Gene Linkage and Polyploidy

Genetic Recombination

Genetic Recombination is the action of recombining DNA with some random modifications

Factors that influence the randomness include

- The random arrangement of chromosomes when they line up for meiosis
- Crossing over at random points in the chromosome
- The splitting of the chromosome later on, the orientation is also random

Gene Linkage

Genes that travel close to each other on the chromosome during meiosis may sometimes be linked.

- Linked genes influence each other and do not segregate independently
- This is an exception to Mendel's Law of independence
- Crossing over more often happens between genes that are further away on the chromosome
- Closer chromosomes tend to travel together
- Using the probability of being recombined, you can create a gene map and get a general idea of where the gene are located on the chromosome
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Polyploidy

Polyploidy is when you have more than two copies of a chromosome in each cell.

- The more copies of each chromosome, the cell will need to be bigger, which will make the fruit as a whole bigger
- The word may sound similar to diploid
- Diploid has two copies of each chromosome, but poly has 3 or more
- Coffee for example has 4, sugar cane has 8