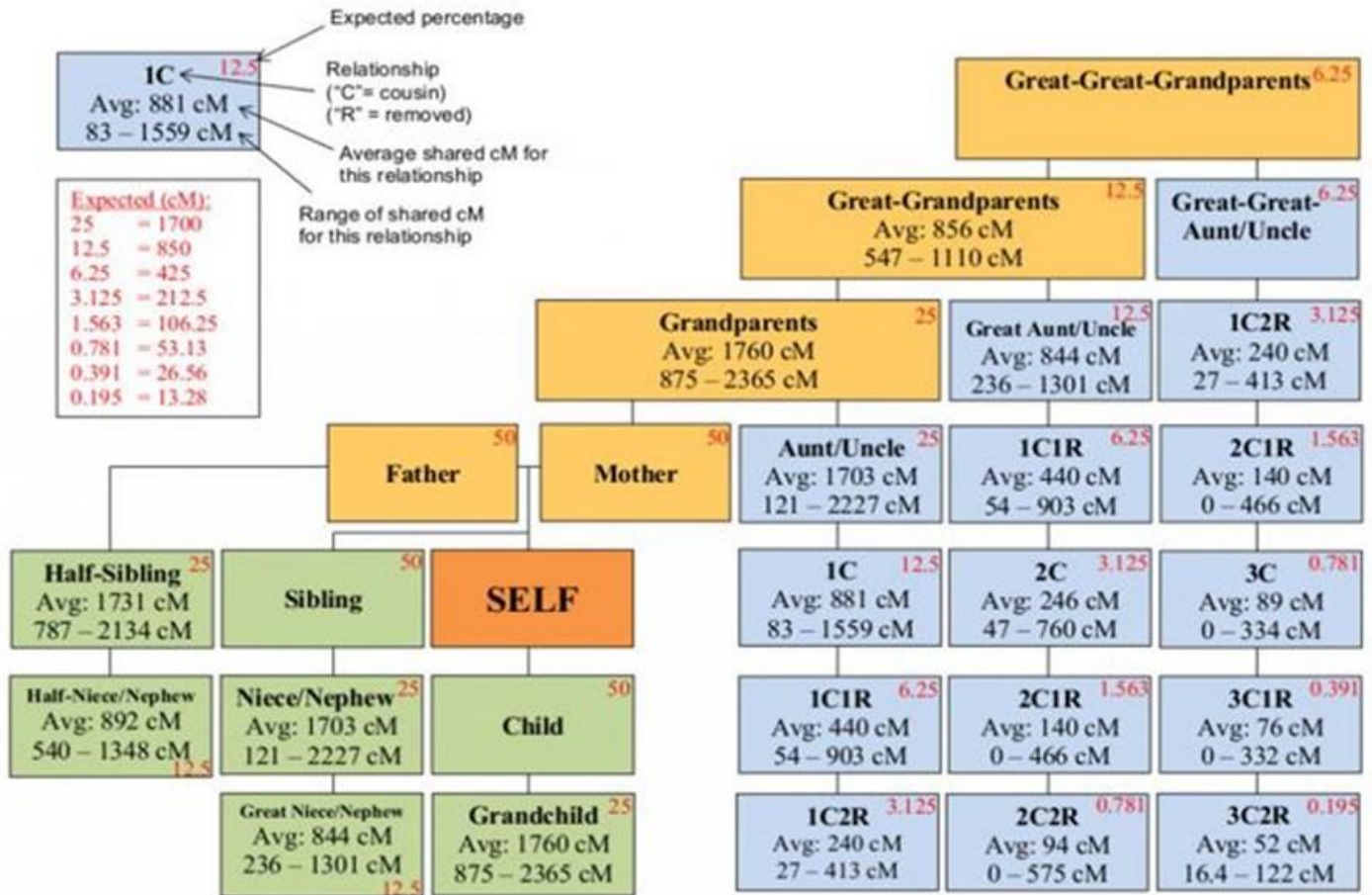


# DNA Match Placement Reference Guides

## I. Autosomal DNA matches

### A. Shared cM Project – 2015 Chart

<https://thegeneticgenealogist.com/2015/05/29/visualizing-data-from-the-shared-cm-project/>



This chart and the next chart were published by Blaine T. Bettinger with a CC 4.0 attribution license. No changes were made to his material.

## B. Shared cm Project – 2017 Chart <https://dnainter.com/tools/sharedcmv4>

										Great-Great-Great-Grandparent		GGGG Aunt / Uncle											
										Great-Great-Grandparent		GGG Aunt / Uncle											
Half GG-Aunt / Uncle 187 12 – 383		Great-Grandparent 881 464 – 1486							Great-Great-Aunt / Uncle 427 191 – 885		Other Relationships												
		Half Great-Aunt / Uncle 432 125 – 765		Grandparent 1766 1156 – 2311				Great-Aunt / Uncle 914 251 – 2108															
				Half Aunt / Uncle 891 500 – 1446		Parent 3487 3330 – 3720		Aunt / Uncle 1750 1349 – 2175															
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	

## C. Ancestry's cM Possible Relationship Chart

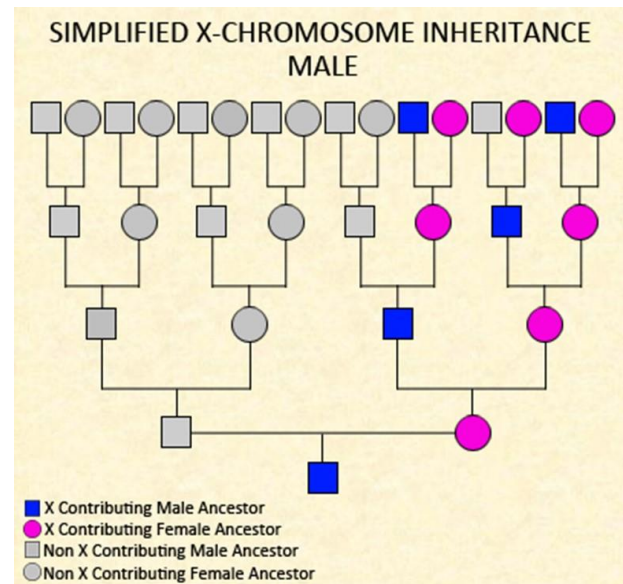
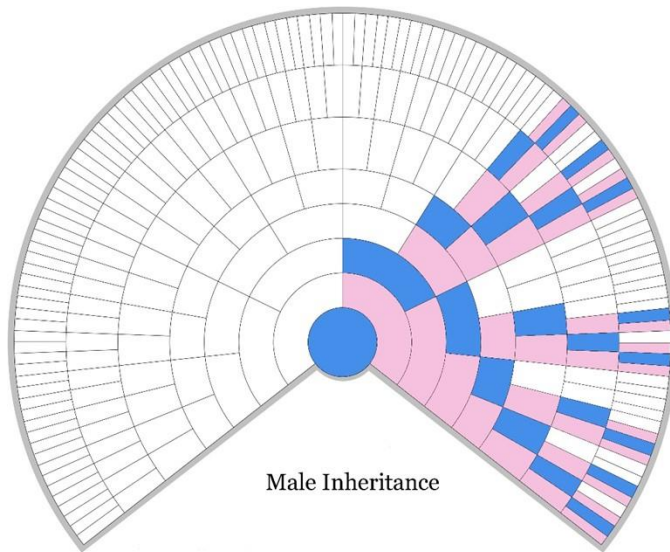
The amount of centimorgans you share with this match can help you understand the relationship, but may range from 2 to 4 degrees of separation. For example, 3rd cousins usually share about 120 centimorgans, but could share as few as 90 or as many as 200.

Approximate amount of shared DNA (in centimorgans)	Possible relationship
3,475	Parent, child, or identical twin
2,400–2,800	Full sibling (including fraternal twins)
1,450–2,050	Grandparent, aunt, uncle, half-sibling
680–1,150	1st cousin, great-grandparent
200–620	2nd cousin
90–180	3rd cousin
20–85	4th cousin
6–20	Distant cousin: 5th cousin – 8th cousins

\*The exact amount of shared DNA can vary beyond the ranges shown in the table.

## II. X-DNA matches.

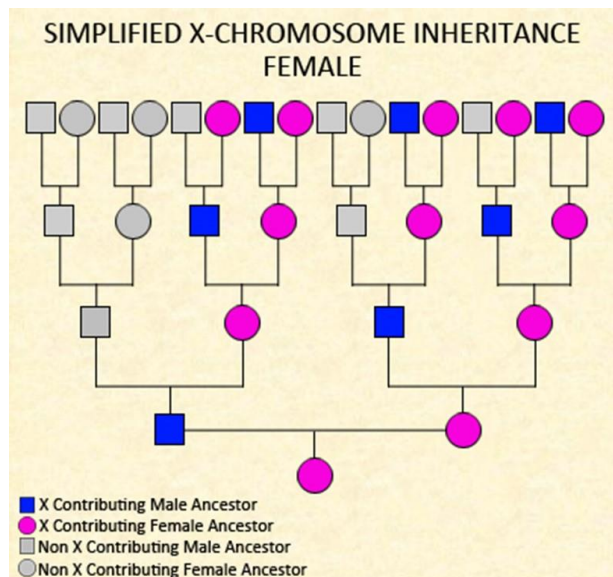
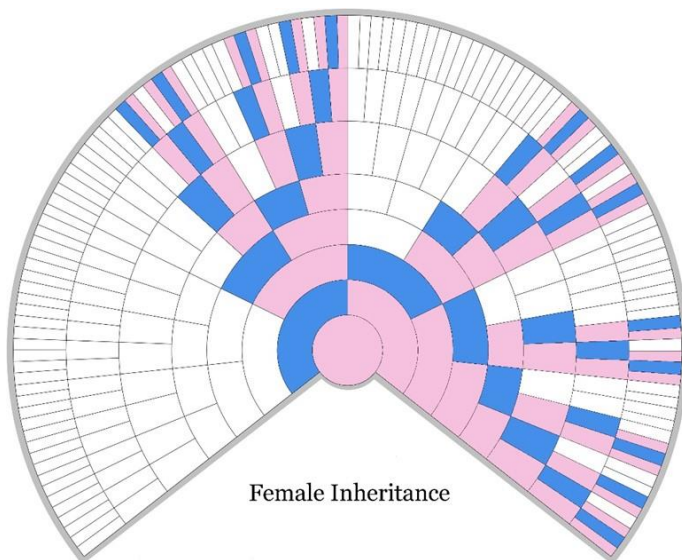
### A. Male Charts



### B. Male Rules

1. The male receives an X chromosome from his mother.
2. The male passes down his X-DNA to his daughters.

### C. Female Charts



### D. Female Rules

1. The female receives an X chromosome from her father and mother.
2. The mother passes down an X chromosome to male and female children.
3. The mother may pass down a recombined X chromosome and the child inherits traits from both maternal grandmothers.

## **A Guide to Placing X-DNA Matches in Your Genealogical Tree**

### **A. General**

1. You can attribute X segments to particular grandparents by comparing your X-DNA with cousins and other close relatives from each side of your family.
2. Focus on larger segments of 20cM or more. Smaller segments may not be reliable.
3. Mitochondrial DNA is not the same as X DNA. mtDNA is inherited maternally. Mothers give their mtDNA to all her children. mtDNA is not part of the 23 paired chromosomes. It surrounds the nucleus of each cell.
4. The X chromosome does recombine when it can, or at least has the capacity to do so. This means that a female who receives an X from both her father and mother receives a recombined X from her mother, but receives an X that is not recombined from her father. In the mother, the X recombines "in the normal way" meaning that parts of both her mother's and her father's X are given to her children, or at least that opportunity exists.
5. X DNA can define maternal and paternal lines for females. Cousins may be separated into maternal and paternal lines.
6. Adoptees may use X-DNA as a tool to help identify their biological mother, siblings, and/or half siblings.
7. People who must share X-DNA include a mother and her children, a father and his daughters, and sisters who have the same father.

### **B. Females**

1. A daughter will share a whole X chromosome with her father.
2. Full sisters will share a whole X chromosome, from their father.
3. Half-sisters will share a whole X chromosome if they have the same father.
4. Fathers contribute their whole X DNA to their daughters.
5. If a female has an X DNA match, the shared ancestor must come from the female inheritance pattern.
6. If half-sisters with the same mother share most of their X-DNA, they would have inherited it either from the same maternal grandparent, or the same or very similar recombined X.

7. The X chromosome does recombine when it can, or at least has the capacity to do so. This means that a female receives an X from her father and a recombined X from her mother, with traits from her maternal grandmother and great-grandmother.

8. If half-sisters with the same mother share very little X-DNA with each other, one would have inherited most of her X from her mother's father and the other would have inherited most of her X from her mother's mother, or they each inherited the exact opposite of a recombined X.

#### C. Mothers

1. The X chromosome does recombine when it can, or at least has the capacity to do so. In the mother, the X recombines "in the normal way" meaning that parts of both her mother's and her father's X are given to her children, or at least that opportunity exists.

#### D. Males

1. If a male shares X-DNA with a match, then the ancestor in common will be on his mother's ancestral lines, according to the X inheritance patterns in the 'Male' chart.

2. All of a male's X DNA comes from his mother.

3. If a male has as an X DNA match, the shared ancestor must come from the male X DNA inheritance pattern (maternal ancestral line).

4. If brothers share very little X-DNA with each other, one would have inherited most of his X from his mother's father and the other would have inherited most of his X from his mother's mother, or they inherited the exact opposite of a recombined X.

5. If brothers share most of their X-DNA, they would have inherited it either from the same maternal grandparent, or the same or very similar recombined X from both maternal grandparents.

#### E. Fathers

1. A daughter will share a whole X chromosome with her father.

2. Full sisters will share a whole X chromosome, from their father.

3. Half-sisters will share a whole X chromosome if they have the same father.

4. Fathers contribute their whole X DNA to their daughters.

#### F. Siblings

1. If siblings have tested their autosomal DNA, and a brother has X-matches in common with his sister(s), then the sisters will know that those particular X-matches must have come from their mother, as their brother could only have inherited them from their mother.