

Chapter 9

Reproduction in Animals

Modes of Reproduction

◆ Reproduction:

The production of new organisms from the existing organisms of the same species is known as reproduction. Reproduction is essential for the continuation of a species generation after generation.

◆ Young one or Offspring:

The newborn animal is called a young one. The young one of the animal is called its offspring.

◆ Sex cells:

The reproductive cells are called sex cells. Sex cells are also known as gametes. The male sex cells or gametes are called sperm and the female sex cells or gametes are called egg or ovum.

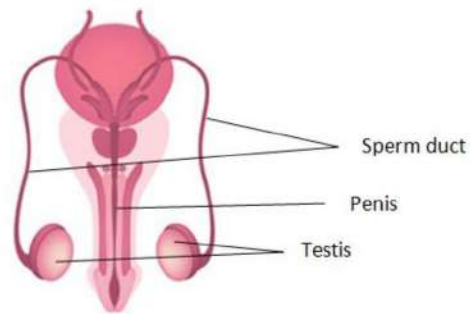
◆ Modes of Reproduction:

Reproduction in animals can be divided into two main groups:

(a) Sexual reproduction: The production of a young one from two parents by fusion of male and female sex cells or gametes is called sexual reproduction. Example: Humans, dogs, frogs, fish, etc.

(b) Asexual reproduction: The production of new organisms from a single parent without the involvement of sex cells or gametes is called asexual reproduction. Example: Amoeba and Hydra. The young produced by asexual reproduction is an exact copy of the parents.

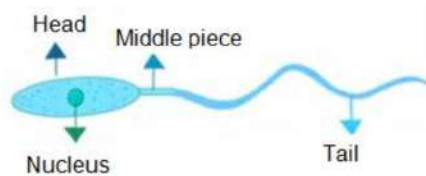
Male Reproductive Organs



Male reproductive organs

- The male reproductive system consists of the testis, sperm duct, and penis.
- The testis produces the male sex cells or gametes.
- The male gametes are called sperms. Millions of sperms are produced in the testes.

♦ Sperm:



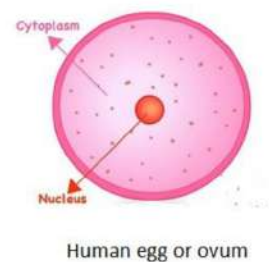
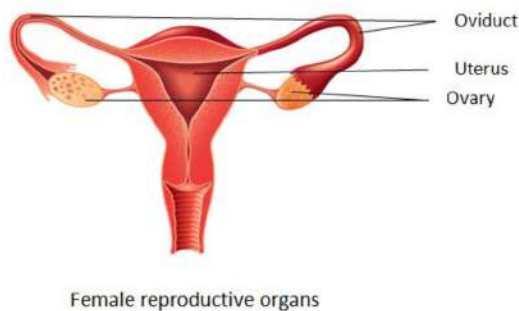
Human Sperm

- Sperm is very small in size and can be visible by a microscope only.
- Each sperm is a single cell with a nucleus, cytoplasm, and cell membrane.
- A sperm has a head, middle piece, and tail.

Female Reproductive Organs

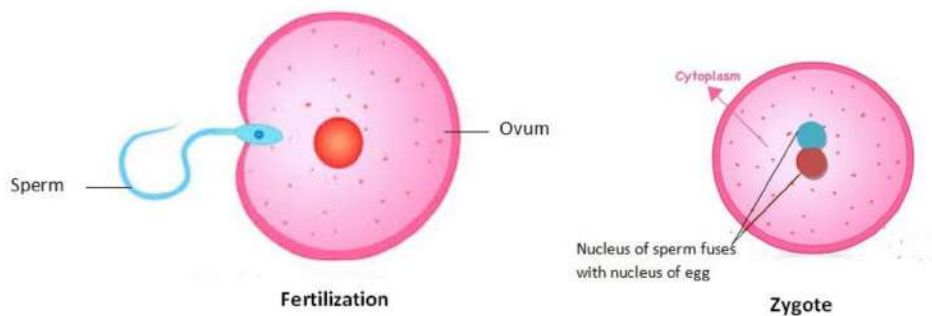
- It consists of the following organs: Ovaries, oviducts (fallopian tubes), and uterus.

- A female has two ovaries and each ovary produces female sex cells or gametes called eggs (ovum).
- One matured egg is released into the oviduct every month by one of the ovaries.
- The fertilization of the egg by sperm takes place in the oviduct.
- Both the oviduct is connected to the bag-like structure called a uterus.
- The growth and development of a fertilized egg into a baby take place in the uterus.
- Like sperm, an egg is also a single cell with a nucleus and cytoplasm.



Fertilisation

- The fusion of a male gamete (sperm) with a female gamete (ovum) is called fertilization.
- Fertilization is the first step in the process of reproduction.
- During this process, the nuclei of the sperm and egg fuse to form a single nucleus.
- This results in the formation of a fertilized egg which is called a zygote. A zygote is the beginning of the formation of a new baby.



- There are two types of fertilisation:

(a) Internal fertilization:

The fertilization which takes place inside the female body is called internal fertilization. Example: Humans, dogs, cows, etc.

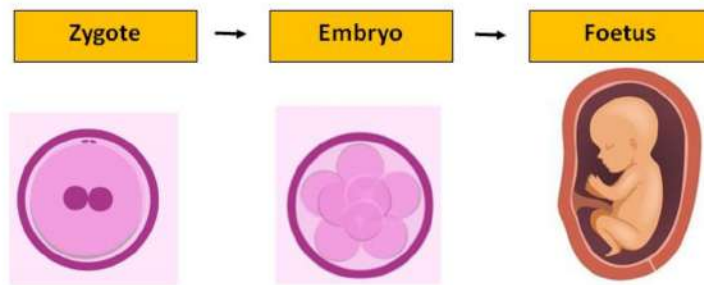
(b) External fertilization:

When the fertilization takes place outside the body of the female is called external fertilization. Example: fish, frogs, and other aquatic animals.

* Tip: Fertilization in fish, in water the female fish lays hundreds of eggs. These eggs are covered with jelly-like substances. When the eggs are laid, the male deposits sperms over them. This results in fertilization.

Development of Embryo

- The zygote divides repeatedly to form a ball of hundreds of cells called an embryo.
- Now the embryo move moves down the oviduct and enters into the uterus.
- The embryo gets embedded in the wall of the uterus for further development and gradually body parts such as hands, legs, head, eyes, ears, etc get developed.
- This stage of the embryo is called foetus and when the development of foetus is complete, a baby is born.



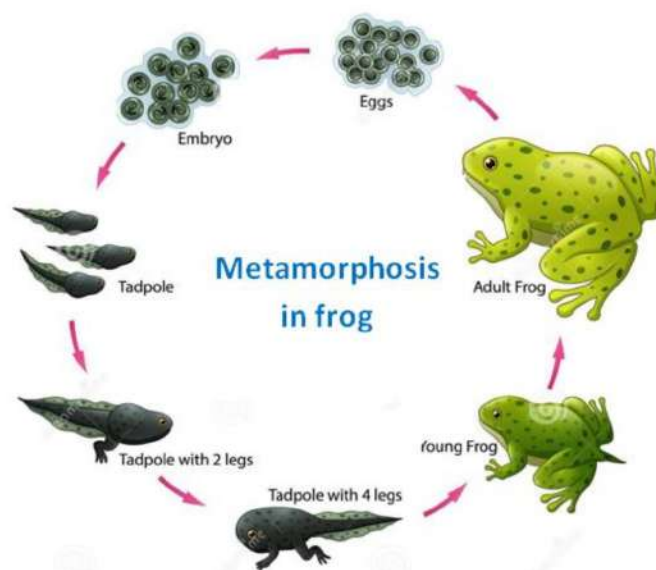
Viviparous - The animals which give birth to young ones are called viviparous. Example: Humans, dogs, cat, lion, elephant, cow, horse, etc.

Oviparous - The animals which lay eggs from which young ones are hatched later on, are called oviparous. Example: birds, fish, lizard, frog, snake, crocodile, etc.

◆ Metamorphosis:

There are many animals whose young ones are similar to adults. Example: young ones of human and adult human look-alike, the chick hatched from the egg look like a hen.

But the young ones of frogs, butterflies, etc. hatched from the eggs look very different from the adult. The young one of the frog is called a tadpole (or larva of a frog) which undergoes drastic changes to form a frog, this is called metamorphosis.

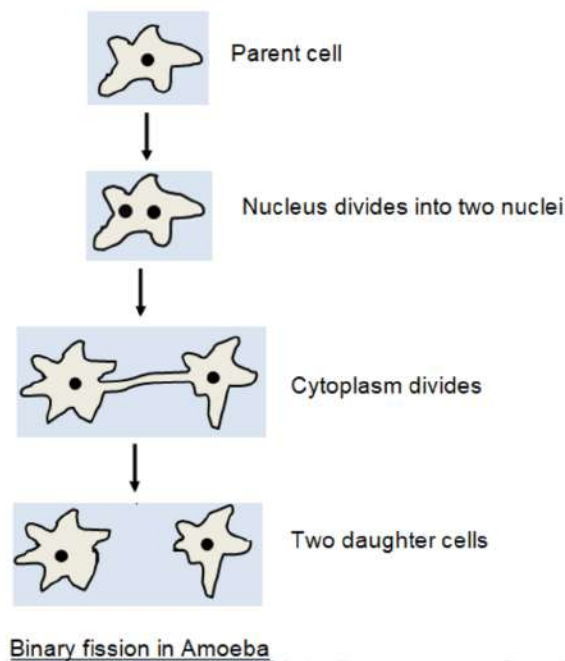


Asexual Reproduction

- The production of new organisms from a single parent without the involvement of sex cells or gametes is called asexual reproduction. Example: Amoeba and Hydra.
- The young produced by asexual reproduction is an exact copy of the parents.
- The two most common methods of asexual reproduction are:

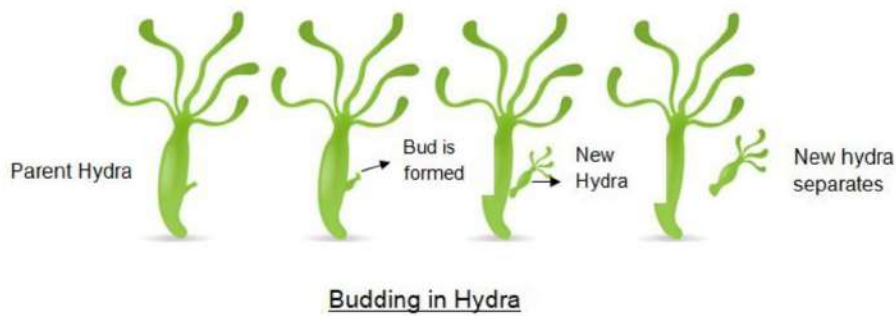
(a) Binary fission:

The mode of asexual reproduction in which an animal reproduces by dividing into two individuals is called binary fission. Example: Amoeba.



(b) Budding:

Budding is an asexual reproduction in which a small part of the body of the parent organism grows out as a bud which then detaches and becomes a new organism. Example: Hydra.



• **Cloning:** The production of an exact copy of an animal, organ or cell is called cloning and the new organism which is produced is called a clone. This is the method of asexual reproduction. The clone is the exact copy of their parent. The 1st cloned animal was a sheep named Dolly (5th July 1996).

Dolly was cloned by the following process:

- ❖ A normal body cell was removed from the mammary gland of a female Finn Dorset sheep (which is to be cloned).
- ❖ An unfertilized egg cell was taken from a female Scottish Blackface sheep and its nucleus was removed.
- ❖ The nucleus of the normal body cell of Finn Dorset sheep was inserted in the empty egg cell of Scottish Blackface sheep.
- ❖ Now a new egg cell was obtained with a nucleus of Finn Dorset sheep.
- ❖ The new egg cell was implanted in the uterus of Scottish Blackface sheep making her pregnant. After 148 days, a young sheep (named Dolly) was born which was found exactly identical to the Finn Dorset sheep whose nucleus was taken.

Note: Dolly was given birth by Scottish Blackface sheep, it did not show any characters of the Scottish Blackface sheep because the nucleus of removed from the egg cell of Scottish Blackface sheep.