

Chapter 13: Reproduction

Knowledge organiser

Types of reproduction

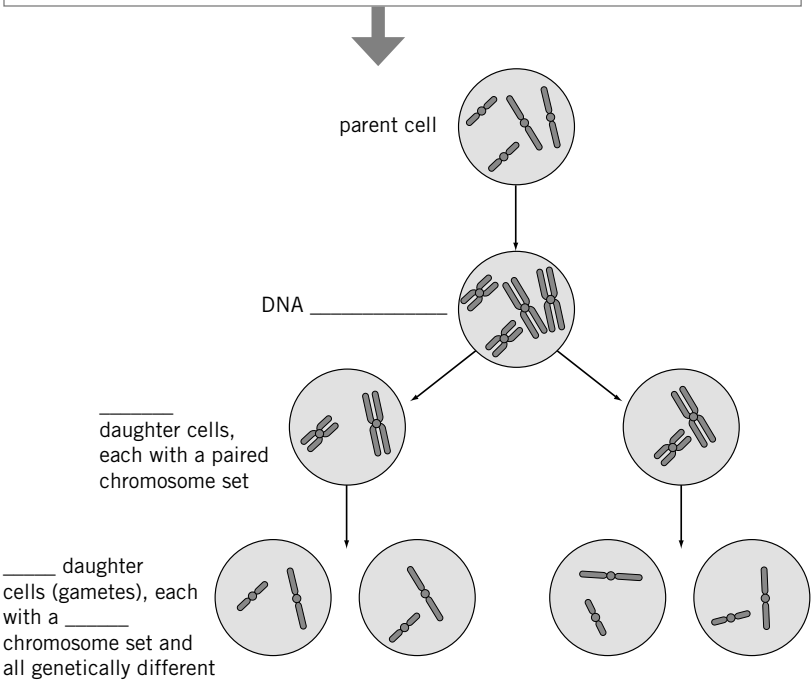
Sexual reproduction	Asexual reproduction
_____ parents	_____ parent
cell division through _____	cell division through _____
joining (fusion) of _____ and _____ sex cells (gametes) – sperm and egg in animals, pollen and ovule in plants	_____ fusion of gametes
produces non-identical _____ that are genetically different to parents	produces offspring that are genetically _____ to parent (_____)
results in wide _____ within offspring and species	no mixing of _____ information

Meiosis

Meiosis is a type of cell division that makes _____ in the reproductive organs.

Meiosis halves the number of _____ in gametes, and _____ (joining of two gametes) restores the full number of chromosomes.

The fertilised cell divides by _____, producing more cells. As the embryo develops, the cells differentiate.



DNA and the genome

Genetic material in the nucleus of a cell is composed of _____.

DNA is made up of two strands forming a _____.

DNA is contained in structures called _____.

A _____ is a small section of _____ on a chromosome that codes for a specific sequence of _____, to produce a specific protein.

The _____ of an organism is the entire _____ material of that organism.

The whole human genome has been studied, and this has allowed scientists to

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-
-

Inherited disorders

Some disorders are due to the _____ of certain alleles:

- Polydactyly (extra fingers or toes) is caused by a _____ allele.
- Cystic fibrosis (a disorder of cell membranes) is caused by a _____ allele.

_____ and _____ may alleviate suffering from these disorders, but there are _____ issues surrounding their use.

Genetic inheritance

Write the definitions of these terms.

<i>gamete</i>	
<i>chromosome</i>	
<i>gene</i>	
<i>allele</i>	
<i>dominant</i>	
<i>recessive</i>	
<i>homozygous</i>	
<i>heterozygous</i>	
<i>genotype</i>	
<i>phenotype</i>	

Genetic crosses

A **genetic cross** is when you consider the offspring that might result from two known parents. _____ can be used to predict the outcome of a genetic cross, for both the _____ the offspring might have and their phenotypes.

Complete the Punnett square for the cross between bb (brown fur) and BB (black fur) in mice.

		mother	
		—	—
father	—	—	—
	—	—	—

offspring genotype: _____

offspring phenotype: _____

Sex determination

Normal human body cells contain _____ pairs of chromosomes – one of these pairs determines the sex of the offspring.

In human females the sex chromosomes are the same (_____, homozygous), and in males they are different (_____, heterozygous).

A Punnett square can be used to determine the _____ of offspring being male or female. The probability is always _____% in humans as there are two XX outcomes and two XY outcomes. Complete the Punnett square.

		mother	
		—	—
father	—	—	—
	—	—	—

Key terms

Make sure you can write a definition for these key terms.

allele chromosome clone DNA dominant double helix fertilisation gamete gene genetic cross
genome genotype heterozygous homozygous meiosis mitosis phenotype Punnett square recessive

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Retrieval questions

Answer the following questions using the information from the knowledge organiser.

B13 questions		Answers
1	What is sexual reproduction?	
2	What type of cell division is involved in sexual reproduction?	
3	What type of cell division is involved in asexual reproduction?	
4	What is meiosis?	
5	What are the male and female sex chromosomes in humans?	<ul style="list-style-type: none">••
6	What are the male and female gametes in flowering plants?	<ul style="list-style-type: none">••
7	What is the genetic material in cells called?	
8	What is the structure of DNA?	
9	What is a gene?	
10	What are alleles?	
11	What is a recessive allele?	
12	What is a dominant allele?	
13	What is a genome?	
14	Define the term homozygous.	
15	Define the term heterozygous.	
16	What type of allele causes polydactyly?	
17	What type of allele causes cystic fibrosis?	
18	How many chromosomes do normal human body cells have?	
19	Why is studying the human genome important?	<ul style="list-style-type: none">•••