The packaging of DNA, genes and chromosomes: Reference Sheet

Figure 1: The organisation and packaging of DNA, genes and chromosomes
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In order to organise the DNA effectively within the cell and maintain it properly, it is packaged into chromosomes. Our DNA (and therefore genes) is arranged into 23 pairs or 46 individual of chromosomes. The two chromosomes of a pair are known ashomologous chromosomes. One chromosome from each homologous pair is inherited from the mother and the other of the pair is inherited from the father.

The chromosomes are labelled from chromosome 1 which is the biggest pair through to 22 which is the smallest pair. The 23rd pair of chromosomes are the sex chromosomes. Females have two X chromosomes whereas males have an X and a Y chromosome.
Therefore when females make their egg cells these can only contain an X chromosome whilst the sperm can have either an X or a Y chromosome. The father therefore determines the sex of a baby.

Figure 2: The normal male chromosome pattern (known as a karyotype)

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