

# DNA EXISTS IN CHROMOSOMES, WHICH CONTAIN THOUSANDS OF GENES.

- During interphase, DNA exists as condensed fibres called **chromatin**
- During mitosis, DNA is found in a very condensed form called **chromosomes**.

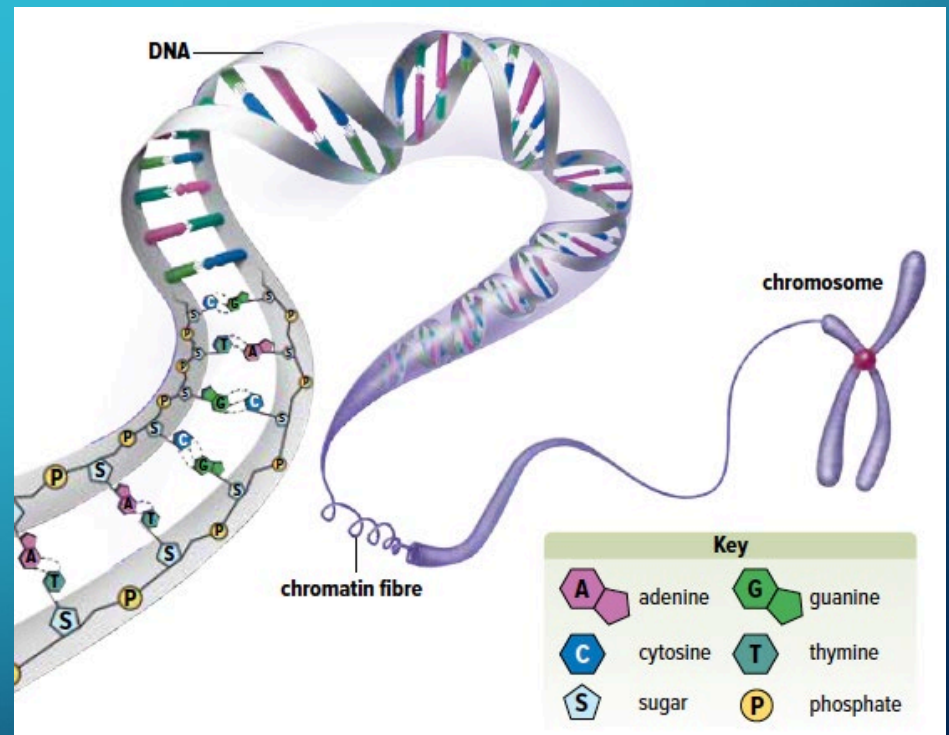


Figure 1.4: DNA is part of chromatin fibre, which condenses to form chromosomes.

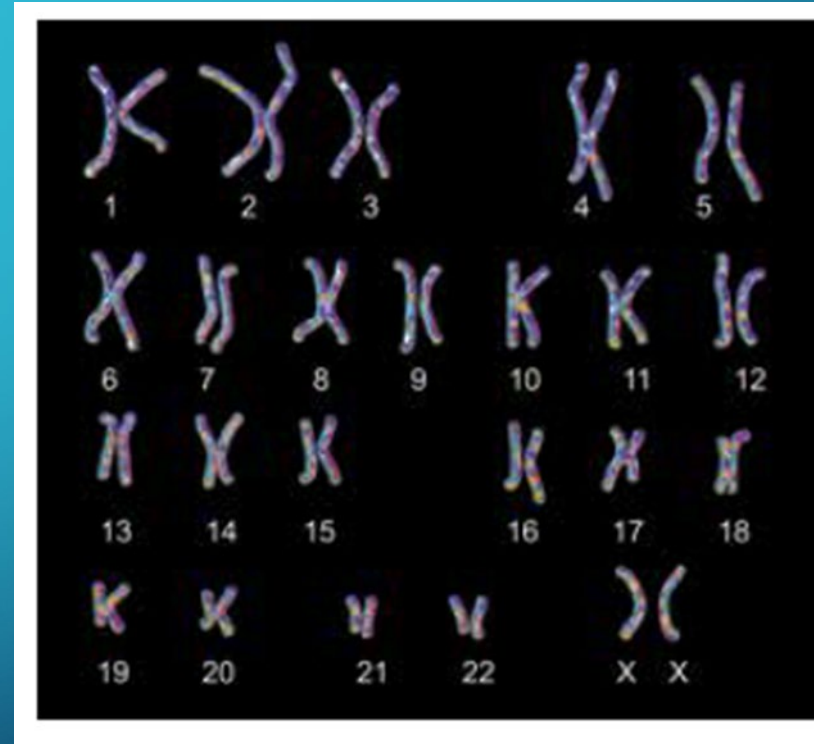
# CHROMOSOME NUMBER

- Each species has a particular # of chromosomes in its cells.
  - Gold Fish = 94
  - Fruit Flies = 8
  - Banana = 22



# CHROMOSOMES ARE PAIRED

- There are 46 chromosomes in human somatic cells.
- Half the chromosomes come from the biological father and the other half are from the biological mother.
- Chromosomes are organized into 23 pairs:
  - One pair consists of the sex chromosomes (X and Y chromosomes).
  - The other 22 pairs are called *autosomes*.



# HOMOLOGOUS CHROMOSOMES –VIDEO LINKED (PLEASE WATCH)

- Chromosomes that are paired are called *homologous chromosomes*
- During fertilization, each parent contributes one chromosome of each pair
- Homologous chromosomes :a chromosome that contains the same sequence of genes as another chromosome
- Homologous chromosomes are not identical to each other.

**Homologous Chromosomes**

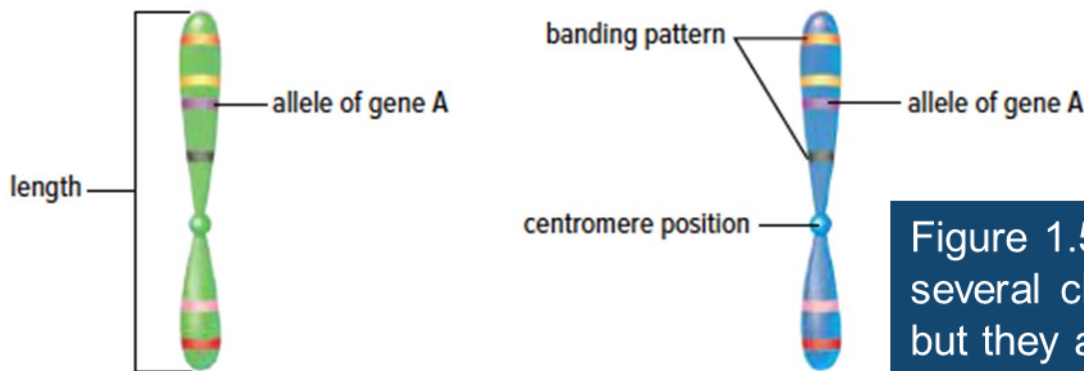
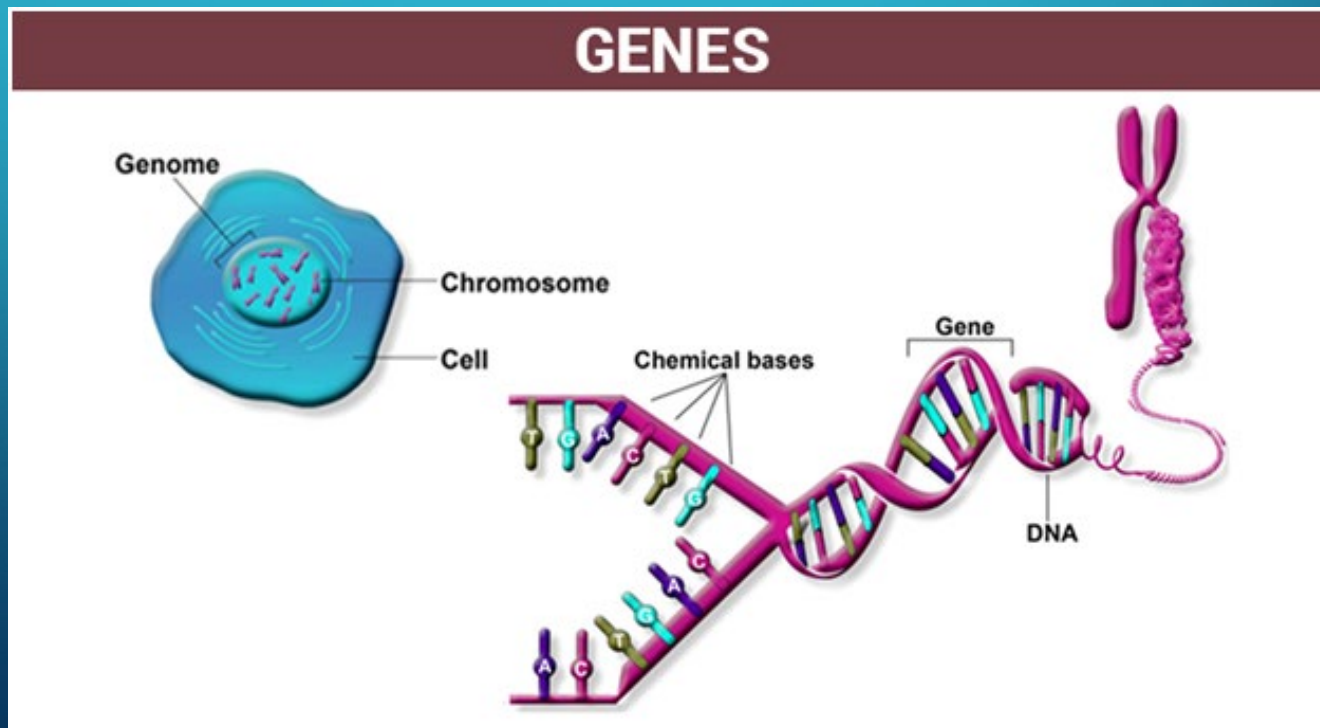


Figure 1.5: Homologous chromosomes have several characteristics in common, but they are not identical.

# GENES

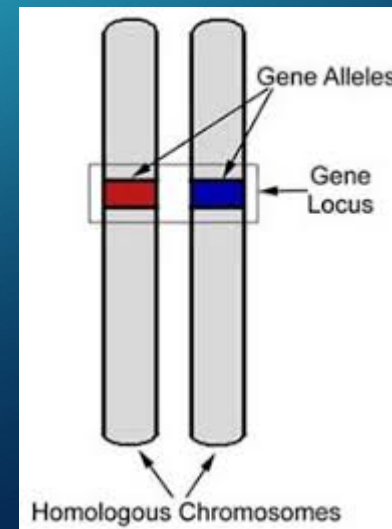
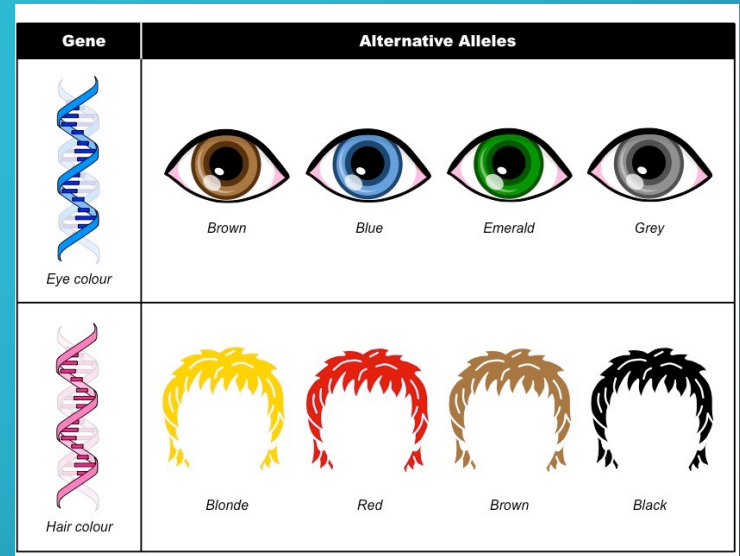
- **Gene:** Short section of DNA that “codes” for a specific protein (instructions for making it).
  - governs the expression of a trait and is passed on to offspring
    - Eye colour, hair colour etc.





# VERSIONS OF A GENE

- **Alleles:** different forms of the same gene
  - *Eg. A homologous chromosome will have two different alleles for the same gene*



# DISCUSSION QUESTIONS

1. Describe the relationships among chromatin, a chromosome, DNA, and a gene.

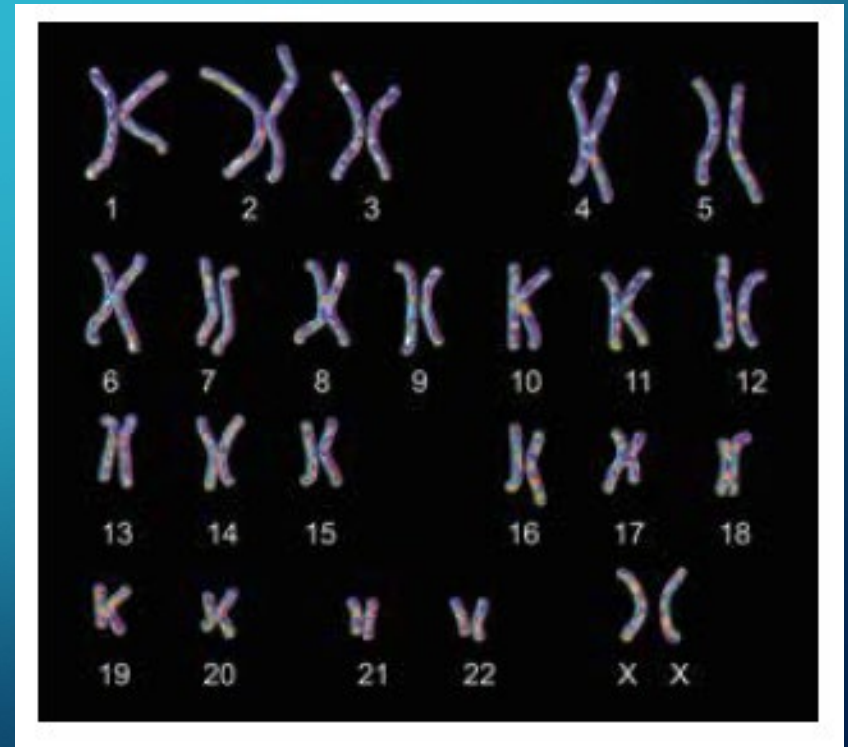
# EXAMINING CHROMOSOMES: THE KARYOTYPE

**Karyotype:** a photograph of pairs of homologous chromosomes in a cell

Biological Female: XX

Biological Male: XY

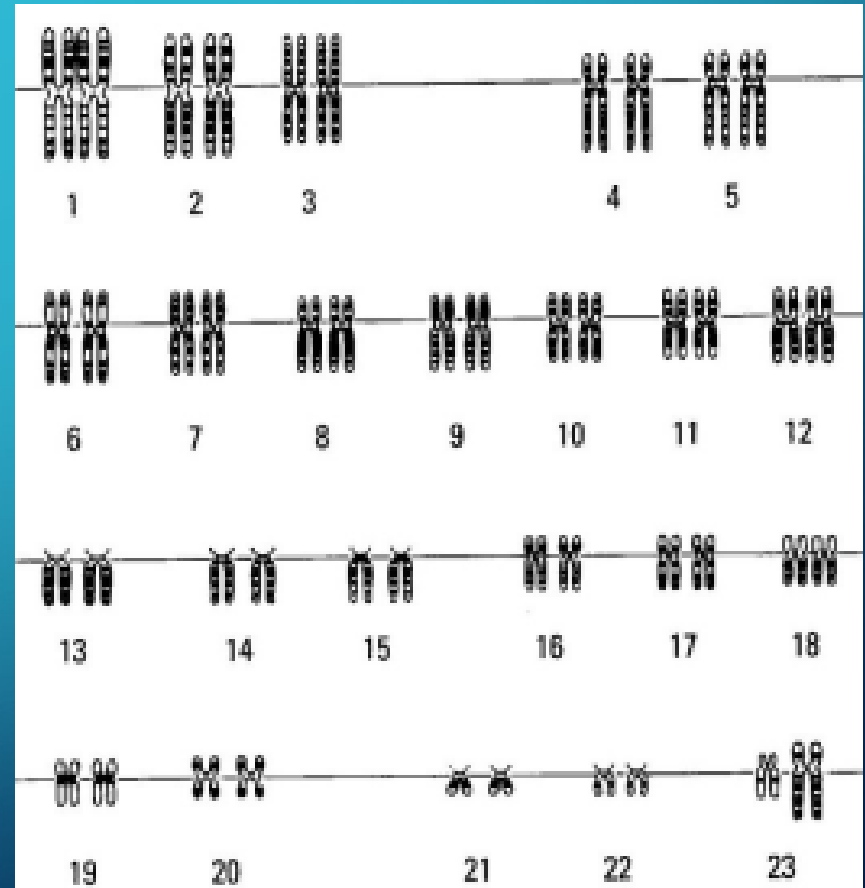
Figure 1.6: This is a human karyotype. The chromosome pairs are arranged and numbered in order of their length, from longest to shortest. The sex chromosomes are placed last.





# ONLINE KARYOTYPE ACTIVITY

- Visit the following link:
  - [DNA KARYOTYPE ACTIVITY](#)
- Complete assignment found on blog using the simulation website.
- Submit Assignment on Teams



# WORKBOOK PG 3-6

- Pages can be found on Teams

