

Reproduction

- The phenomenon of producing young ones from an existing living organism of the same species is called Reproduction.
- It is essential for continuation of a species. Living organism produce more organism of their kind to maintain the life of their species on this earth.
- Reproduction gives rise to more organisms with similar basic characteristics as their parents.

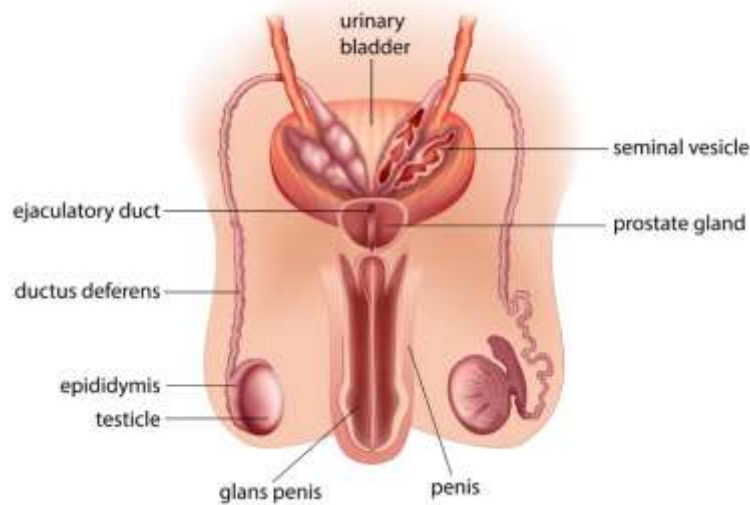
Methods of Reproduction

There are two main methods of reproduction:

1. Asexual Reproduction:
 - When reproduction takes place without the involvement of sex cells it is called Asexual Reproduction.
 - Only one parent is required for asexual type of reproduction.
 - Examples: amoeba, budding in Hydra.
 - The young one is the exact copy of its parent.
2. Sexual Reproduction:
 - When reproduction takes place by using sex cells or gametes it is called Sexual Reproduction.
 - The sex cell of one parent fuses with the sex cell of another parent to produce a new cell called zygote.
 - This zygote grows and develops to a new individual organism.
 - This type of reproduction takes place in human beings.

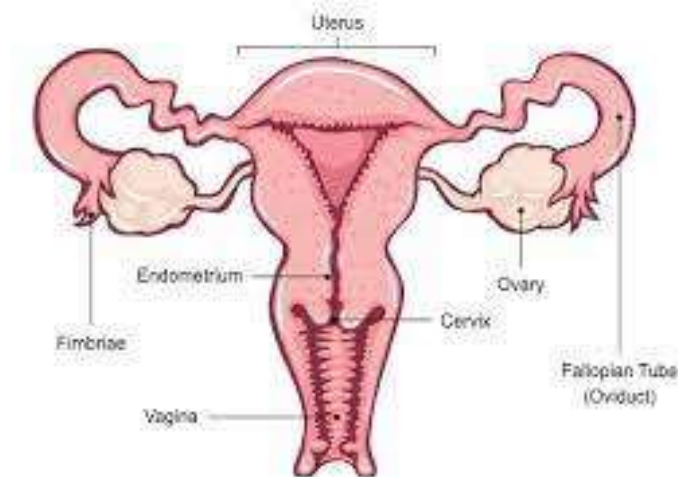
Male Reproductive Organs

- The male reproductive organs consist of a pair of testes (singular, testis), two sperm ducts and a penis. The testes produce the male gametes called sperms.
- Millions of sperms are produced by the testes. Sperms are very small in size, and have a head, a middle piece and a tail.



Female Reproductive Organs

- The female reproductive organs consist of a pair of ovaries, oviducts (fallopian tubes) and the uterus. The ovary produces female gametes called ova (eggs).
- Eggs are larger than sperm in size.
- In human beings, a single matured egg is released into the oviduct by one of the ovaries every month. The development of the baby occurs in the uterus. Like the sperm, an egg is also a single cell having a nucleus, cytoplasm and a cell membrane.



Fertilisation

- Fusion of a sperm with an ovum is called Fertilisation.
- The nuclei of the sperm and egg fuse to form a single nucleus called a Zygote.
- Fertilisation takes place in female body; this is called internal fertilisation.
- Fertilisation in which male and female gametes fuse together outside the female body is called External Fertilisation. It takes place in aquatic animals like starfish, fish etc.

Development of Embryo

- The zygote repeatedly divides to produce a ball of cells that forms groups which develops into different tissues and organs of the body. This is called Embryo.
- It gets embedded in the walls of the uterus. It continues to grow and develops into various body parts.
- The stage of the embryo in which all the body parts can be clearly identified is called foetus.
- After complete development, the mother gives birth to the child.

Viviparous and Oviparous Animals

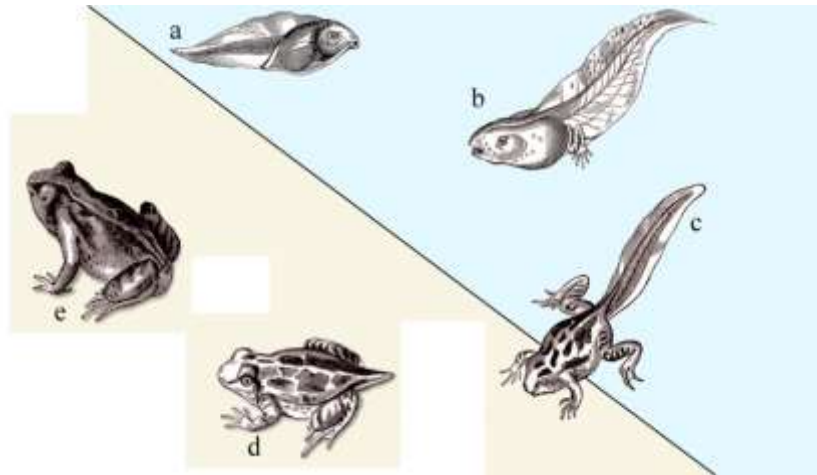
- **Viviparous Animals:** the animals that give birth to young ones are called Viviparous animals. The young one develops inside the uterus of the female. When the young one is fully developed then mother gives birth to the baby.
- **Examples:** humans, cat, lion, dog etc.
- **Oviparous Animals:** the animals that lay eggs, from which young ones are hatched later on are called Oviparous animals. When the development of the young one is completed inside the egg, its shell breaks and a live young one comes out, this is called hatching.
- **For examples:** hen, butterfly, sparrow, lizard etc

Asexual Reproduction

- Hydra and amoeba reproduce by asexual reproduction.
- In asexual reproduction new organism is produced from a single parent without the involvement of sex cells or gametes.
- The young one produced exactly identical to its parent.
- The two methods of asexual reproduction are:
 - Binary fission: The parent organism splits or divides into 2 organisms, hence called binary fission. Amoeba reproduces by this method. When amoeba reaches its maximum size of growth the nucleus of amoeba lengthens and divides into two parts. These two daughter amoeba grow to their full size and divide again to produce 4 new daughter nuclei and so on. Paramecium also reproduces through asexual method.
 - Budding: Hydra, sponges and corals reproduce by budding. The repeated division of cells produces a small outgrowth called a bud on the outside of its body. This bud then grows slowly to form a new hydra by developing a mouth and tentacles. Finally the new hydra detaches from the parent body and leads an independent life.

Metamorphosis in Frog

- The transformation of a larva of an organism into an adult through drastic steps of changes is called metamorphosis.
- It occurs in amphibians and insects like moth, butterfly etc.
- The fertilised egg of a frog hatches into very immature young one called tadpole.
- The tadpole undergoes into drastic changes in appearance to become an adult frog.
- The tadpole and the adult frog appear very different from each other.



Metamorphosis in Silk Moth

- Silk moth is the silk producing insect which undergoes metamorphosis during its life cycle.
- After the eggs are hatched, It passes through the larva and pupa stage during its development to form adult silk moth.
- The caterpillar or pupa stage of a silkworm appears very different from the adult moth.

