Law of Independent Assortment Encyclopedia Article

Law of Independent Assortment

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Law of Independent Assortment

Originally formulated by the Austrian monk Gregor Johann Mendel (1822-1884), the law of independent assortment states that the distribution of alleles to gametes during **meiosis** is random. If one particular allele goes to one **gamete**, it has no influence on the likelihood of any other allele going to the same gamete.

The law of independent assortment holds true for genes on separate chromosomes, however, there are many cases where the law of independent assortment does not hold true. When the alleles are present on the same linkage group or **chromosome**, they are physically attached to each other and cannot show independent assortment. The further apart the alleles are, however, the more likely that there will be a cross over event between them that results in their subsequent ability to show independent assortment.

Independent assortment implies independence rather than true randomness. Independent assortment does not imply that there are not physical restrictions, or forces, that direct the assortment of chromosome bearing genes, but rather that the events of chromosome assortment do not influence each other. An analogy may be fairly drawn to the simultaneous flipping of two identical coins. Whether one coin lands heads or tails has no effect on whether the second coin lands heads or tails. Regardless of the outcome of the first coin the chances remain 50/50 for either outcome with the second coin.

Translated to genetic terms, the second law of Mendelian **genetics**, the law of independent assortment specifies a random distribution of genes located on different chromosomes to the gametes (in humans, **ovum** and spermatozoa) that are produced via meiotic **cell division** (meiosis).