

Asexual Mode of Reproduction

Did you ever wonder how various **organisms** reproduce? Not every organism is capable of reproducing sexually. There are so many hidden surprises for you in this chapter! We will study a different form of reproduction in organisms. It is known as **asexual reproduction**. We will have a brief look at its characteristics and types.

What is Asexual Reproduction?

Asexual reproduction is a mode of reproduction in which the new offspring arise from a single parent. The offsprings are identical to each other, both physically as well as genetically. They are the exact copies of their parent **cell**. Hence, they are ‘clones’. We observe asexual reproduction in both unicellular and multicellular organisms.

Features of Asexual Reproduction

- It involves a single parent
- There is no gamete **formation** or **fertilization**

- The whole process takes place in a small period of time
- Rapid multiplication and **growth** happens
- There is limited **variation** (genetically similar offsprings)

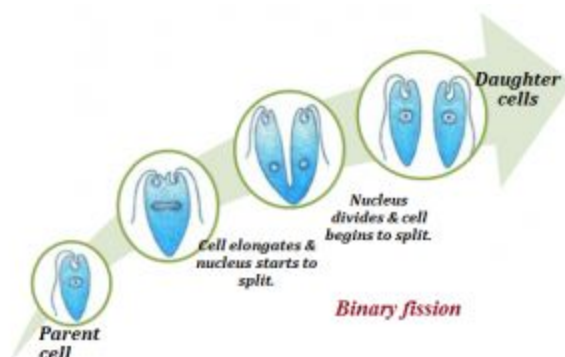
Modes of Asexual Reproduction

Organisms choose to reproduce asexually by different means. Some of the asexual methods are binary fission (e.g. **Amoeba**, bacteria), budding (e.g. Hydra), fragmentation (e.g. Planaria), spore formation (e.g. ferns) and **vegetative propagation** (e.g. Onion). Let us now look at the different modes of asexual reproduction in brief.

1) Fission

Fission means division. During asexual reproduction, the parent cell divides into two or more **cells**. Unicellular organisms show different patterns of cell division according to their **cell structure**. For example, an **amoeba** can divide itself into two at any plane but the division in euglena is longitudinal.

Fission can be of two types, namely, binary fission and multiple fission. In binary fission, parent cell divides into two equal halves called daughter cells. Daughter cells are identical to each other and to their parent cell. Organisms like the amoeba, bacteria, euglena, etc., exhibit binary fission.



During multiple fission, organism divides itself into numerous daughter cells. Examples of multiple fission are sporozoans and algae.

2) Fragmentation

Fragmentation is another mode of asexual reproduction.

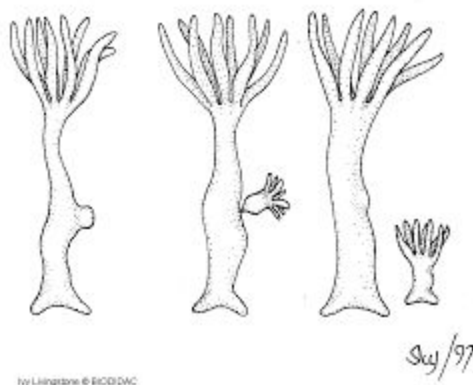
Multi-cellular organisms like planaria, spirogyra, etc. reproduce by fragmentation. The parent body divides into two or more fragments. Later, each fragment develops into a new individual.

3) Regeneration

When a lizard loses its tail, it grows a new one. This is known as regeneration. In many organisms, there are specialized cells, which can differentiate and grow into a new organism. Organisms like hydra and planaria also show regeneration. In these organisms, when the cell divides into numerous pieces, each piece proliferates and differentiates to regenerate new organisms.

4) Budding

Some organisms develop buds on their body. These buds develop into a new individual. This is known as budding. An example is a hydra. From the parent hydra, a bud arises which eventually matures into a new hydra. Once it gets mature, it detaches from the parent body.



(Source: brainly)

5) Vegetative Propagation

Plants reproduce asexually through their vegetative parts such as leaves, **roots**, **stem**, and buds. This is known as vegetative propagation. For example, onion bulbs, tubers of potato, runners/stolon, etc. **Vegetative propagation** is much faster than the sexual reproduction in plants. This can be done artificially as well, which is widely employed in horticulture.

Here's a Solved Question for You

Q: Write a note on spore formation.

Ans: Spore formation is another means of asexual reproduction. Organisms which belong to the fungi group produce spores within a sac-like structure called sporangium. Under the favourable condition, sporangium burst to release spores which germinate to form new offspring.

Sexual Reproduction

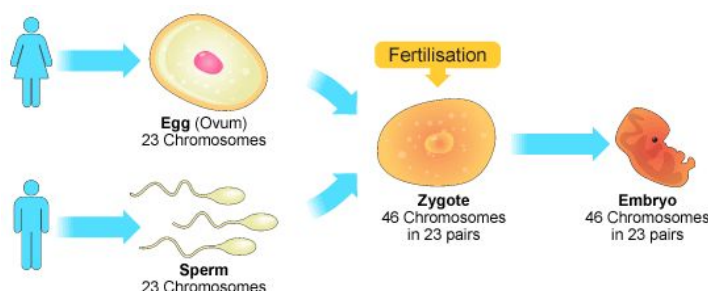
How do you think generations continue on **earth**? How do dogs give birth to puppies? More importantly, how did you get your life? Yes! This is the **process** of reproduction. In this chapter, we will study more about sexual reproduction. This is the process that we **human beings** follow. Before we get into the details, we will first look at what reproduction is all about!

What is Reproduction?

Reproduction is a life process which enables an **organism** to reproduce its own offspring. Thus, they continue their **species** without extinction. Reproduction can take place by the participation of a single parent or two parents. Based on this, we can classify reproduction into two types.

- Asexual reproduction: A type of reproduction where a single parent is divided by itself and reproduce its offspring.
- Sexual reproduction: A process where two parents participate in producing their offspring.

Let us study about sexual reproduction in this chapter. We will talk about asexual reproduction in another chapter.



Sexual Reproduction

Sexual reproduction is a natural way of reproduction in humans, animals and the majority of [plants](#) also choose to reproduce sexually. This type of reproduction is more complex and lengthy as compared to asexual reproduction. Moreover, reproducing sexually gives the benefit of [variation](#) and offsprings are unique. Sexual reproduction consists of a set of events. We can divide it into three stages: Pre-[fertilization](#), Fertilization, and Post-fertilization.

Learn about [Asexual Reproduction in more detail here](#).

The Stages of Sexual Reproduction

Below, we will discuss the various stages of sexual reproduction.

1) Pre-fertilization

This stage involves the events prior to fertilization. Gamete formation (gametogenesis) and transfer of gamete are the two processes that take place during this stage. Gametes are sex cells which are haploid (23 chromosomes) in nature and are distinct in males and females.

Male gamete is called sperm whereas female gamete is called ovum or egg. In every organism, these gametes form within special [structures](#). Since female gamete is immobile, male gametes need to be transferred for fertilization. In plants, this is pre-fertilization happens through [pollination](#). Unisexual animals transfer gametes by sexual intercourse.

2) Fertilization

The process in which the haploid male and female gametes meet and fuse together to form a zygote is fertilization or syngamy. This can occur either outside the body known as External fertilization or inside the body known as Internal fertilization.



(Source: Slideshare)

3) Post-fertilization

Fertilization results in diploid zygote formation. Eventually, the zygote divides mitotically and develops into an embryo. This process is called embryogenesis. During embryogenesis, cells differentiate and modify accordingly. Zygote development depends on the organism and its life cycle.

Animals are classified into oviparous and viviparous based on whether the zygote develops outside or inside the body respectively. In angiosperms, zygote develops into the ovary and ovary transforms into fruit while ovules develop into seeds.

Here's a Solved Question for You

Q: Write a note on types of fertilisation in animals.

Ans: There are two types of fertilization in animals, viz. external fertilization and internal fertilization.

- **External Fertilisation:** When fertilization takes place outside the animal's body, it is external fertilization. Most of the aquatic animals show external fertilization, e.g. fish and frog. A large number of eggs need to be fertilized in this method because most of the fertilized eggs get washed away by water or are eaten by predators. A large number of eggs ensures the survival of some of the offspring.
- **Internal Fertilisation:** When fertilization takes place inside the animal's body, it is internal fertilization. Internal fertilization happens in most of the terrestrial animals. Unlike external fertilization, there is no need to produce a large number of eggs in internal fertilization.