

## DNA in Practice

### *Class 4: Confirming Parentage of Distant Generations*

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For the most part, the confirmation or dismissal of genealogical theories of parentage several generations back is limited to the paternity of a male ancestor or maternity of a female ancestor. There are limited examples where the application of the X chromosome or autosomal DNA has been used, but often in conjunction with more traditional genealogical evidence, or in cases where a certain part of one's ancestry is geographically or ethnically different than the rest of their ancestry. Most DNA confirmations at this level, require an already possible theory, although there are occasional examples of learning a solution to a problematic answer without an existing theory based on the strength of one's matches, and Big Y testing offers more possibilities.

Both Y-DNA and mtDNA is primarily offered through FamilyTreeDNA.com. The autosomal DNA test for 23andme will show the mtDNA haplogroups for all testers and the Y-Chromosome haplogroups for males but does not report the HVR1/HVR2 regions for mtDNA or the Y-STR markers for Y-DNA that are used in genetic genealogical studies.

## Y-DNA

One of the earliest examples of Y-DNA involved the historic claim that President Thomas Jefferson had children with Sally Hemings, the enslaved half-sister of his late wife, who was of one quarter African and three quarters English. White grandsons of Thomas Jefferson had confirmed the resemblance of Sally's children but claimed Jefferson's nephews Peter or Samuel Carr were the fathers of these children, and their accounts had numerous factual errors. In 1998, a 25-marker match was found with a patrilineal descendant of Sally Hemings' youngest child with several patrilineal descendants of Thomas Jefferson's paternal uncle.

Y-DNA studies tended to be a focal point of articles in *New England Ancestors* and *American Ancestors* magazine. While noticing two men with different Y-DNA sequences can conclude a case misattributed parentage, finding a solution, especially when dealing with more generations, becomes more difficult unless plausible candidates for paternity or already known. Bill Griffeth's *The Stranger in My Genes* is an example of Y-DNA testing between two sets of male first cousins showing a case of a misattributed parentage. Because a living person was able to provide context, a solution was discovered.

The case of the Rice/Royce family is somewhat more complicated. Descendants of Edmund Rice of Massachusetts submitted their Y-DNA, and most of the participants matched at the expected level of markers. However, two purported descendants of the same grandson Gershom<sup>3</sup> Rice – through his second and third son – did not have the same Rice sequence, while descendants of the eldest son matched with the other Rice men. The second between the second and third son descendants did match each other – leading to speculation of a long-standing extramarital affair in the early 18<sup>th</sup> century, and the sequence matched many members of the Connecticut Royce family! Soliciting other descendants of the second and third son revealed the same Rice

DNA, and discovery of two cases of an incorrect genealogical research several generations later. There was no extramarital relationship, rather a mistaken assignment of two men with a similar name.

Sometimes it might initially appear like two men may not share a male ancestor when that is not the case. Looking at the DNA markers and soliciting other descendants for participation are vital elements before making a hasty conclusion. Sometimes, based on the large number of generations involved, any solid conclusion may not be achievable, barring exhuming of remains. The recent application of Big Y, although costly, tests 700 Y-STR markers and on average will find 70,000 SNPs along one's Y chromosome. The more specific nature of these variants can allow for more specific generational assignments of paternity when enough men are tested.

## mtDNA

mtDNA can occasionally reveal unexpected results and can also be used as a corroborating piece of evidence in establishing the maternity of a female ancestor several generations ago.

In the case of Catherine Pillard of Quebec, earlier genealogical research had assumed she was born in France in the 17th century. However as multiple matrilineal descendants had haplogroup A, common in indigenous North America, the research revealed an early Huron identity.

The case study for establishing the parents of Esther (Dyer) Flanders is very specific to the generation at which Dyer enters the family's matrilineage and is stronger evidence of the generation linkage than most traditional Y-DNA studies.

## Testing Companies – referenced in this presentation

- FamilyTreeDNA: <https://www.familytreedna.com/>
- AncestryDNA: <http://dna.ancestry.com/>
- MyHeritage: <https://www.myheritage.com/>
- 23andMe: <https://www.23andme.com/>

## Genetic Genealogy Resources:

Helen F.M. Leary, "Sally Hemings's Children: A Genealogical Analysis of the Evidence," *National Genealogical Society Quarterly* 89 (2001): 165-207.

Robert V. Rice and John F. Chandler, "Y-DNA Instigated a Search for a Royce Father and Reveals Many Different Rice or Royce Families," *New England Ancestors* 5.1 (2004):44-47, 51.

Robert V. Rice and John F. Chandler, "Revised Conclusions from the Rice-Royce Y-DNA Study," *New England Ancestors*, 9.4 (2008):48-50.

Gratia Dunham Mahoney and Paul C. Dunham, "The Dunham DNA Project," *New England Ancestors* 10.1 (2009):46-47.

C. C. Child, Sam Sturgis, and Greta Anscheutz, "Tracing Native American DNA to Colonial Quebec," *American Ancestors* 17.4 (2016):55-57.

C. C. Child, "Thoughts on the Y-DNA of Richard III," <https://vita-brevis.org/2014/12/thoughts-y-dna-richard-iii/>.

Pamela R. Paschke and Raymond T. Wing, "The Fuller Family of Redenhall, Norfolk, England: Initial Report on the Fully Big Y DNA Project," *Mayflower Descendant* 70 (2022): 101-120.

David Bailey, "Identifying the Maiden Name of Hester, Wife of Robert Daniels of Sherborn, Massachusetts," *American Ancestors* 19.4 (2018):48-49

Michael Sean Dunn, "The Parents of Esther (Dyer) Flanders (1790-1876) of Bratinree, Vermont, and Livingston County, New York: A Matrilineal Priscilla Mullins Descent" *Mayflower Descendant* 66 (2018):23-49, 178

International Society of Genetic Genealogists or ISOGG wiki: <http://www.isogg.org/wiki/>

X-DNA: <http://www.thegeneticgenealogist.com/2008/12/21/unlocking-the-genealogical-secrets-of-the-x-chromosome/> & <http://thegeneticgenealogist.com/2009/01/12/more-x-chromosome-charts/>

Percent of DNA shared: [http://www.isogg.org/wiki/File:Cousin tree \(with genetic kinship\).png](http://www.isogg.org/wiki/File:Cousin_tree_(with_genetic_kinship).png)

Shared cMs for various relationships: <http://www.isogg.org/wiki/File:Shared-cM-Project-Image-2.png> also <http://thegeneticgenealogist.com/2017/08/26/august-2017-update-to-the-shared-cm-project/>

### **Blogs**

- Blaine Bettinger: The Genetic Genealogist <http://thegeneticgenealogist.com/>
- CeCe Moore: Your Genetic Genealogist <http://www.yourgeneticgenealogist.com/>
- Judy Russell: The Legal Genealogist <http://www.legalgenealogist.com/category/dna/>