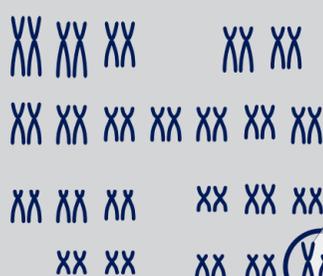


10 Neat Facts About the X Chromosome



CELL

23 pairs of Chromosomes



Sex chromosomes

1

In the nucleus of each cell, DNA is packaged in thread-like structures called **chromosomes**.

X Chromosome

2

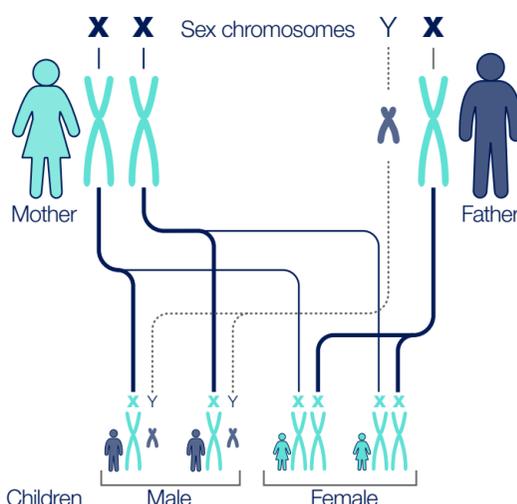
Most human cells contain 23 pairs of chromosomes. One set of chromosomes comes from the mother, while the other comes from the father. The twenty-third pair is the **sex chromosomes**, while the rest of the 22 pairs are called **autosomes**.

3

Typically, biologically female individuals have two X chromosomes (**XX**) while those who are biologically male have one X and one Y chromosome (**XY**). However, there are exceptions to this rule.

4

Biologically female people inherit an X chromosome from their father, and the other X chromosome from their mother. Biologically male people always inherit their X chromosome from their mother.



5

The X chromosome is about three times larger than the Y chromosome, containing about 900 genes, while the Y chromosome has about 55 genes.

X Chromosome



Y Chromosome

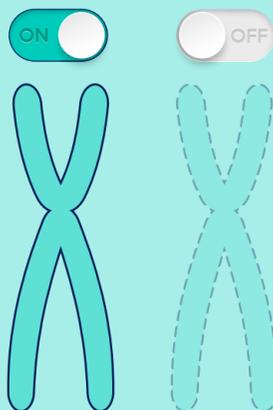


6

Female mammals have two X chromosomes in every cell. However, one of the X chromosomes is **inactivated**. Such inactivation stops transcription from occurring, hence making sure a potentially toxic double dose of X-linked genes does not occur.

7

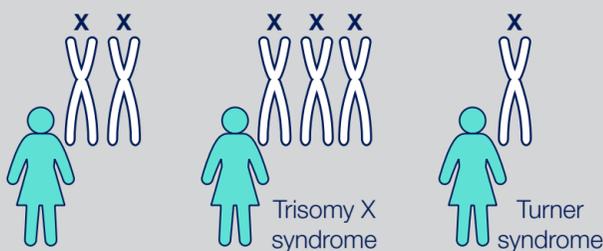
An inactivated X chromosome gets condensed into a small, dense structure in the nucleus, and is called a Barr body. Barr bodies are commonly used to determine sex.



8

Changes in the structure or number of X chromosomes can lead to a number of diseases. For example, **trisomy X syndrome** is caused by the presence of three X chromosomes instead of two. **Turner syndrome** occurs when women inherit only one copy of the X chromosome.

Variation in female sex chromosomes



9

Some women have a rare super color vision trait called **tetrachromacy**, which is linked to the X chromosome. These women can see up to **100 million shades of color** because they have four types of cone cells in their eye instead of the usual three.

10

Contrary to popular belief, **calico** is not a breed of cats, but rather a **distinctive coat color pattern** linked to the X chromosome. Over 95% of calico cats are female. The patches of fur on a calico cat are orange and black, and the color depends on which X chromosome is inactivated within each patch of color.

