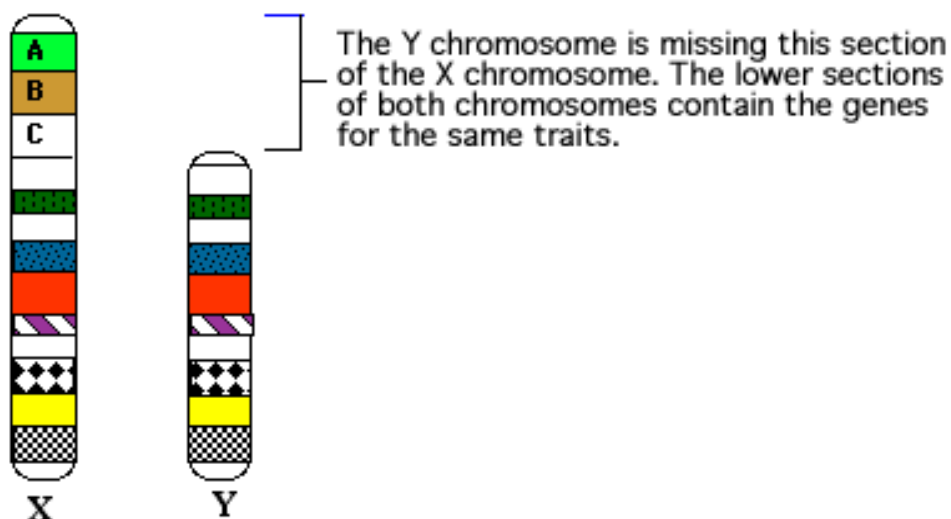


Sex Linked Traits

- traits that are controlled by genes found on the sex chromosomes
- X chromosome contains about 1100 genes, while the Y contains 78
- Y chromosome carries genes that determine sex, X chromosome carry many unrelated sex traits such as
- examples of X linked traits - colour-blind, hemophilia, muscular dystrophy, baldness

Sex-linked Traits



Examples

1. A normal female carries the gene for colour-blindness (which is a sex linked trait), marries a normal male.
 What genotype and phenotype will there children be?

$X^B X^B$ - "normal" ♀
 $X^B X^b$ - "normal" ♀ carrier
 $X^b X^b$ - colour blind ♀
 $X^B Y$ - "normal" ♂
 $X^b Y$ - colour blind ♂

| | | |
|-------|-----------|-----------|
| | X^B | X^b |
| X^B | $X^B X^B$ | $X^B X^b$ |
| X^b | $X^B X^b$ | $X^b X^b$ |
| Y | $X^B Y$ | $X^b Y$ |

2. A colour-blind man marries a normal female. Show all the possible genotypes and phenotypes of their children.

| | | |
|-------|-----------|-----------|
| | X^B | X^B |
| X^b | $X^B X^b$ | $X^B X^b$ |
| Y | $X^B Y$ | $X^B Y$ |

3. A recessive sex-linked trait gene (h) is located on the x chromosome increases the time it takes for blood to clot. This causes the genetic disease, hemophilia.

A. A carrier female and a hemophilic male have children. Use a punnett square to show their possible offspring.

| | | |
|-------|-----------|-----------|
| | X^H | X^h |
| X^H | $X^H X^H$ | $X^H X^h$ |
| X^h | $X^H X^h$ | $X^h X^h$ |
| Y | $X^H Y$ | $X^h Y$ |

B. Explain how a hemophilic offspring can be born to two parents who are not hemophilic's.

C. Can a female develop hemophilia? Show proof