

My Journey with Genetic Genealogy

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INTRODUCTION

Genetic Genealogy: Genetic genealogy is the use of DNA testing in combination with traditional genealogical and historical records to infer relationships between individuals and their ancestors.

Importance in Understanding Ancestry and Heritage: Genetic genealogy allows individuals to uncover their ancestral origins, discover connections to distant relatives, and gain insights into their family history beyond what is possible through traditional genealogical research alone.

Historical Overview

- **Early Methods of Tracing Ancestry:** Before the advent of genetic testing, tracing ancestry relied heavily on historical records such as birth certificates, census data, and family Bibles.
 - **Emergence of Genetic Genealogy:** Genetic genealogy began to gain traction in the early 2000s with the commercialization of DNA testing kits and the development of algorithms to analyze DNA data for genealogical purposes.
 - **Key Milestones in Genetic Genealogy Research:** Important milestones include the discovery of Y-chromosomal DNA markers for tracing paternal lineages, the development of autosomal DNA testing for uncovering both paternal and maternal ancestry, and the establishment of databases for comparing DNA results among individuals.
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Basics of Genetic Genealogy

- **Overview of DNA Testing Techniques:** Genetic genealogy primarily relies on three types of DNA testing: autosomal DNA testing, which examines DNA inherited from both parents and is useful for finding relatives across multiple generations; Y-DNA testing, which traces the direct paternal lineage from father to son; and mtDNA testing, which traces the direct maternal lineage from mother to child.
 - **Understanding Genetic Inheritance and Genealogical Relevance:** Genetic inheritance follows specific patterns, such as the inheritance of autosomal DNA from both parents, the inheritance of Y-DNA exclusively along paternal lines, and the inheritance of mtDNA exclusively along maternal lines. Understanding these inheritance patterns helps genealogists interpret DNA test results and construct family trees.
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Applications of Genetic Genealogy

1. **Solving Cold Criminal Cases:** Genetic genealogy has been instrumental in solving cold criminal cases by identifying perpetrators through familial DNA searches. Law enforcement agencies use DNA samples collected from crime scenes and compare them to genetic databases to find potential relatives of the suspect. By building family trees and tracing common ancestors, investigators can narrow down the pool of suspects and ultimately identify the perpetrator.
 1. **Finding Birth Parents for Adopted Individuals:** Genetic genealogy offers adopted individuals the opportunity to locate and connect with their birth parents or other biological relatives. By taking a DNA test and comparing their results to large genetic databases, adoptees can identify genetic matches who share common ancestors. Through careful analysis of family trees and collaboration with DNA matches, adopted individuals can piece together their biological heritage and potentially reunite with birth family members.
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AncestryDNA

1. **Introduction to AncestryDNA Testing Kit:** AncestryDNA is a popular direct-to-consumer genetic testing service offered by Ancestry.com. The AncestryDNA testing kit allows individuals to submit a saliva sample for DNA analysis.
 1. **Features and Services Provided by AncestryDNA:** AncestryDNA provides ethnicity estimates that reveal the geographic regions from which an individual's ancestors likely originated, as well as DNA matches with other individuals who share genetic ancestry.
 1. **Integration with Ancestry.com Family Trees:** AncestryDNA results can be linked to family trees created on Ancestry.com, enabling users to visualize their genetic connections to known ancestors and discover new relatives through shared DNA matches.
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How Family Trees Connect with DNA

1. **Building and Maintaining Family Trees on Ancestry.com:** Users can create and edit family trees on Ancestry.com by inputting information about their ancestors, including names, birthdates, and relationships.
 1. **Linking DNA Results to Family Trees:** AncestryDNA results can be linked to specific individuals in a user's family tree, allowing for the identification of common ancestors shared with DNA matches and the visualization of genetic connections within the context of one's family history.
 1. **Utilizing Shared Matches and ThruLines:** AncestryDNA provides tools such as shared matches and ThruLines, which identify common ancestors shared with DNA matches based on family trees, helping users validate relationships and extend their family trees.
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Determining Birth Parents through DNA Matches and Triangulation

Steps in the Process:

- 1. Identifying Close DNA Matches:** Begin by identifying close DNA matches with significant shared DNA segments, which are more likely to indicate recent common ancestors.
 - 2. Examining Shared Matches:** Investigate shared matches between the adoptee and their DNA matches, focusing on individuals who share common ancestors or surnames.
 - 3. Triangulating Shared Segments:** Triangulate shared DNA segments among multiple individuals to confirm common ancestry and pinpoint specific branches of the family tree.
 - 4. Building Hypotheses:** Based on the triangulated segments and shared matches, construct hypotheses about potential birth parents and their extended family members.
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DNA Painter Chart

						Great-Great-Grandparent		GGGG Aunt / Uncle				
						Great-Great-Grandparent		GGG Aunt / Uncle				
Half GG-Aunt / Uncle	Great-Grandparent					Great-Great-Aunt / Uncle	1C3R	2C3R		Other Relationships		
208 103 – 284	887 485 – 1486					420 186 – 713	117 25 – 238	51 0 – 154				
Half 1C2R	Half Great-Aunt / Uncle	Grandparent				Great-Aunt / Uncle	1C2R	2C2R	3C2R	6C		
125 16 – 269	431 184 – 668	1754 984 – 2462				850 330 – 1467	221 33 – 471	71 0 – 244	36 0 – 166	18 0 – 71		
Half 2C1R	Half 1C1R	Half Aunt / Uncle	Parent			Aunt / Uncle	1C1R	2C1R	3C1R	4C1R	6C1R	
66 0 – 130	224 62 – 469	871 492 – 1315	3465 2376 – 3720			1741 1201 – 2282	433 102 – 980	122 14 – 353	48 0 – 192	26 0 – 126	15 0 – 56	
Half 3C	Half 2C	Half 1C	Half Sibling	Sibling	SELF	1C	2C	3C	4C	5C	6C2R	
48 0 – 168	449 10 – 325	449 156 – 979	1759 1160 – 2436	2613 1613 – 3488		866 396 – 1397	229 41 – 592	73 0 – 234	35 0 – 139	25 0 – 117	13 0 – 45	
Half 3C1R	Half 2C1R	Half 1C1R	Half Niece / Nephew	Niece / Nephew	Child	1C1R	2C1R	3C1R	4C1R	5C1R	7C	
37 0 – 139	66 0 – 190	224 62 – 469	871 492 – 1315	1740 1201 – 2282	3487 2376 – 3720	433 102 – 980	122 14 – 353	48 0 – 192	28 0 – 126	21 0 – 80	14 0 – 57	
Half 3C2R	Half 2C2R	Half 1C2R	Half Great-Niece / Nephew	Great-Niece / Nephew	Grandchild	1C2R	2C2R	3C2R	4C2R	5C2R	7C1R	
27 0 – 78	48 0 – 144	125 16 – 269	431 184 – 668	850 330 – 1467	1754 984 – 2462	221 33 – 471	71 0 – 244	36 0 – 166	22 0 – 93	18 0 – 65	12 0 – 50	
Half 3C3R	Half 2C3R	Half 1C3R	Half GG-Niece / Nephew	Great-Great-Niece / Nephew	Great-Grandchild	1C3R	2C3R	3C3R	4C3R	5C3R	8C	
		60 0 – 120	431 103 – 284	420 186 – 713	887 485 – 1486	117 25 – 238	51 0 – 154	27 0 – 98	19 0 – 60	13 0 – 30	11 0 – 42	

Personal Experience: Assisting Adopted Individuals

- **Completed 30 Cases of Adopted People Seeking Birth Parents:** As a genetic genealogist, I've had the privilege of working with roughly 30 adopted individuals on their quest to uncover their biological heritage.
 - **Achieving Closure:** While many adoptees express gratitude for gaining insight into their genetic ancestry and finding a sense of closure, it's essential to acknowledge the emotional significance of these discoveries.
 - **Challenges Faced:** Despite successful reunifications in some cases, it's important to note that the journey is often fraught with challenges. Many adoptees encounter resistance or 'stone-walling' from their birth relatives.
 - **Reasons for Resistance:** The reluctance of birth relatives to engage with adoptees can stem from various factors, including financial concerns, fear of disrupting established family dynamics, and emotional complexities surrounding the adoption.
 - **Navigating Emotional Terrain:** As a genetic genealogist, I strive to provide support and guidance to adoptees as they navigate the emotional terrain of reunion and reconciliation with birth family members.
 - **Empathy and Understanding:** Recognizing the profound emotional impact of adoption and reunion, I approach each case with empathy, sensitivity, and a commitment to fostering understanding and healing.
 - **Looking Forward to the Exciting Future of Genetic Genealogy:** I am very optimistic about the future of genetic genealogy and the opportunities for continued innovation and discovery in the field.
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Future Directions

- **Advancements in Genetic Sequencing Technology:** Ongoing advancements in genetic sequencing technology continues, such as whole-genome sequencing and next-generation sequencing, and their potential impact on the field of genetic genealogy.
 - **Enhanced Ethnicity Estimates and Regional Breakdowns:** Improvements in ethnicity estimates and regional breakdowns as genetic databases will grow and algorithms become more sophisticated, providing users with more detailed insights into their ancestral origins.
 - **Integration with Historical Records and Archaeological Discoveries:** The integration of genetic data with historical records and archaeological discoveries to reconstruct ancient population migrations and illuminate the deep roots of human ancestry.
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THANK YOU

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