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Wed., 20th Jan. 2010.

Multiple Allele.

The various forms of gene are called allele. When three or more alleles are responsible for a single characteristic are called multiple allele All these alleles occupy the same specific locus on the chromosome. In diploid cell only 2-allele can be present at a time on a homologous chromosome.

If the several alleles may show themselve within the same phenotypic range either in wild or mutant such allele is called iso-allele. If the phenotype is wild called wild-isoallele. If the phenotype is mutant called mutant isoallele.

Several eg. have been given to explain the behaviour of multiple allele such as colour loci in corn, skin colour in Rodents, Eyes in Drosophilla, self stelity in Necotiana. blood group in human being.

Inheritance of blood type :- There are 4-types of blood groups, i.e; A, B, AB & O are 4-phenotypes.

* A & B contain two type of antigens (glycoprotein).
* AB blood group cells contain the antigen (glyco-protein)
* O blood doesn't contain antigen.

Teacher's Signature

* d antigen is produced by an autosomal gene.

The blood gr. characters is controlled by a set of alleles — I^A, I^B & i or I^o.

When a person carries a gene for A-antigen & gene for B-antigen, his blood will contain both antigens. Hence neither gene dominant over the other. a condition similar to intermediate interitance. (lack of dominance).

i) The gene which produces antigen A is denoted by I^A — blood gr. — 'A' type.
ii) The gene for antigen B by I^B — 'B' type.
iii) The gene for absence for both the antigens i or I^o. blood gr. — 'O' type.
iv) Gene I^A & I^B are both dominant over gene I^o or i.
v) I^o or i are dominant in absence of I^A & I^B.
vi) The person with both ~~the glycoprotein~~, allele $I^A I^B$ produces both the glycoprotein, allele I^A or I^B are said to be co-dominant.

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Phenotype	Genotype	Antigen
Type - A	I^AI^A or I^AI^O	A
Type - B	I^BI^B or I^BI^O	B
Type - AB	I^AI^B	A & B
Type - O	I^OI^O or ii	Non (absent)

Fig: Showing phenotype, genotype & antigen

If a blood gr. - A (male) is crossed with blood gr. - B (female).

Heterozygous for male blood gr. - A

↓

I^AI^O

Heterozygous for blood gr. - B I^BI^O

	I^A	I^O
I^B	I^AI^B Group - AB	I^BI^O Group - B
I^O	I^AI^O Group - A	I^OI^O group - O

Result - I^AI^B — Blood group - AB

I^BI^O — " " - B

I^AI^O — " " - A

I^OI^O — " " - O

Fig cross between a male I^AI^O & female I^BI^O.