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## JEWISH OUTLAWS AND CLANS OF THE POST CIVIL WAR ERA

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The post-Civil War decade in the South and West was a time of lawlessness. The economy was in shambles and many former Confederate soldiers were without work and angry over the loss of the war. Some became bandits and engaged in violent attacks against existing businesses and property. Perhaps the most notorious of these were Jesse and Frank James and the Younger Gang. Others were family-based clans who engaged in feuds with those living nearby. The most famous of these were the Hatfields of West Virginia. Using genealogical DNA methods, this research examines the ancestry of the James brothers, the Youngers and the Hatfield clan and shows they were likely Jewish. This finding sheds a new light on the Post-War landscape.

Keywords: Genealogical DNA, Jewish Outlaws, Jesse James, Frank James, Younger Gang, Hatfield Clan

## INTRODUCTION

The post-Civil War decades were a time of lawlessness. The economy across the former Confederate states from Virginia to Texas was in shambles and many former Confederate soldiers were without work. Some became bandits and engaged in violent attacks against existing businesses and towns which they believed had supported the Union. Perhaps the most famous outlaws in the post-Civil War era were Jesse and Frank James and the Cole Younger Gang (Settle 1977, Yeatman 2003). We closely examine the ancestry of the James brothers and the Youngers and learn they likely had Jewish ancestry. We then turn to examining the ancestry of the Hatfield clan of West Virginia and document that they were also likely Jewish.

### **The James Brothers**

Frank and Jesse James were born in the Ozark Region of Missouri—a region largely settled by Appalachian families who migrated westward. It has already been learned through prior DNA genealogical research that many of the original Appalachian settlers were of Jewish descent (see Hirschman and Vance 2019). These settlers were composed of both Sephardic (Spanish) and Ashkenazic (Eastern European) Jews who had immigrated to colonial Virginia during the 1600s to escape religious persecution in their native countries (Hirschman and Vance 2019).

The father of Jesse and Frank was a man named Robert Franklin James, the son of Alexander Franklin James and Ann (Ralston) James. Robert married a woman named Mae A. Sanborn. His DNA haplotype and STR scores are shown below (taken from the James DNA Project, Family Tree DNA.com): [Please see the **Appendix** for details on this Methodology]

Robert Franklin James
Haplotype J-m17 12 23 14 10 11-17 11 15 14 11 31 16 8-8 11 11 26 15 21 28 12-16 13-16

The J-m172 Y haplogroup, to which the James males belong, is Semitic and originated in the Middle East. It is also considered to be one of the founding Jewish lineages (FTDNA Jewish Heritage Project). It is widespread throughout the Middle East and Jewish descendants are found in Spain, Hungary, England, Wales, Ireland, Scotland, Italy, and Portugal, as well as in the United States (FTDNA-Haplogroup J-M172 Project).

The James scores matched those of two entries in the Jewish Heritage Project at 20 markers; thus, it is highly likely that Jesse and Frank James were of Jewish descent.

Now let us take a look at their lives and history.

#### **Frank James**

Frank was the older brother of Jesse James and both served in the Confederacy during the Civil War. As Confederate troops were withdrawn from Missouri during the fall of 1864, a bloody guerrilla conflict broke out between pro-Confederates ("Bushwhackers") and the Home Guards for the Union. Frank first joined Fernando Scott's Bushwhacker group and later switched to William Clark Quantrill's company. While Frank was a part of this company, they instigated the Lawrence, Kansas Massacre of August 21, 1863 in which 200 unarmed civilians were killed (Settle 1977, Yeatman 2003).

After the Civil War, Frank continued his violent behavior, participating in four armed robberies from 1868-1876, which resulted in the deaths of local townspeople and bank employees (Settle 1977). During this same time period, the James brothers joined with the Younger gang in a series of bank and train robberies (Settle 1977). However, an attempted bank robbery in Northfield, Minnesota on September 7, 1876, resulted in the capture of most of the Younger gang members (Settle 1977). An account of this incident is given below (www.NorthfieldMinnesotaHistoricalSociety.com):

"Attempting a bold daytime robbery of the Northfield Minnesota bank, the James-Younger gang suddenly found itself surrounded by angry townspeople and was nearly wiped out on September 7, 1876. The bandits began with a diversion: five of the men galloped through the center of town, hollering and shooting their pistols in the air. As the townspeople ran for cover, three other men wearing wide-brimmed hats and long dusters took advantage of the distraction to walk unnoticed into the First National Bank. Brandishing pistols, one of the men ordered the bank cashier to open the bank safe. Though the cashier recognized the famous face of the dangerous outlaw, Jesse James, he stalled, claiming that the safe had a time lock and could not be opened. As Jesse James considered his next move, a ... bank teller made a break for the back door. One of the robbers fired twice, hitting the teller in the shoulder, but the man managed to stumble to safety and sound the alarm.

"The citizens of Northfield ran to surround the bank and shot down the robbers as they tried to escape. A 19-year-old medical student killed one gang member, Clell Miller, while the owner of the Northfield hardware store mortally wounded Bill Chadwell.... Jesse's brother, Frank, was hit in the leg, while their criminal partners, Jim, Cole, and Bob Younger, were also badly wounded.

"Jesse was the last one out of the bank. After pausing briefly to shoot the uncooperative cashier, Jesse leapt onto his horse and joined the rest of the survivors as they fled town. For the next two weeks a posse pursued them relentlessly, eventually killing or capturing four more of the gang members. Luckily for Frank and Jesse James, the two brothers had decided to go their own way, escaping to Dakota Territory. After things had cooled down, they went to Nashville, Tennessee, where they started rebuilding their gang and planning new robberies."

After learning that the Younger family had moved to Missouri from Appalachia, we examined their DNA ancestry, as well, and learned that it also suggested Jewish ancestry.

## Y DNA haplotype of the Missouri Youngers taken from the Younger DNA Project (FTDNA)

1 6 1 6 4	Yo un ger	Thomas Younger, Halifax Co.Va. b 1707	United Kingdo m	R- M 26 9	1 3	2 4	1 4	1 0	1 1 - 1 3	1 2	1 2	1 2	1 3	1 3	2 9	1 6	9 - 9	1	1	2 5	1 5	1 9	3 0	15 - 15 -1	
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The 25 marker haplotype of the Youngers matched (within 20 or more points) those of Jewish men named Lorberfeld, Breslauer and Slizak (Poland), Greenberg and Siedenberg (Romania) and Pikholz (Ukraine) in the Jewish R1b/R-m269 DNA Project. Their surname may have originally been Junger (German for 'youth')

### Jesse James

Like his older brother Frank, Jesse James was a Confederate guerrilla fighter during the Civil War (Settle 1977, Yeatman 2003). Although there are popular media portrayals of the James brothers as Robin Hood-type figures, stealing from the rich and giving money to the poor, this was not the case. The 1869 Gallatin robbery, described below, was the first time Jesse James was labeled an "outlaw," and Missouri Governor Thomas T. Crittenden set a reward for his capture (Settle 1977). Concurrently, a political alliance grew between James and a man named John Edwards, editor of the pro-Secession *Kansas City Times*, to create a pro-Southern legacy for the James gang (Yeatman 2001). It is this published series of articles that gave rise to the popular notion that the James brothers were rebel heroes, trying to gain justice for the defeated South. The Gallatin Robbery is described below:

"Forty-four years ago, December 7, 1869, the Gallatin bank was robbed... by the James boys and Jim Anderson.... The cashier of the bank, Capt. John Sheets, was killed. The robbers got about \$100 and left behind a fine bay mare that was worth more than the money they took from the bank. The mare was later given to Daniel Smoot, whose own horse was stolen by the James gang as they fled from Gallatin (DaviesCountyHistoricalSociety.com)."

Six months after the Gallatin robbery, *Kansas City Times* editor Edwards printed the first of many letters he claimed to have received from Jesse James asserting his innocence of the robbery (Settle 1977). Over time, these letters from Jesse became more political in tone, denouncing the Republicans and voicing James' pride in his Confederate loyalties. Together with Edwards's supportive editorials, the letters turned James into a symbol of the Confederate defiance of Reconstruction (Settle 1977).

The predations by the James gang continued, with their targets shifting from banks to trains. On July 21, 1873, the James gang together with the Ford brothers derailed the Rock Island train in Adair, Iowa and stole around \$3,000 (Yeatmen 2001). However, in contrast to their bank robberies, the James gang's train robberies usually were non-violent. This served to reinforce the Robin Hood image that Edwards had been creating in his newspaper. However, there is no evidence that the gang ever shared any of the stolen money outside their own circle (Settle 1977). Ironically, Jesse James was killed in his own home by gang member, Robert Ford (Yeatman 2003).

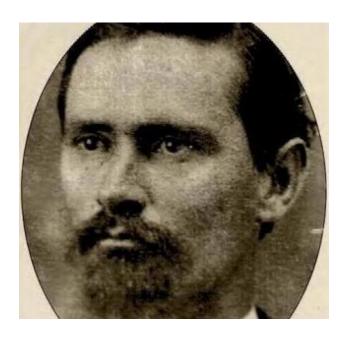
Five months after Jesse was killed, Frank voluntarily surrendered to the Missouri Governor, stating that after being hunted for more than twenty years, he was tired (Yeatman 2003). Ironically also, Frank James was put on trial for only two murders – of the many the gang had committed—and acquitted in both. Frank moved to Oklahoma where he died peacefully on February 18, 1915 (Settle 1977).

## When and Where did Jesse James Die?

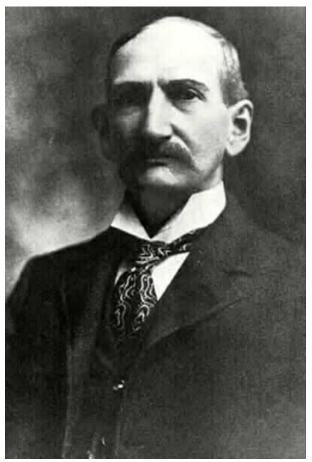
There is some controversy over whether Jesse James was killed by Robert Ford or actually faked his death. His presumptive remains were originally buried on the James family farm in Missouri and later reburied in the Mt Olivet Cemetery. In order to determine if these remains actually belonged to Jesse James, samples were collected from both burial locations and genetically analyzed (www.dnainthenews.com/mystery-myths/jesse-james-2)

Two maternal descendants of Jesse's sister (Susan) were identified and agreed to provide blood samples for DNA analysis. As discussed in the Appendix, there are three regions of mitochondrial (female) DNA that can be analyzed – HVR1, HVR2 and the coding region. The study sequenced the first hypervariable region (HVR1) from the two female relatives' blood samples and from burial specimens presumed to belong to Jesse James – two hair samples from the original burial site and two molar teeth from the reburial site. The hair and teeth samples all revealed the same mtDNA HVR1 sequence, indicating that they came from the same individual. This mtDNA HVR1 sequence also matched the sequence obtained from the two reference samples (<a href="www.dnainthenews.com/mystery-myths/jesse-james-2">www.dnainthenews.com/mystery-myths/jesse-james-2</a>). Therefore, it is very likely that Jesse James was indeed murdered in his own home in 1882.

Of additional interest for our purposes is that the mtDNA sequence from the teeth and hairs belonged to Haplogroup T2e, with 5 mutations relative to the CRS (16126C, 16274A, 16294T, 16296T, and 16304C). Importantly, female haplogroup T2e is one of the 'marker' DNA haplotypes among Sephardic Jewish women. So it is virtually certain that James's mother was of Jewish ancestry. This would suggest that Frank and Jesse James were of Jewish ancestry on both their mother's and father's side. Lastly, we note that Jesse married his first cousin, Zerelda Mimms -- also an indicator of Jewish ethnicity (Hirschman and Vamce 2019)..



**Jesse James** 



**Frank James** 

# After the Civil War the Most Famous Inter-Family War

Now we turn to our final set of Post-Civil War ethnic analyses – examining the ancestry of two of the major players in the famous Hatfield-McCoy feud in Kentucky and West Virginia. Anderson Hatfield and his cousin James 'Bad Jim' Vance were related by both marriage and blood (Alther 2012). We document below their very likely Jewish ancestry, as well.



Caption: Anderson Hatfield

As the photo above illustrates, Anderson Hatfield, the family patriarch, had strongly Semitic features. As will be discussed below, his Y-DNA haplotype is E-M35, a signature Jewish haplotype (FTDNA Jewish Heritage Project).

William Anderson "Devil Anse" Hatfield was a Confederate soldier and the patriarch of his West Virginia family during the Hatfield–McCoy feud – one of the bloodiest family rivalries in American history (Jones 1948). He grew up deeply believing in the Southern cause, and when the Civil War broke out, Hatfield enlisted in the Confederate army – commissioned as a First Lieutenant. After his unit was disbanded, he joined the newly formed 45th Battalion Virginia Infantry as a private (Alther 2012).

Hatfield quickly gained a reputation for being efficient and ruthless in the battlefield, and rose through the ranks to become a captain. He later co-founded the infamous Logan Wildcats to wage guerrilla warfare against local Union sympathizers (Waller 1988); thus he followed much the same trajectory as the James brothers. Hatfield was accused of murdering Asa Harmon McCoy, an act actually committed by Hatfield's cousin, James "Bad Jim" Vance (Alther 2012). This killing set off a three-decade-long feud, in which both families lost several members..

Anderson Hatfield's DNA haplogroup is E-M35. (www.geni.com/projects/E-M35-Y-DNA/10447). A significant proportion of Jewish male lineages are E-M35; this haplotype includes approximately 18% to 20% of Ashkenazi and 8.6% to 30% of Sephardi Y-chromosomes. It is considered one of the founding lineages of the Jewish population. (Wikipedia, Haplogroup E1b1b.)

Valentine Hattield b.c 1767	Unknown Origin  E-  M3  5	1 2 1 3 4 3	1 16 3 0 - 17	1 1 1 2	1 1 1 2 3 1	$\begin{bmatrix} 1 & 3 & 1 & 9 \\ 1 & 0 & 5 & 9 \end{bmatrix}$	1 1 2 1 1 7	1 2 3
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## **James Alexander Vance**



Caption: James Alexander (Bad Jim) Vance

DNA testing of Anderson Hatfield's cousin, James "Bad Jim" Vance, indicates Vance had haplotype RU152 subgroup R-L2. Examining his extended haplotype produced matches to a Jewish man named Herzig in Austria and additional international matches to men in Italy and Spain, all at the 21 marker level (Jewish Heritage Project FTDNA). In the U.S. the Vance haplotype is closely linked to the Saylor, Starnes, Barnett and Burnett lines; these are all families living in Central Appalachia, a region already documented to have a high level of Jewish ancestry (see Hirschman and Vance 2019). We conclude that the Vance lineage is likely Jewish, but we are unable to distinguish between Sephardic or Ashkenazic.





Caption: The Hatfield clan in 1897

#### **How the Feud Began**

During the early months of the Civil War, Asa McCoy joined a company of the Pike County (Kentucky) Union Home Guards and was wounded. A group of soldiers from this Union same unit then attacked and shot Mose Cline, a friend of Anderson "Devil Anse" Hatfield. Although Cline survived his wounds, Anse vowed to retaliate against the responsible parties. In 1863, a group of Confederate Home Guards ambushed and killed one of the Pike County Union soldiers; Anse took credit for the deed (Alther 2012).

In December 1864, the 45th KentuckyUnion Infantry began mustering its regiments out of service, as the Civil War was winding down; one its members was Asa McCoy.. As Asa journeyed home, he was ambushed and killed near his house on January 7, 1865. A group of local Confederate guerillas took credit for the killing, and his wife's pension application states that he was "killed by Rebels". McCoy family tradition points to James "Bad Jim" Vance, a member of a West Virginia Militia group, as the killer (Waller 1988).

The next recorded violence between the two families occurred thirteen years later in 1878, in a dispute over the ownership of a hog. Floyd Hatfield, a cousin of Anderson, was in possession of the hog, but Randolph McCoy claimed it was his, saying that the notches on the pig's ears were McCoy, not Hatfield, marks. The matter was taken to the local Justice of the Peace, who ruled in favor of the Hatfields based on the testimony of Bill Staton, a local man who was related to both families. In June 1880, Staton was shot and killed by two McCoy brothers, Sam and Paris. They were later acquitted on the grounds of self-defense, though Staton was an alcoholic and unarmed at the time of his death (Jones 1948, Alther 2012).

The feud escalated when Roseanna McCoy began a romantic relationship with Devil Anse's son Johnson, known as "Johnse". Roseanna left her family and went to live with the Hatfields in West Virginia. She later returned to live with the McCoys, after a falling out with Johnse. When the couple resumed their relationship, Johnse was arrested by the McCoys on outstanding Kentucky moonshining warrants (Waller 1988).

Johnse was freed from McCoy custody when Roseanna made a midnight ride to alert Anse Hatfield, who organized a rescue party. The Hatfield party surrounded the McCoys and took Johnse back to West Virginia. Despite what was seen as her betrayal of her own family on his behalf, Johnse later abandoned the pregnant Roseanna and instead married her cousin, Nancy McCoy, in 1881 (Waller 1988). The feud continued in 1882 when Ellison Hatfield, brother of Anse, was killed by three of Roseanna's younger brothers on Election Day in Kentucky. The three McCoy brothers purposely started a fight with Ellison, who was very inebriated, and then stabbed him 26 times, finally killing him with a gunshot (Alther 2012).

The three McCoy brothers who killed Ellison were initially arrested by Hatfield agents assigned to take them to Pikeville, KY for trial. But Anse Hatfield organized a group of men and intercepted his own agents and their McCoy prisoners before they reached Pikeville. The three brothers were taken back to West Virginia and killed with a volley of shots (Alther 2012).

Several of the Hatfield men involved in kidnapping and killing the three McCoy brothers, including Anse, were then indicted for murder in Kentucky (Alther 2012). When the Hatfields refused to be arrested, the McCoy family contacted Pikeville, KY attorney Perry Cline for legal assistance. Cline, who was married to Martha McCoy, used his political connections in Eastern Kentucky to reinstate the murder charges against the Hatfields and posted rewards for their arrest.

The feud reached its peak with the 1888 New Year's Massacre. Bad Jim Vance led several members of the Hatfield clan to the McCoy cabin in Kentucky and opened fire on the sleeping family. The cabin was torched in an effort to drive Randolph McCoy into the open. Randolph escaped, but two of his children were shot, and his wife was beaten. With his house burning, Randolph and his remaining family members escaped into the woods. The remaining McCoys moved to the town of Pikeville to escape the Hatfield raiding parties (Alther 2012)

A few days after the New Year's Massacre, a posse led by Pike County Deputy Sheriff Frank Philipps, reputed to have ridden with the James-Younger gang discussed earlier, rode out to track Anse Hatfield's group across the border into West Virginia. Two McCoys were members of Philipps' posse (Alther 2012, Waller 1988). The posse's first victim was "Bad Jim" Vance, who was killed after he refused to be arrested. Philipps then made additional raids on Hatfield family homes and supporters, capturing many and killing another three Hatfield allies, before cornering the rest (Alther 2012).

However, Anse and several other Hatfields were waiting for them. A battle ensued between the two parties, but the Hatfields were eventually apprehended. (Alther 2012). One Hatfield man and eight other participants were arrested and brought to Kentucky to stand trial for the murder of Randolph McCoy's young daughter during the New Year's Massacre (Waller 1988).

#### **Trial**

Because several jurisdictional issues were at stake, the United States Supreme Court became involved in the case (*Mahon v. Justice*, 127 U.S. 700 (1888)). The Court ruled in favor of the McCoys and Kentucky, holding that, even if a fugitive is taken from an asylum state illegally, instead of through lawful extradition procedures, no federal law prevents the fugitive from being tried. The men were tried in Kentucky and found guilty. Seven received life imprisonment, while the eighth, a Hatfield cousin, Ellison "Cottontop" Mounts, was executed by hanging (Alther 2012). Ellison had tried to retract his confession, stating that he was innocent and had only confessed because he expected leniency, but his retraction was denied. Ellison's last words were: "The Hatfields made me do it." (Alther 2012).

## **DISCUSSION**

We have now reviewed the lives of two sets of American folklore icons – Frank and Jesse James together with the Younger gang and the Hatfields of West Virginia. The basic narrative of historical events has not changed from what was known before you read this manuscript – and indeed we have not attempted to challenge the dates, actions or persons involved. But something significant for our and hopefully your understanding of the post-Civil War South has been profoundly altered. Always before historians and the media presented these folk anti-heroes as *white Americans*. – white, rural, southerners whose lives were impacted by the Civil War. Historians did not even consider what their ancestral origins might have been; they were just regular people "gone bad" or "good", depending upon one's political perspective.

But the present research argues that they can no longer be seen as *regular* Americans, good, bad or otherwise. These men were very likely all *Jewish* – and that puts a profound ideological spin on things. Currently most Americans (and Civil War historians) probably think of Jews as people working in the financial markets on Wall Street, or being in a profession, for example, doctors, lawyers, accountants. Most Americans probably would not conjure up images of Jews as outlaws, renegades, feudists with guns, or people who rode into town and shot up banks in Nebraska. And yet, here they are.

Stereotypes, whether positive or negative, have a powerful effect on our abilities, even as trained academic researchers, to challenge prevailing paradigms. It is hard to see around the ideological frames of reference each of us carries that restrict our theoretical perceptions. The goal of this research has been to splash paint on those walls and make them visible, tangible, so that we can be more open to other, more accurate, interpretations of the past.

## References

Alther, Lisa. (2012). *Blood Feud: The Hatfields & the McCoys: The Epic Story of Murder and Vengeance*. Lyons Press. ISBN 978-0762779185.

Hirschman, Elizabeth C. (2019), "DNA Evidence for a Colonial Jewish Settlement in Appalachia" with James A. Vance and Jesse D. Harris, *Ethnic Studies Review*.

Jones, Virgil Carrington. (1948). *The Hatfields and the McCoys*. University of North Carolina Press. ISBN 0891760148.

Settle, William A., Jr. (1977). Jesse James Was His Name, or, Fact and Fiction Concerning the Careers of the Notorious James Brothers of Missouri, University of Nebraska Press.

Stone, A., J. Starrs, and M. Stoneking. (2001). "Mitochondrial DNA Analysis of the Presumptive Remains of Jesse James", *Journal of Forensic Sciences*, Vol. 46, No. 1, pp. 173-176.

Waller, Altina L. (1988). *Feud: Hatfields, McCoys, and Social Change in Appalachia, 1860–1900.* University of North Carolina Press. ISBN 0807842168.

Yeatman, Ted P. (2003). Frank and Jesse James: The Story behind the Legend, Second Edition, Cumberland House

### **APPENDIX**

One of the current buzzwords in the social sciences is *disciplinary silos*. This concept draws attention to the insularity of disciplines, activities, and research approaches using only a dominant paradigm or method to study a phenomenon. Over the past few decades, greater strides have been made within and across fields when ideas and ways of thinking are imported from other disciplines, rather than using only orthodox approaches. For example, energy researchers have learned from ecologists how to make their products more efficiently and with less environmental damage. Pharmaceutical scientists have learned from indigenous peoples about plants and animals relevant to treating disease. Cognitive psychologists have learned from neurosurgeons about how humans store, process and use sensory, written and mathematical information. If each of these fields had remained embedded in prior theories and research techniques, much less progress would have been made.

We propose that the same can be said for the discipline of historical studies. Whether examining the last decade, the last century, or the last millennium, historians have depended upon written, carved, painted – and more recently – photographic images to conduct their research. These may be cunieform symbols inscribed on clay tablets, carvings on rock slabs (e.g., stele), papyrus scrolls, tomb inscriptions, statues, handwritten documents or printed manuscripts.

Archaeologists, who also study human history, have been more progressive in adopting technologies such as satellite photography, in-ground radar, and magnetic imaging in their research. These have provided novel perspectives to archaeological researchers, permitting them to locate, for example, the outlines of flattened city-walls, which are not visible when a site is only viewed from ground level or excavated downward in a square area. Large-scale features and perimeters can become visible when viewed from high above ground or even from space.

We propose that current historians resemble the archaeologists of old – they dig in one narrow trench using available documents and consider that an accurate excavation of an historical event. In so doing, they miss the big picture. Historical documents can be lost, falsified, or written to be purposely misleading. DNA is what it is – chemical molecules in each and every cell of one's body. Properly collected, analyzed and compared to other samples, DNA does not lie.

## **Commercial DNA Testing Services**

In 2000, Family Tree DNA (FTDNA.com) was the first company dedicated to direct-to-consumer testing for genealogy research. In 2019, new analysis tools were developed; these included auto-clusters (grouping all matches visually into clusters) and family tree theories (suggesting possible relationships between DNA matches by combining several trees as well as global family trees). This permits users to track the genetic evolution of their ancestry over time in a fine-grained manner.

## **How does DNA Testing Work?**

A genealogical DNA test is performed on a sample provided by the individual. Typically, the sample collection uses a home test kit supplied by a service provider such as 23andMe, AncestryDNA, Family Tree DNA, or MyHeritage. After following the kit instructions on how to collect the sample, the user returns it to the supplier for analysis. The sample is then processed using a technology known as DNA microarray to obtain the genetic information requested by the consumer (Bettinger and Wayne 2016).

## **Female Line Testing**

Mitochondrial DNA (mtDNA) is transmitted from mother to child, thus a direct maternal ancestor can be traced using mtDNA (Bettinger and Wayne 2016). This transmission occurs with very few mutations over time. A perfect match found to another person's mtDNA test results indicates shared ancestry of possibly between 1 and 50 generations ago. More distant matching to a specific haplogroup or subclade may be linked to a common ancestor. (Bettinger and Wayne 2016).

## Y chromosome (Y-DNA) testing

A man's patrilineal ancestry, or male-line ancestry, can be traced using the DNA on his Y chromosome (Y-DNA), because the Y-chromosome is transmitted father to son nearly unchanged.

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A man's test results are compared to another man's results to determine the time frame in which the two individuals shared a most recent common ancestor (MRCA) in their direct paternal line (Bettinger and Wayne 2016).. There are two types of paternal DNA testing one can order: STR and SNP.

#### STR markers

The most common type of testing is performed using STR (short tandem repeat). A certain section of DNA is examined for a pattern that repeats basic chemical components of the DNA. The number of times it repeats is the value of the marker. Typical tests examine between 12 and 111 STR markers. STRs mutate fairly frequently, which permits different branches of paternal ancestry to be charted. The results of two individuals are then compared to see if there is a match. DNA companies will usually provide an estimate of how closely related two people are, in terms of generations or years, based on the difference between their results (Bettinger and Wayne 2016).

### **SNP** markers and Haplogroups

A person's male ancestral haplogroup can often be inferred from STR results, but can be proven only with a Y-chromosome SNP test (Y-SNP test). Getting an SNP test allows a much higher resolution of one's male ancestry than STRs. It can also be used to provide additional information about the relationship between two individuals and to confirm one's ancestral haplogroup. Most haplogroups can be further subdivided into sub-clades. Some known sub-clades were founded just in the last 1000 years, meaning their time-frame can be connected to specific surnames (FTDNA.com).

#### Reference

Bettinger Blaine T and Debbie Parker Wayne. (2016). *Genetic Genealogy in Practice*. National Genealogical Society.