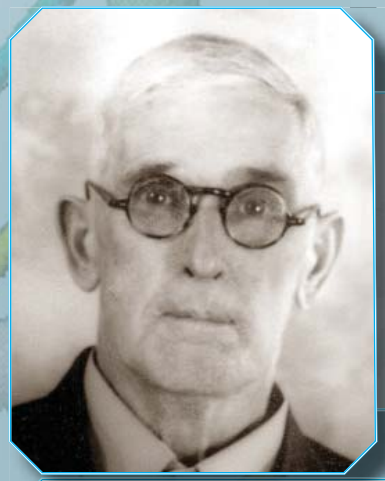
Can you help solve a

Hallley Family Mystery?



Who was the great grandfather of John Bennett Halley? He lived in Maryland around 1797 and might have been born there. But what was his name? What was his nationality? Who was his father? His mother?

Was the great, great, great, great, great, grandfather of Mary (Peacock) Halley one of the pilgrims who started the Jamestown settlement in 1606?

What is Genealogy DNA Testing?

DNA testing is commonly shown on today's crime investigation TV shows as a way to identify the bad guy and prove he committed the crime. This type of DNA testing uses elements of a person's DNA that makes them unique. Genealogy DNA testing, on the other hand, looks at the DNA elements that are the same and join each of us to our families. It tries to answer the question "How are we the same?" instead of "How are we unique?"

DNA is passed down from one generation to the next. Some parts of the DNA strand remain virtually unchanged while other segments are changed greatly from one person to the next. The unchanged strand creates an unbreakable link between generations that can help reconstruct our family histories.

An individual's test results have little meaning by themselves. You cannot learn who your ancestors were by simply taking a DNA test. Instead, these test results must be compared to others. Companies providing these test also provide databases and tools that do these comparisons for you. These new tools have greatly extended genealogy research in the past few years.

What Does Testing Require?

You can order a home test kit through the mail or over the Internet. It comes with a swab to collect cells from the inside of your cheek. You send the sample back and within a few weeks you will receive your results and a certificate with your family DNA sequence. This will be a series of numbers that represent key chemical "markers" within your DNA. Most companies also place your results into their database and provide you with control over how they are displayed and how you can be contacted should a match be found.

Which Test is Best for Me?

There are basically two different tests. Both tests are options for males while only one is available to females. Costs for this type of testing have dropped significantly over the past few years and tests are now available for less than $100. Also, a free test become available in Sept. 2006.

Both tests are designed to help identify "**markers**" in our DNA that are passed down through each generation. These markers are created each time a change or mutation in the DNA occurs in one person and passed down to their offspring. Think of it as a "spelling mistake" where some of the DNA code is copied incorrectly. Each child of the person with the first spelling mistake will pass the mistake down to their children – who then pass it down to their children – and so forth. These random mutations in the DNA sequence act as genetic milestones that become "markers of decent."

In most cases, the father passes an exact copy of his Y-Chromosome (**Y-DNA**) to his son and a mother passes an exact replica of her Mitochondria DNA (**mtDNA**) to all of her children. The Y-DNA markers of the son are identical to those of his father and the mtDNA markers in both sons and daughters are identical to their mother.

This means many generations could pass down the same Y-DNA or mtDNA to their offspring without change – and therefore, uniquely identify everyone in the group as being related.

The science of genealogy DNA research is focused on tracking each marker back to its origin—the first person with the "spelling mistake" who is also the "most recent common ancestor" (MRCA). Each time a mutation occurs it splits the offspring carrying the mutation to a new branch of the human family tree.

The earliest "branches" of the tree have been divided into "**Haplogroups**" that are identified by specific markers found in Y-Chromosome and Mitochondria DNA. They first appeared thousands of years ago and have been passed down through the generations. Each branch divides humans into different races and geographic locations (such as Native Americans, Oriental, etc). By studying these unique markers researchers can trace the movement of mankind to today's

ethnic groups and their locations. Haplogroups are broad in their identification of groups and go back thousands of years.

Each Haplo*group* is made up of a collection of distinct markers called **Haplo*types***. Also referred to a set of single nucleotide polymorphisms (SNPs), these are used to further identify specific ethnic groups. In most cases, your haplotype will be the same as other members of your family. Haplotypes are more specific in their identification of groups and typically go back 600 years or less.

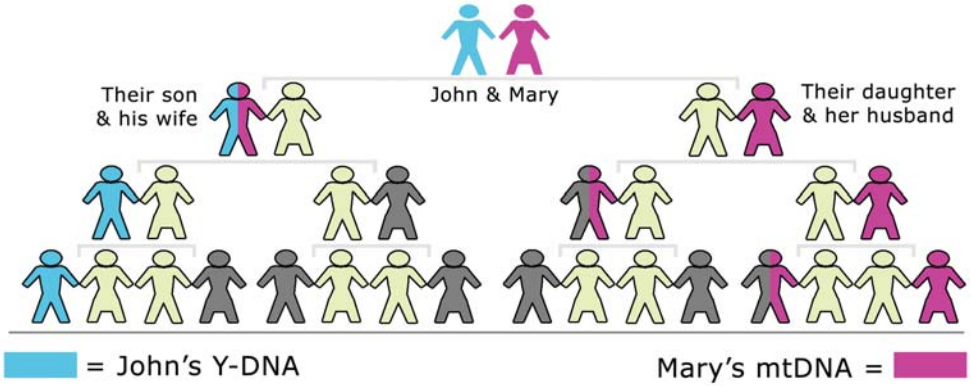
The Two Tests

Currently there are no industry standards for these tests. For example, what is sold as a Y-DNA test by one company may not be as comprehensive as the same test from another company. The following technical information is provided to help you understand the differences.

1. Y-DNA or Paternal Testing

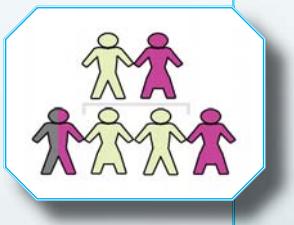
Y-Chromosome or Y-DNA test analyze DNA information handed down from father to son. This test is only available to men because women do not have Y-Chromosomes. You can also think of this test as a "surname" test. The Y-Chromosome is passed down just like the family's last name is handed down from father to son.

Pricing for Y-DNA tests is based upon the number of markers the test analyzes. Many Y-DNA tests only look at 12 markers, which are considered the minimum number required for comparison. However, results obtained using 23–37 markers can better pin-point common ancestors between two people and reduce the risk of obtaining false positives. Current statistics show the 12 marker test produces false positives 21% of the time. Several companies are now offering tests for 40 or more markers.



The chart above shows how John's Y-DNA is passed down to his sons and Mary's mtDNA is passed down to both her daughter and son. However, only her daughters will continue to pass her mtDNA through the generations. Some of their direct descendants do not inherit either DNA (shown in gray). Instead, they pass down DNA from their children's spouses (shown in light green). This is also why DNA among first cousins (John & Mary's grandchildren) often do not match.

2. mtDNA or Maternal Testing



This test looks at Mitochondrial DNA (mtDNA) which is found in the cytoplasm of the cell, rather than the nucleus. Mitochondrial DNA is passed by a mother to both male and female children. If two people have an exact match in their mtDNA, then they share a common grandmother. However, it can be hard to determine if this is a recent grandmother or one who lived hundreds of years ago. For men wishing to take this test, please keep in mind men do not pass mtDNA to their offspring. Instead, they can only receive it from their mothers.

Researching the parents of women from ancient times is difficult because a woman's name changes after marriage. Researchers frequently have only a woman's maiden name or married name. If they cannot find records of the marriage tying the woman's maiden and married names together, then the genealogy trail often comes to a sudden end. mtDNA test results can be used to overcome this problem and establish connections with correct family groups.

Pricing for mtDNA tests is based upon which of the different Hyper Variable Regions (HVR) are analyzed. Most companies provide prices using the following breakdowns:

- HVR1 = Analysis of the Hyper Variable Region #1 is considered a low resolution test. Markers in this region are numbered from 16001 to 16569. Most companies also provide Haplogroup identification with these test results which will help to identify ethnic and geographic origins of your mother's family line.
- HVR2 = Analysis of the Hyper Variable Region #2 is considered a high resolution test. Markers are numbered 001 to 574 (00001 to 00574). This test provides more information and helps to narrow your matches to better determine your closest relatives. The results of this test

can be compared to the Cambridge Reference Sequence –the standard mtDNA sequence used to compare all mtDNA samples.

- HVR3 = This classification is confusing because it is actually considered the end sequence of the HVR2 area. Some companies conduct a full HVR2 analysis while others separate this area of the HVR2 region and charge more for its testing. The marker numbers associated with this sequence are 00438 to 00574.

Where Can I Purchase a DNA Test?

Prices for the tests outlined above start at $95. The three companies currently providing the best options and prices for these tests are:

Company	*Website*	*Phone*
Family Tree DNA	www.familytreedna.com	(713) 868-1438
Relative Genetics	www.relativegenetics.com	(800) 956-9362
DNA Heritage	www.dnaheritage.com	(866)-736-2362

These companies provide a free database where your results will be shared online. They also provide options that allow you to control how these results are shared and how you will be notified of future matches.

Family Tree DNA was the first to begin providing DNA testing and is currently seen as the industry standard. They also provide Haplogroup analysis with their tests (which provide nationality information).

Relative Genetics is pushing for industry standards in the DNA research field and actively growing their database through free testing. They offer a wide range of tests and upgrade options that allow you to order the lesser test now and upgrade later to add more data if/when it is needed. Haplogroup results must be purchased separate from Y-DNA or mtDNA test.

DNA Heritage, and international company, provides comprehensive testing at a fair price. They also provide unique tests where you can specify which markers are to be tested. They have high standards, a really bad website and a great online tutorial. Haplogroup results must be purchased separate from Y-DNA or mtDNA test.

Try a Free DNA Test

Sorenson Molecular Genealogy Foundation (who is affiliated with Relative Genetics) offers a free DNA test and placement in their database – however, they do not provide you with the results of your test. Your DNA results and pedigree will be added to their database which will help you to make new connections in your family tree. Your information can also help others make connections based on your contribution. They also provide a way for you to remove yourself from their database should you change your mind. You may also decide later to purchase your test results at a discounted rate. They require you to provide 4 generations of genealogy information on yourself. You can find most of this information posted on the Halley/Howard website at www.littletownmart.com/family or contact Susan (see below) for assistance. For more information:

www.smgf.org or (800) 344-7643

What Can I Do With My Test Results?

In addition to being the person to solve a mystery, you can easily share your results with other researches or conduct your own research. Researchers have created free online databases where anyone can post their test results. These databases allow you to share and compare your results with people who purchased their test results from other companies. Some of these databases are:

Ybase
www.ybase.org

YHRD
www.yhrd.org

Ysearch
www.ysearch.org

YFiler
www.appliedbiosystems.com/yfilerdatabase

Also, please provide a copy of your results to Susan so they can be kept with the family records for future generations to use. You can send a copy to:

Susan Sapronetti
2918 Pearl Drive
Tallahassee, FL 32312

email: suesap@hotmail.com

How Can My DNA Solve a Mystery?

The further back in time we trace our ancestors the fewer paper records are available to provide clues. Buildings burned, floods happened, and a multitude of other events have destroyed these vital records. Without these records the trail of clues leading to a positive identification of our ancestor ends and a mystery begins.

Genealogy DNA research allows us to trace the path of our ancestors and find out who they were, where they lived and how they have migrated throughout the world. This type of DNA testing can provide vital clues that link our family to other families. It can prove or disprove that two families are related. It can also provide clues about our ethnic origin. It can help solve the two Halley Family mysteries shown on the cover as well as many others.

Daughters of Bennett Halley

If you are the son or daughter of a daughter, of a daughter, of Bennett Halley (1797-1863), then your mtDNA test could unravel the mystery of who was his mother and what nationality was she? Was she from the United States or another country?

William Peacock

If you are the son, of a son, of a son, of William Peacock (1620-1720), then the results of your Y-DNA test can help identify where he came from and possibly his father's name.

Sons of Bennett Halley

If you are the son, of a son, of Bennett Halley (1797-1863), then the results of your Y-DNA test can help solve many of the mysteries about him. Results of this test could link the Halley family to others from our common ancestors on other continents. Results of your mtDNA could answer questions about his ancestry.

Because these DNA tests require a straight line of male-to-male-to-male or female-to-female descendants, *you could be the only person living who can solve one of these mysteries.* In many cases, the direct line of sons or daughters has already been broken because no male or female offspring are alive today who carry the Y-DNA or mtDNA.

Go to the website: www.littletownmart.com/family

Check your known ancestry of mother-to-mother-to-mother and father-to-father-to-father — all the way up the line to learn where the trail stops. Your mtDNA or Y-DNA test may help identify the next "mother" or "father" in the chain. If you have no living sisters or brothers, then you may be the only one with the right DNA to solve the mystery.

There are many, many other mysteries, too.

You may be the only person living who can solve one of these mysteries!