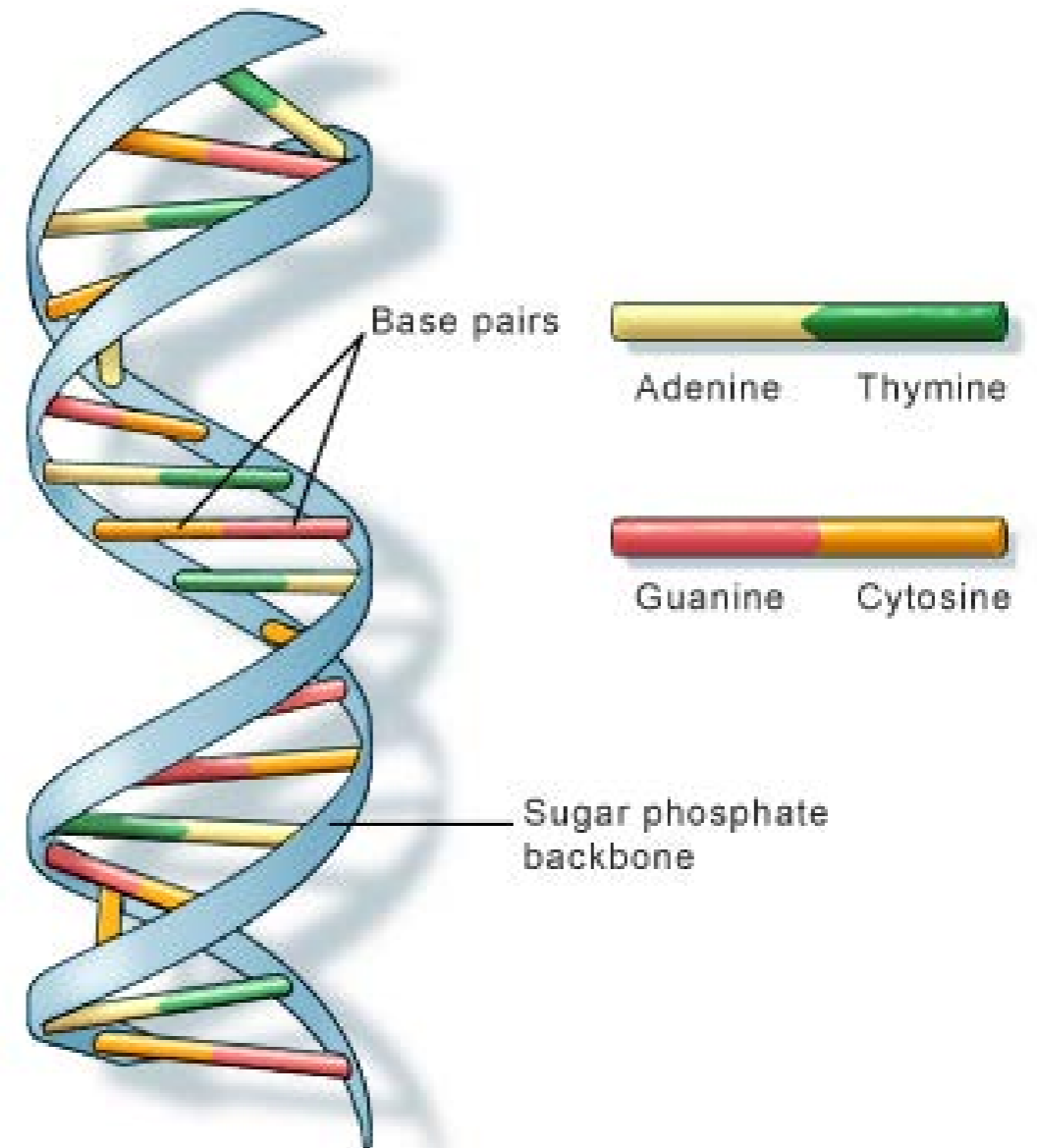


# What is DNA?

- Deoxyribonucleic Acid
- A molecule composed of two chains that wrap around each other consisting of sugars, phosphates, and nucleotide bases (adenine, guanine, thymine, and cytosine)
- Acts as the store of genetic and hereditary information within a cell (“blueprint of a person”)
- All cells in the body contain DNA except red blood cells (they have no nucleus)
- Half of a person’s DNA is inherited from their mother (egg) and half from their father (sperm)
- No two people have the exact same DNA except for identical twins



U.S. National Library of Medicine

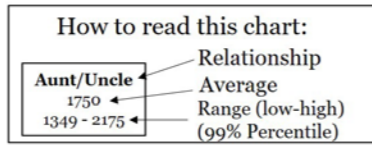
# Genetic Genealogy

- Is the use of DNA testing in combo with traditional genealogical methods and historical records
- Individuals use companies such as 23 & Me, Ancestry, My Heritage, and Family Tree to find out about their ancestry, build their family tree, find adopted family members, etc., and can upload their DNA file to GEDmatch and/or FamilyTreeDNA (public databases for genetic genealogy info)
- Some public databases can also be accessed by law enforcement agencies to search DNA profiles developed from crime scene evidence
- If a familial association is reported from the databases, professional genealogists conduct extensive research on the familial relationship to the possible suspect
  - Degree of relatedness reported from the databases as centimorgans (cM)
  - Building family trees using public records (such as birth/death certificates, marriage licenses, social media, etc.)
  - additional DNA testing of these individual's DNA is completed to be compared to the crime scene evidence

# Genetic Genealogy

The Shared cM Project – Version 3.0 For MUCH more information (including histograms and company breakdowns) see: [goo.gl/Z1EcJQ](http://goo.gl/Z1EcJQ)  
August 2017

Blaine T. Bettinger  
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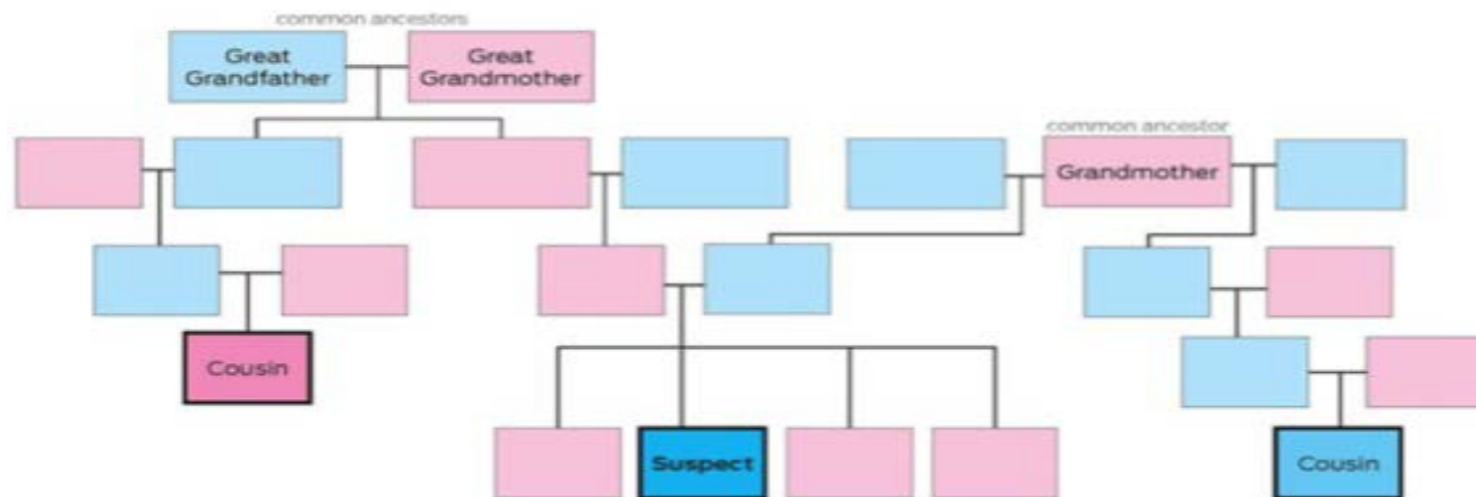


Half GG-Aunt/Uncle 187 12 - 383	Great-Grandparent 881 464 - 1486										Great-Great-Aunt/Uncle 427 191 - 885	GGGG-Aunt/Uncle	Other Relationships
Half Great-Aunt/Uncle 432 125 - 765	Grandparent 1766 1156 - 2311					Great Aunt/Uncle 914 251 - 2108						6C 21 0 - 86	
		Half Aunt/Uncle 891 500 - 1446	Parent 3487 3330 - 3720			Aunt/Uncle 1750 1349 - 2175						6C1R 16 0 - 72	
Half 3c 61 0 - 178	Half 2c 117 9 - 397	Half 1C 457 137 - 856	Half-Sibling 1783 1317 - 2312	Sibling 2629 2209 - 3384	SELF	1C 874 553 - 1225	2c 233 46 - 515	3c 74 0 - 217	4c 35 0 - 127	5c 25 0 - 94	6C2R 17 0 - 75		
Half 3c1R 42 0 - 165	Half 2c1R 73 0 - 341	Half 1C1R 226 57 - 530	Half Niece/Nephew 891 500 - 1446	Niece/Nephew 1750 1349 - 2175	Child 3487 3330 - 3720	1C1R 439 141 - 851	2c1R 123 0 - 316	3C1R 48 0 - 173	4C1R 28 0 - 117	5C1R 21 0 - 79	7C 13 0 - 57		
Half 3c2R 34 0 - 96	Half 2c2R 61 0 - 353	Half 1C2R 145 37 - 360	Half Great Niece/Nephew 432 125 - 765	Great-Niece/Nephew 910 251 - 2108	Grandchild 1766 1156 - 2311	1C2R 229 43 - 531	2c2R 74 0 - 261	3C2R 35 0 - 116	4C2R 22 0 - 109	5C2R 17 0 - 43	7C1R 13 0 - 53		
Half 3c3R	Half 2c3R	Half 1C3R 87 0 - 191	Half GG Niece/Nephew 187 12 - 383	Great-Great-Niece/Nephew 427 191 - 885	Great-Grandchild 881 464 - 1486	1C3R 123 0 - 283	2c3R 57 0 - 139	3C3R 22 0 - 69	4C3R 29 0 - 82	5C3R 11 0 - 44	8C 12 0 - 50		

Minimum was automatically set to 0 cM for relationships more distant than Half 2C, and averages were determined only for submissions in which DNA was shared

C = cousin R = removed

Suspect family tree based on genetic genealogy



Forensic Science International