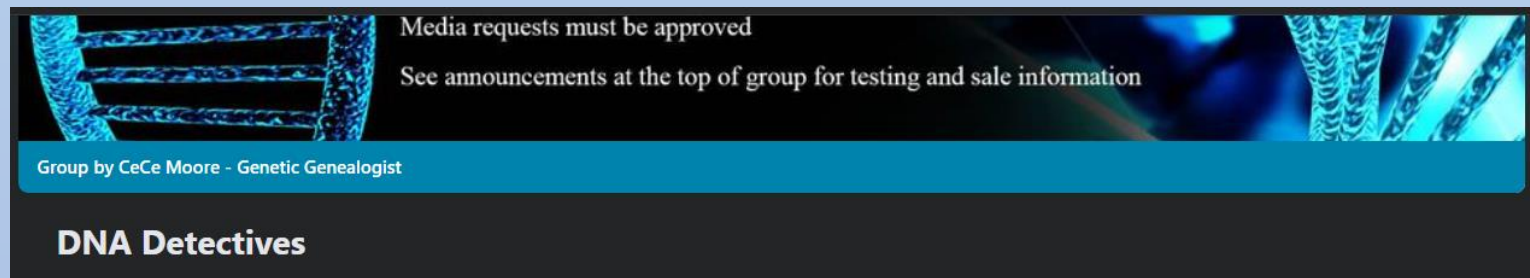
The author and her dad, on the last day they saw her mother. PHOTO COURTESY OF B.K. JACKSON

# Father not as expected

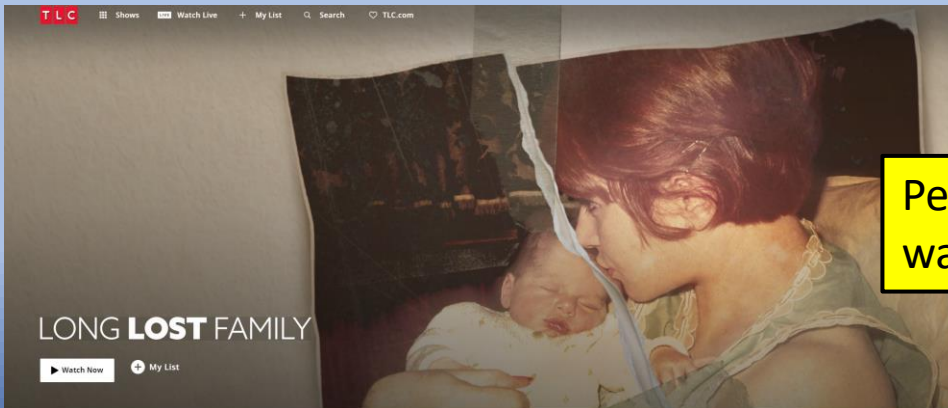
- Unless the father tested with the same company this might not be immediately obvious
- Some clues:
  - Close matches with surnames not recognized
  - No surnames for the expected father
- Might require a bit of work with shared matches and tools such as DNAPainter's WATO but most of the time these cases can be quickly solved or at least isolated to perhaps two brothers

# Unexpected father stories

- There are \*hundreds\* of stories like this
  - Check out Facebook group DNA Detectives



- TV show: Long Lost Family often deals with situations like that



Personally---I really love this show;  
warning, have some tissues handy!

# Upcoming Classes/Presentations

**Sat, Dec 9, 3 pm – Mesa Red Mountain Library**

**DNA Q&A --- bring your questions or your DNA brick walls and let's try to solve them together**

**Sat, Jan 6, 2 pm – Mesa Red Mountain Library**

**Should I Take a DNA Test? -- will discuss the pros and cons of taking a DNA test. What will you gain or risk by taking one?**



All library classes (highlighted blue) are free to attend and require no registration. Classes are held at the Red Mountain Mesa Public Library at 635 N Power Rd in Mesa (unless otherwise noted above).

# Remember---all presentations online

- Presentations: <http://familytreeaz.com/Presentations>



## **Genealogy Presentations**

**2023**

[Identifying Your DNA Matches \(Jan 2023\)](#)

**2022**

[A Unified Process for DNA Matches \(Dec 2022\)](#)

[Intro to DNA \(Dec 2022\)](#)

[DNA Painter Dec 2022](#)

[GEDMatch \(Trilogy\)](#)

[DNA Relational Diagrams](#)

[First Look at Ancestry SideView Matching](#)

[Deep Dive into MyHeritage DNA Oct 2022](#)

[What Can DNA Do For You Sep 2022](#)

[New Match Methodology 2022](#)

[GEDMatch Apr 2022 Handout](#)

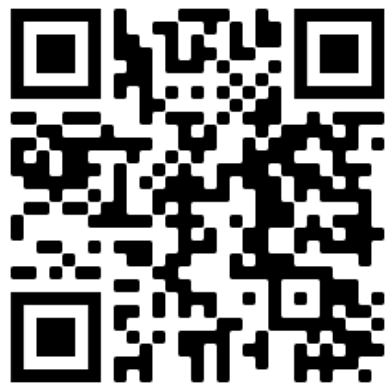
[DNA Tips & Tricks](#)

[Intro to DNA \(Mar 2022\)](#)



Presentations:

<http://familytreeaz.com/Presentations>



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Paternal haplogroup (Big-Y700): R-FTB79747

Maternal haplogroup (Full series): H1c1

GEDMatch: A979857

