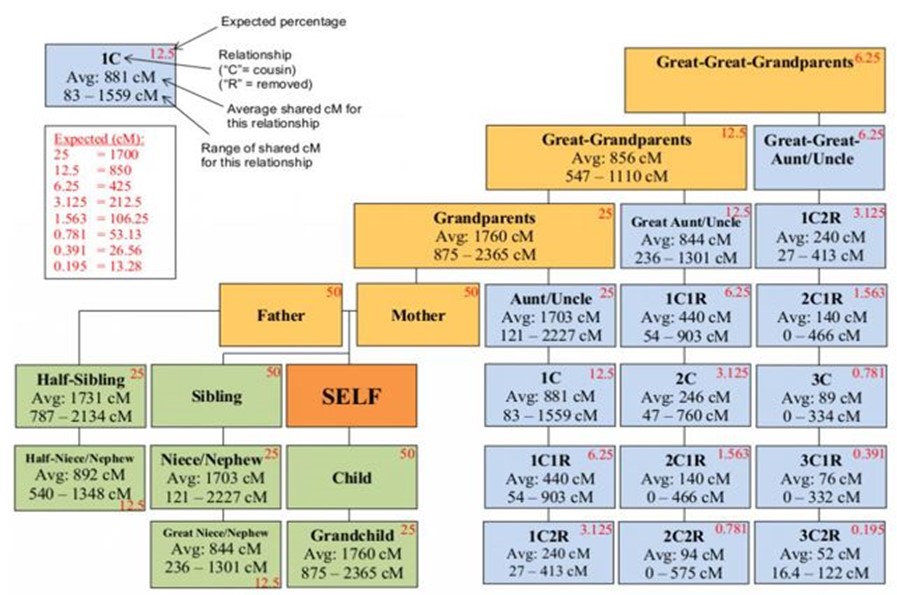
**DNA Match Placement Reference Guides**

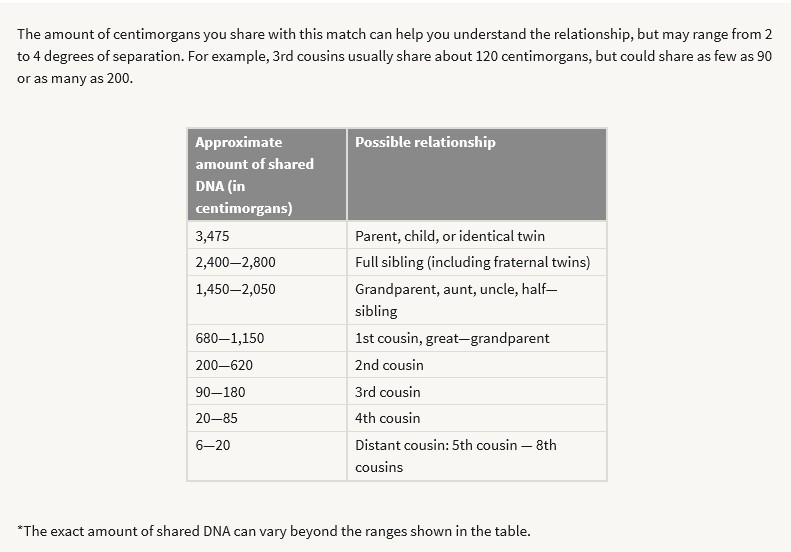
I. Autosomal DNA matches

 A. Shared cM Project – 2015 Chart <https://thegeneticgenealogist.com/2015/05/29/visualizing-data-from-the-shared-cm-project/>

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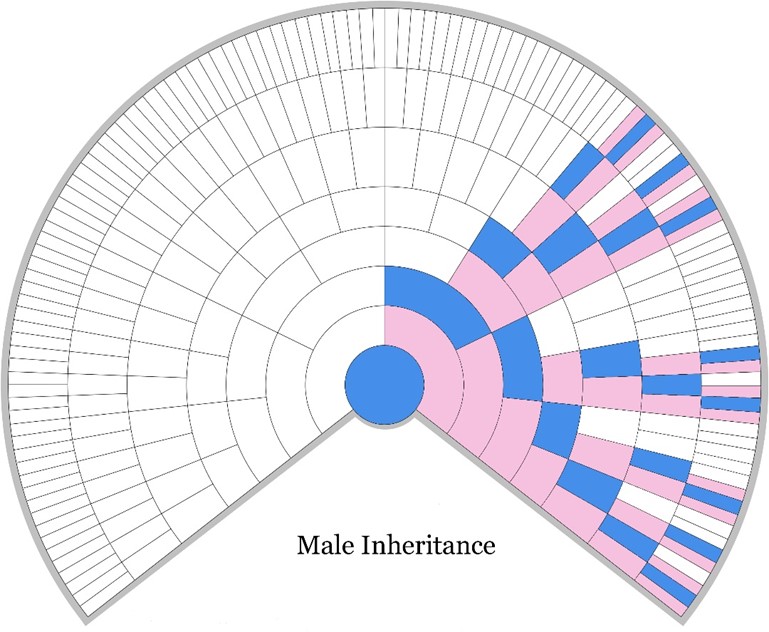
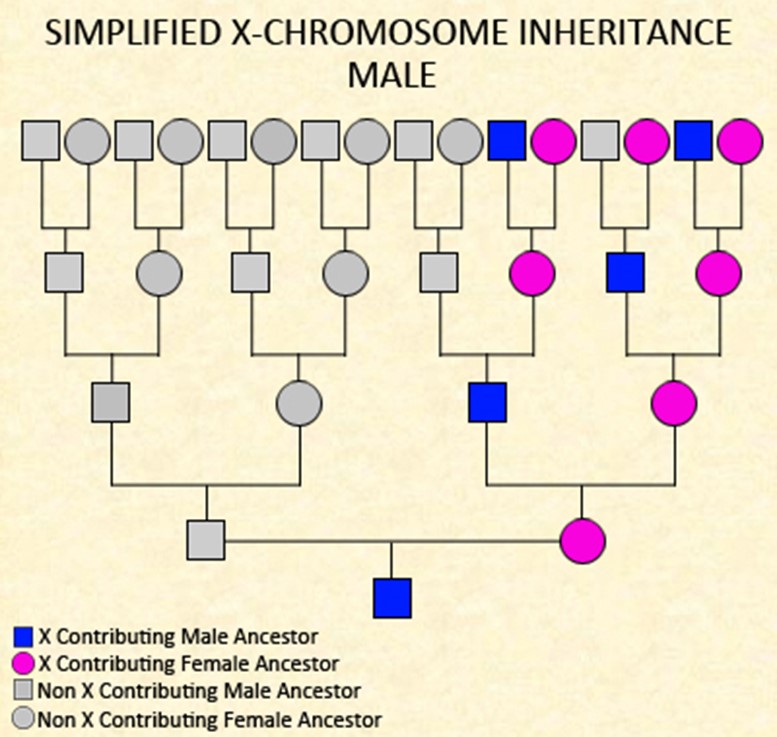
B. Shared cm Project – 2017 Chart <https://dnapainter.com/tools/sharedcmv4>

C. Ancestry’s cM Possible Relationship Chart



II. X-DNA matches.

A. Male Charts

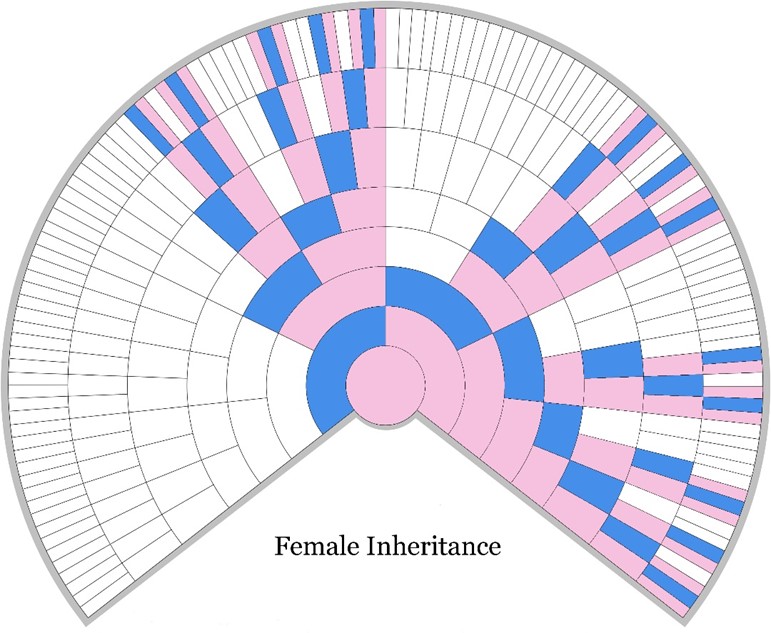
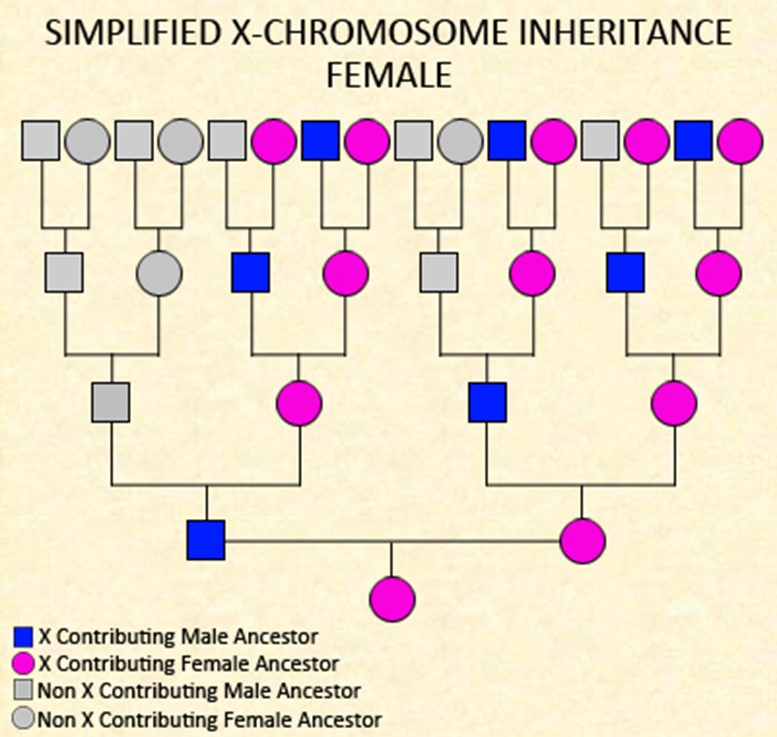


B. Male Rules

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 and 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**

1. General
2. 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.
3. Focus on larger segments of 20cM or more. Smaller segments may not be reliable.
4. 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.
5. 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.
6. X DNA can define maternal and paternal lines for females. Cousins may be separated into maternal and paternal lines.
7. Adoptees may use X-DNA as a tool to help identify their biological mother, siblings, and/or half siblings.
8. People who must share X-DNA include a mother and her children, a father and his daughters, and sisters who have the same father.
9. 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.

1. 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.

1. 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.

1. 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.

1. 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.