

## INHERITANCE 1 - MALE OR FEMALE?

### Introduction

Human cells have 46 chromosomes in their nucleus. The 46 chromosomes work in pairs so this means humans have 23 pairs of chromosomes in each cell. Two of these chromosomes (i.e. one pair) determine if the person is male or female and are known as the “sex chromosomes”.

The sex chromosomes can be of two types known as X or Y. Males have one X and one Y chromosome abbreviated to XY. Females have two X chromosomes so are XX.

**Activity;** It is possible to take pictures of chromosomes in dividing cells. See if you can find an image of the chromosomes in a human cell.

The sex cells or gametes, sperm of males and the eggs of females, have 23 chromosomes i.e. HALF the number of the parent, This means that when one sperm fertilises one egg, the total number of chromosomes in the first cell of the new offspring will be 46, the same as the original parents.

Sperm cells or egg cells only have ONE sex chromosome, HALF the number of the parent.

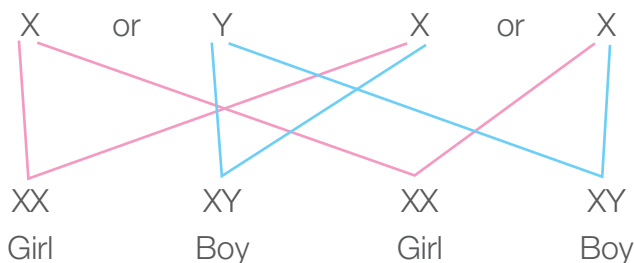
### Boy or Girl?

What is the chance of parents having a child which is a boy or a girl? Let’s have a look at the genetics.

<b>Parents</b>		Father			Mother	
		XY			XX	
<b>Gametes</b>	X	or	Y	X	or	X

This shows half of the sperm cells will have an X and half will have a Y. All female egg cells have an X chromosome.

Any sperm can fertilise any egg! So the combinations are...



	X	X
X	XX	XX
Y	XY	XY

This means that when a sperm and egg join that it is a 50% chance that it could be XY, a boy or XX, a girl.