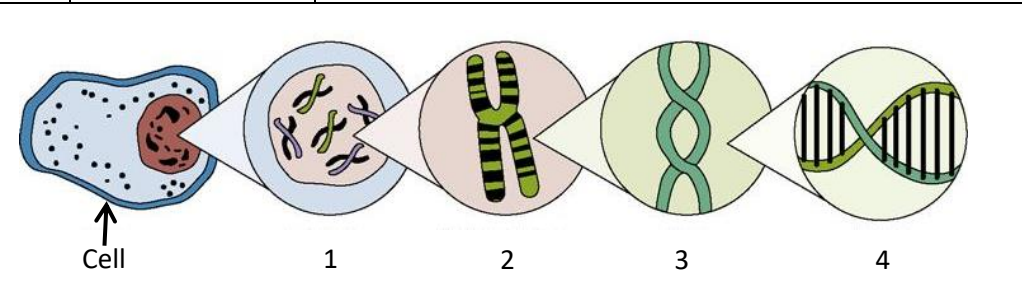


## 1. DNA

1	Nucleus	Organelle that contains the genetic material
2	Chromosomes	Long molecule of DNA that comes in pairs
3	DNA	Sequence that codes for the
4	Gene	Single section of DNA that is responsible to specific characteristics



## 2. The Human Genome Project

Genome	The entire sequence of the genetic material in an organism
Human Genome Project	25 year research project that mapped the entire human genome to identify specific locations of the genes each chromosome.
<b>Application</b>	<b>Advantage</b>
Genes linked to genetic diseases can be identified	Gives a better understanding of how genetic diseases are inherited, so effective treatments can be developed
Tiny differences in peoples genomes can be studied	Helps to trace migration patterns of past human populations

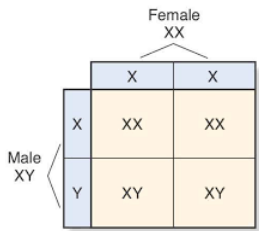
## 3. Cell Division in humans

Mitosis	Meiosis
Used for growth and repair	Used in the production of gametes
Once cell division per cycle	Two cell divisions per cycle
Daughter cells contain 46 chromosomes	Daughter cells contain 23 chromosomes

## 4. Key Words

Gamete	Sex cell
Allele	Single gene from a gene pair
Genotype	Coding used for a characteristic
Phenotype	Description of the chearacteristic
Dominant	An allele that is always expressed
Recessive	An allele only expressed when there are 2 recessive genes present
Homozygous	Alleles code for the same characteristic
Heterozygous	Genes code for different characteristics
Sexual reproduction	Fusing of nuclei from gamets, produces variation
Asexual reproduction	One parent, produces genetically identical offspring
Mutation	A random change in the sequence of DNA
Variation	Changes in a population caused by a mutation (differences in physical, chemical and behavioural characteristics between organisms or individuals)
Genetic variation	Variation that is caused by the inheritance of alleles of genes
Environmental variation	Variatio that is caused by the effects of environmental factors

## 5. Determining Gender

Female Genotype	XX									
Male Genotype	XY									
Each time an egg is fertilised there is a 50% chance it will be a girl.	 <p style="text-align: center;">Female XX</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td></td> <td>X</td> <td>X</td> </tr> <tr> <td>X</td> <td>XX</td> <td>XX</td> </tr> <tr> <td>Y</td> <td>XY</td> <td>XY</td> </tr> </table> <p style="text-align: center;">Male XY</p>		X	X	X	XX	XX	Y	XY	XY
	X	X								
X	XX	XX								
Y	XY	XY								

## 6. Inherited diseases

Cystic Fibrosis	Caused by a recessive gene Affects the cell membrane formation, causing mucus to build up in the lungs and digestive tract
Polydactyly	Caused by a dominant gene Causes an extra digit to grow on the hand or feet

## 7. Embryo Screening

This is where one cell from an embryo is taken and the DNA is checked for the presence of specific genes

<b>For</b>	<b>Against</b>
It will help prevent people suffering	Screening is expensive
Treating disorders costs the government a lot of money	People might want to screen embryos so they can pick the most 'desirable' trait
There are laws to stop the procedure being misused	Ethical issues as embryos found with genetic disorders are often destroyed (killing potential life)