Sex Influenced Inheritance

Sex Influenced Inheritance :

Certain genes express the dominance depending up on sex of the individual. Such inheritance is called as sex linked inheritance.

Body coat colour of Ayreshire Cattle

Red & White or Mahogany & White

When; Mahogany & White X Red & White

F1 : Males : Mahogany & White

Females : Red & White

F2 Males : 3 Mahogany & White : 1 Red & White

Females : 3 Red & White : 1 Mahogany & White

Let ‘M’ represent Mahogany & White;

While ‘m’ represents Red & White

One allele is dominant in males while other allele in females. In this example Mahogany & White gene (M) is dominant in Males while Red & White gene (m) is dominant in females

Genotype	Male	Female
MM	Mahogany & White	Mahogany & White
Mm	Mahogany & White	Red & White
mm	Red & White	Red & White

Parent: Mahogany & White Male X Red & White Female

Genotype MM X mm

Gametes M m

F1 Mm Mm

Mahogany & White Male Red & White Female

F1 X F1 Mahogany & White Male X Red & White Female

Genotype Mm X Mm

Gametes M, n M, m

F2 Males: 3 **Mahogany & White : 1 Red & White**

Gametes	M	m
M	MM Mahogany & White	Mm Mahogany & White
m	Mm Mahogany & White	mm Red & White

F2 Females: 3 **Red & White : 1 Mahogany & White**

Gametes	M	m
M	MM Mahogany & White	Mm Red & White
m	Mm Red & White	mm Red & White

Inheritance of Horn in Sheep

In Dorset both sexes are horned while Suffolk both are hornless.

When; Horned (Dorset) X Hornless (Suffolk)

F1 : Males : Horned

Females : Hornless

F2 Males : 3 Horned : 1 Hornless

Females : 3 Hornless : 1 Horned

Genotype	Male	Female
HH	Horned	Horned
Hh	Horned	Hornless
hh	Hornless	Hornless

Baldness in Human

In human baldness pattern is hereditary. More in man than woman. It is not recessive sex linked inheritance as father transmits baldness to son & about half of the sons are bald.

When; Bald Man X Non-bald Woman

F1 : Males : Bald Females : Non-bald

F2 Males : 3 Bald : 1 Non-bald

Females : 3 Non-bald : 1 Bald

Genotype	Male	Female
BB	Bald	Bald
Bb	Bald	Non-Bald
bb	Non-Bald	Non-Bald

Sex Limited Genes

Sex Limited Genes:

Genes which are capable of expression in only one sex, but not in other are called as sex limited genes.

e.g. Beard in Man, Breast development in Woman.

Genes for these traits are present in both sexes, but not expressed in one sex. This is due to presence of sex hormone. A hormonal disturbance may alter the expression.

Milk production in Cattle:

Egg Production in poultry.

Feathering pattern in poultry.

Poultry Hen feathered & Cock feathered pattern are seen

Sea-bright bantam – Male & Female Hen feathered

Campines & Hamgurghs both Hen feathered & cock feathered males are seen.

H allele : Hen feathering, Dominant to h

h : Cock feathering, which is expressed only in males.

Genotype	Cock	Hen
HH	Hen- feathered	Hen- feathered
Hh	Hen- feathered	Hen- feathered
hh	Cock- feathered	Hen- feathered

Removal of testes in hen feathered males or ovary in females results in cock feathering even though ‘H’ gene is present. Therefore, hormones control the expression of these characters.