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Mendel’s trait and Probability of Inheritance

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Mendelian Trait



A Mendelian trait is one that is controlled by a single locus and shows a simple Mendelian inheritance pattern. The traits passing from parental generation to off springs were discovered by Mendel. According to Mendel’s laws if any mutation occurs even in a single gene can cause a disease which has been inherited from the parental generation.

For example, sickle-cell anemia, cystic fibrosis etc. Arthritis is affected by several loci gene mutations and inherited in non mendalian factor as well. So, a disease controlled by a single gene contrasts with a multi-factorial disease has been proved in this case. The Mendelian Inheritance in Man, proves that genes inherited can cause disease.

Probability of Inheritance

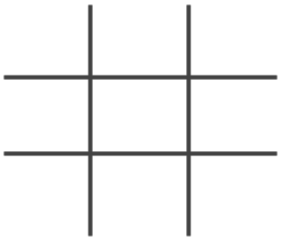
Genetics study helps us to understand the inheritance patterns and can predict the inheritance of particular trait. P can have better ideas to create better varieties with the desired qualities. Humans also have an idea about their family pattern of inheritance.

Punnett square

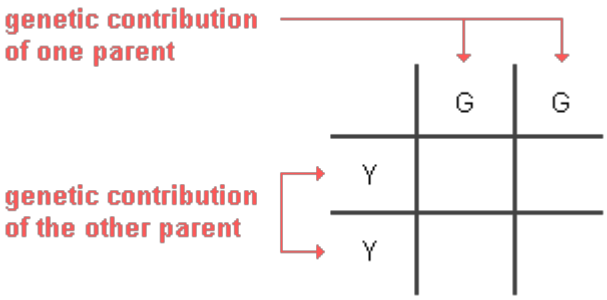
To calculate the mathematical probability of inheriting a specific trait is an easy way of understanding or predicting a particular trait. In early 20th century Reginald Punnett invented a technique to find the probability of chances of inheriting a trait. It is termed as Punnett square. To discover the potential combinations of genotypes occur in children received from their parents can be calculated in a graphical method. Odds of each of the offspring genotypes occurring can also be predicted.

How to use Punnet square?

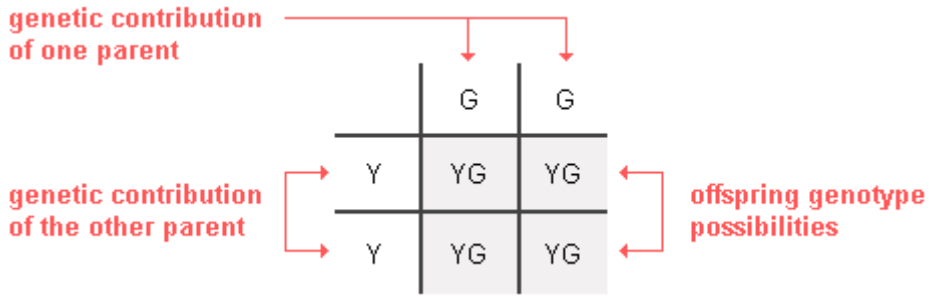
If you undertand the working of Punett square, it will be very simple to use the Punnett square . First draw lines. For your reference it is shown below.



Now you write the genotype of one parent across the top and write the genotype of other parent down the left side. For your easy understanding given below shows the pea plant genotypes. They are YY and GG and the setup would be:



Only one letter can goes in each box for the parents. You can write the genotype of any parent in any side. It won't affect the calculation.



Now start filling the boxes by copying the row and column-head letters across or down into the empty squares. We can predict the frequency of all possible potential genotypes among the offspring after each reproduction.

Here 100% of the offspring would be heterozygous (YG). Y allele is dominant and G allele is recessive. The YG shows yellow colour only and the Y is dominant over G. This is Mendel's experimental observation and was proved by many researches.

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