Multiple allele

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Outline

- Introduction and Defination
- Features of Multiple allele
- Examples of Multiple allele
    a. **Blood group in human being**
    b. **Coat colour in mice**

Introduction

"Multiple allele- When more than two different form of given gene exist in a species they are called as multiple allele"

- Normally individual has two alleles
- During his study on Genetic Mendel also assumed only two alleles of one trait.
- There can be large number of possible allelic forms in that same population. This situation is called as multiple allelism.

Features of Multiple Alleles

- Multiple alleles always occupy the same locus on the chromosome.

- Multiple alleles always influence the same character.

- No crossing over among the member alleles of the same multiple allelic series.

Examples of Multiple Alleles

a) **Blood group (ABO) in human.**

b) Coat color in mice.

c) Coat color in rabbit.

d) Eye color in Drosophila.

Blood group (ABO) in human

- Classical and most common example of multiple allele is ABO blood group of human being

- **Gene coding blood group has three alleles rather than two.**

- For the ABO gene, the three alleles are the I^A, I^B and i alleles. We typically call these alleles "A," "B," and "O,"

- "letter "I," stands for "immunoglobin."

Cont...

- **The I^A and I^B show co-dominance** - an individual who is heterozygous for these two alleles, the phenotypes of both alleles are completely expressed, thus producing blood type AB.

- The **i allele (the "O" allele) is recessive** to both the I^A and I^B alleles (the "A" and "B" alleles).

Sr.no	Genotype	Phenotype
1	I^AI^A or I^Ai	Type A
2	I^BI^B or I^Bi	Type B
3	I^AI^B	Type AB
4	ii	Type O

Coat color in Mice

- The coat or hair color in mice is determined by a single gene with a series of alleles.
- Alleles for black, brown, agouti, gray, albino, and other colors of hair.
- These alleles follow order of dominance like **agouti > black > albino.**
- This means that agouti is dominant to black and albino; black is dominant to albino.