

2. Homozygous - both alleles are same
 Heterozygous - both alleles are different

The pattern of inheritance of monogenic traits may occur in:

a) **AUTOSOMAL DOMINANT INHERITANCE -**

PARENTS -

Male - Genotype - Aa, (Affected male)

Female - Genotype - aa, (Normal female)

a a

A	Aa	Aa
a	aa	aa

CHILDREN

Genotype - 1:1

Phenotype - 50% affected
(50-normal)

b) **AUTOSOMAL RECESSIVE INHERITANCE -**

PARENTS -

Male - Genotype - Bb (carrier male)

Female - Genotype - Bb (carrier female)

B	BB	Bb
b	Bb	bb

CHILDREN

Genotype - 1:2:1

Phenotype - 25% affected
(25-normal, 50-carriers)

c) **X-CHROMOSOME (SEX CHROMOSOME) - LINKED INHERITANCE**

PARENTS -

Male - Genotype - XY (Normal male)

Female - Genotype - X^cX (carrier female)

X ♀ X^c

X	XX	X ^c X
Y	XY	X ^c Y

CHILDREN

Genotype - 1:1:1:1

Phenotype - 50% males affected

GENETIC DISEASES IN HUMANS

Aneuploidy :- abnormal number of chromosomes

most common - trisomy - three copies of chromosome

Down's syndrome ← trisomy 21

trisomy 18 instead of normal two

→ autosomal aneuploidy ← Edward's syndrome.

EUGENICS :- science of improving human race based on genetics.

objective - to limit the production of people who are unfit to live in the society.