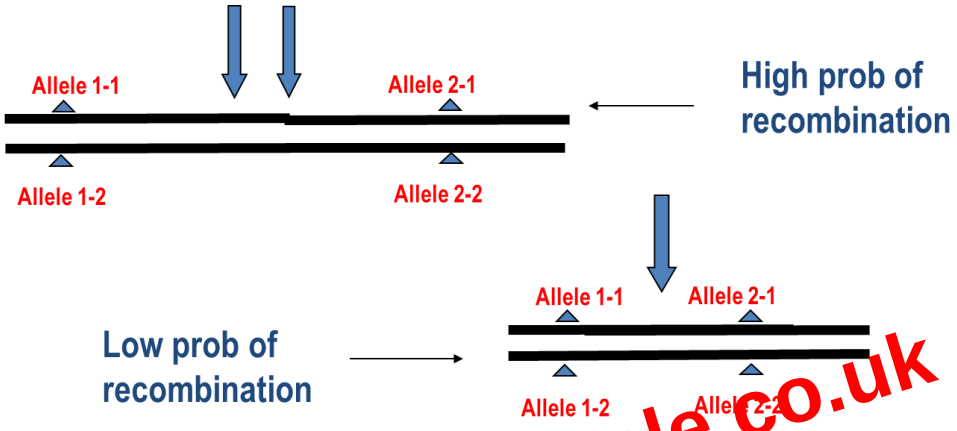
- Genetic loci physically close to one another on the same chromosome tend to stay together during meiosis, and are therefore genetically *linked*. This is called autosomal linkage.
- Even though loci may be physically linked on a chromosome, because crossovers occur, before the chromosomes segregate during meiosis, alleles on the same chromosome can be separated and go to different daughter cells.
- There is a greater probability of crossovers/recombination occurring if the alleles are far apart on the chromosome, as it is more likely that a crossover will occur between them.
- Alleles for genes on different chromosomes are not linked, due to independent assortment of chromosomes during meiosis.



- Mendel ignored crossing over, or as it tends to be known "recombination"
- Bateson and Punnett rediscovered Mendel's work in 1900 and discovered linkage soon after when they started to test his work

- Consequences of meiosis
  - Recombination: movement of genetic material between chromosomes (Prophase 1)
  - Segregation: Even distribution of chromosomes during meiosis. One half of each chromosome pair goes to each gamete (Anaphase 1)
- Genetic Linkage
  - Linked autosomal (Non-sex chromosomes)
    - Genes on same chromosomes, degree of segregation determined by crossing over
  - Sex Linked
    - Genes located on sex chromosomes e.g. White eyed fly on Drosophila X chromosome and colour-blindness on human X chromosome
- Recombination frequency
  - How often crossing over occurs is measured as the fraction or percentage of offspring that inherit recombinant chromosomes
    - These offspring are called "recombinants"
  - Recombinant chromosomes are chromosomes where the alleles of interest have been separated by a recombination event
  - Recombination frequency = (Number of recombinants / Total offspring) x 100