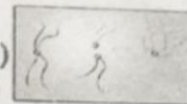


- ***OTHER INHERITANCE PATTERN:***

© Companies, Inc. Permission required for reproduction or display.

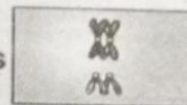
Diploid Cell ($2N = 4$)

(a)

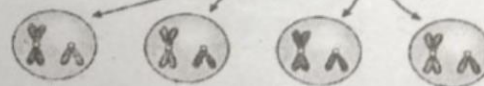


Prophase I: Synapsis of homologous chromosomes

(b)

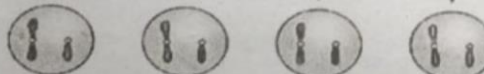


(c)



Possible combinations of chromosomes in haploid cells after segregation of homologous chromosomes during meiosis I. All possible combinations of one member of each pair is represented.

(d)



Meiosis II results in separation of chromatids but no further reduction in chromosome number.

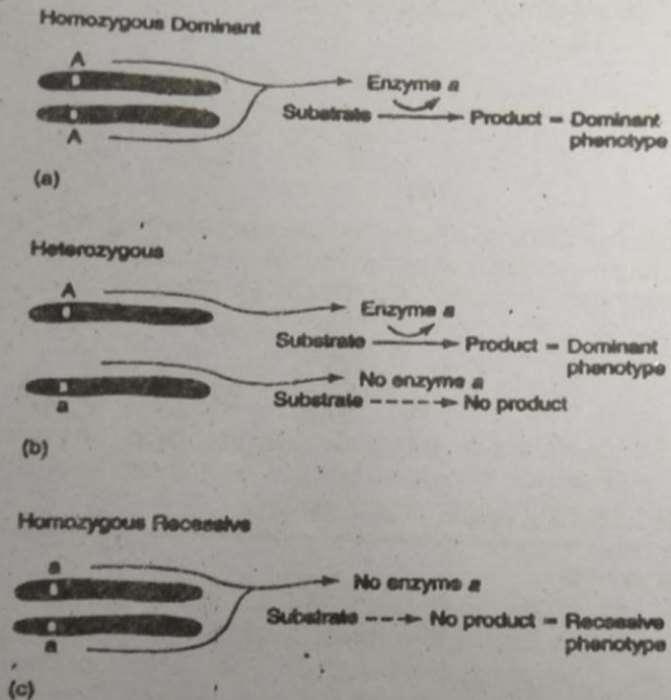
OTHER INHERITANCE PATTERN

Multiple alleles

The presence of more than two alleles in a single gene in different combination is called multiple alleles. Normally two genes determine the traits in one individual. One gene is carried on each chromosome of a homologous pair. Some populations have many different alleles. They can transfer these alleles to any member of the population. These are called multiple alleles. Genes for a particular trait are present at the same position on a chromosome. The position of gene on the chromosome is called its **locus**. Numerous human loci have multiple alleles. Three alleles, symbolized I^A , I^B and i , determine the ABO blood types.

- ♦ The allele i is recessive to I^A and to I^B .
- ♦ I^A and I^B are neither dominant nor recessive to each other. When I^A and I^B are present together, both are expressed.

GENOTYPE (s)	PHENOTYPE
$I^A I^A, I^A i$	A
$I^B I^B, I^B i$	B
$I^A I^B$	A and B
ii	O



Incomplete Dominance and Codominance

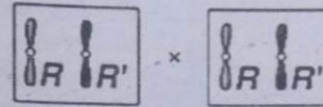
The interaction between two alleles that are expressed more or less equally, and the heterozygote is different from their homozygote is called incomplete dominance.

Example

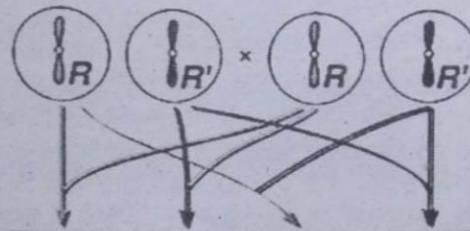
In cattle, the alleles for red coat color and for white coat color interact to produce an intermediate coat color. This colour is called **roan**. Both red and the white allele are not dominant. Therefore, capital letters and a superscript are used to represent genes. Thus, red cattle are symbolized RR , white cattle are symbolized $R'R'$, and roan cattle are symbolized RR' .

$R' = \text{white}$
 $R = \text{red}$

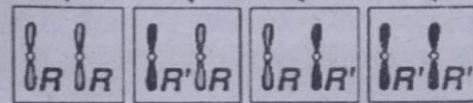
Parents



Gametes



Offspring



1 red : 2 roan : 1 white

Codominance

The phenomenon in which heterozygote expresses the phenotypes of both homozygote is called Codominance. In the ABO blood types, the I^A , I^B heterozygote expresses both alleles.