

Sexual and Asexual Reproduction Notes

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Different organisms take different approaches to reproduction. It boils down to one of two methods, **sexual** or **asexual reproduction**. Let's look at each.

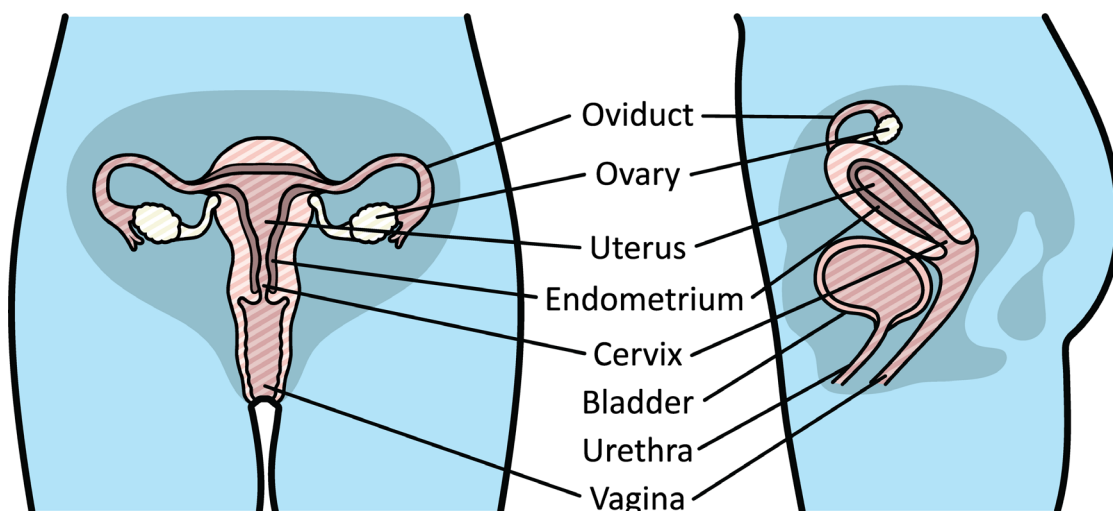
Sexual reproduction: is the fusion of the nuclei of two gametes to produce a zygote.

A gamete: is a sex cell. In animals these are ova or eggs in females and sperm in males. In plants these are egg cells and pollen.

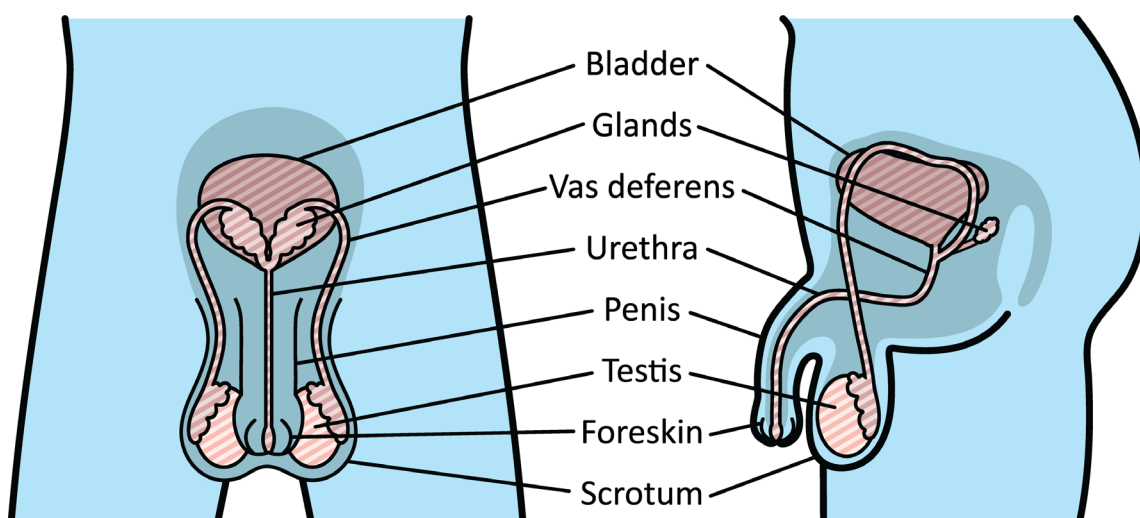
A zygote: a fertilised ovum/ egg cell.

Before we continue, let's just have a look at the male and female reproductive systems. Please do learn and be able to label these diagrams from memory.

Female Reproductive System



Male Reproductive System



Sexual reproduction is a great source of genetic variation. The random nature of sexual reproduction, in that any one of hundreds of millions of sperm can fertilise any one of thousands of eggs.

Key note: Sexual reproduction involves Meiosis.

Meiosis: the process of cell division that produces four genetically different haploid daughter cells in two divisions. This produces gametes (sex cells).

Haploid: meaning that gametes have half the number of chromosomes that a body cell would have, in humans gametes have 23 chromosomes and body cells have 46.

For the AQA specification you do not need to know anything else about meiosis.

Advantages of sexual reproduction	Disadvantages of sexual reproduction
• <u>Provides offspring with variation.</u>	• <u>Two parents are required.</u>
• This <u>variation can help the offspring to survive if the environment changes.</u>	• Time and energy are required to find a mate.
• Humans can use selective breeding to improve the food production of animals and plants.	• Slower than asexual reproduction.

Asexual Reproduction

Asexual reproduction: reproduction that involves only one parent. This produces clones.

Asexual reproduction uses mitosis to produce new cells.

Mitosis: the process of cell division that produces two genetically identical diploid daughter cells in one division. This produces **somatic** (body) cells.

Advantages of asexual reproduction	Disadvantages of asexual reproduction
• Only one parent is needed. • No time is spent finding a mate. • Faster than sexual reproduction.	• Offspring are genetically identical. There is no variation. • If a disease kills the parent it is highly likely it will kill the offspring.

Bit of both...

Some organisms can do both sexual and asexual reproduction depending on the situation that they find themselves in. For AQA we are required to know the following examples:

1. **Malaria** – the plasmodium (single celled living animal) that causes malaria reproduces sexually inside the mosquito but can reproduce asexually inside humans.
2. **Fungi** – most fungi reproduce asexually by spores but can also reproduce sexually to give variation.
3. **Plants** – many plants reproduce sexually but some can reproduce asexually by runners such as strawberries and the bulbs of daffodils.