**Sex Linked Inheritance**

Sex-linked inheritance involves genes present on a specific portion of the sex chromosomes (the 23rd pair).

**Male** =



If a gene is present on this part of the sex chromosome, a male can only have 1 allele, not two.

**Female** =

 

Females being two X chromosomes can have two alleles (normal pattern of inheritance).

This has implications in predicting inheritance as the male will possess only one allele – males have no backup copy of the gene. Males are therefore more susceptible to diseases or conditions caused by recessive genes on this part of the X chromosome, e.g. haemophilia, colour blindness.

**Example:**

Haemophilia is a disease caused by a sex-linked recessive gene (h). If a woman who is heterozygous for haemophilia (that is, she has one dominant and one recessive allele, and does not have haemophilia but is a carrier) has a child with a man without haemophilia. What are the chances any son or daughter will have the diseases?

\* Punnet squares are still used, but used differently and interpreted differently.

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Female** |  |  |
|  |  | **XH** | **Xh** |  |  |
| **Male** | **XH** | XH Xh | XH Xh |  | * **Daughters** (XX) – 100% heterozygous not haemophilia.
* **Males** (XY)

50% recessive phenotype (haemophilia)50% dominant phenotype |
| **Y** | XH Y | Xh Y |