

Reproduction in Animals

KEY POINTS



"The ability to reproduce & perpetuate its species is a basic characteristic of living things."

Reproduction

- Reproduction means 'to reproduce', to produce more of the same kind.
- The phenomenon of producing new individual from existing ones to increase the community
- It is the biological process by which existing organisms create new individual organisms that are similar to themselves.
- Every existing plants, animals or other living organism are the result of reproduction.

Modes of reproduction

- There are two modes by which animal reproduce.

Reproduction

Sexual
reproduction

Asexual
reproduction

Sexual reproduction

- It is a mode of reproduction that involves fusion of female gamete and male gamete.
- Sexual reproduction in flowering plants is accomplished through the agency of flower because both male and female reproductive parts are located in them.

Note

Hermaphroditism is a form of sexual reproduction in which a single individual produces both eggs and sperms. e.g., earthworm, snails

- The mode of reproduction in humans is sexual. In humans there are two types of reproductive system.

1. Male reproductive system
2. Female reproductive system

Male reproductive system

1

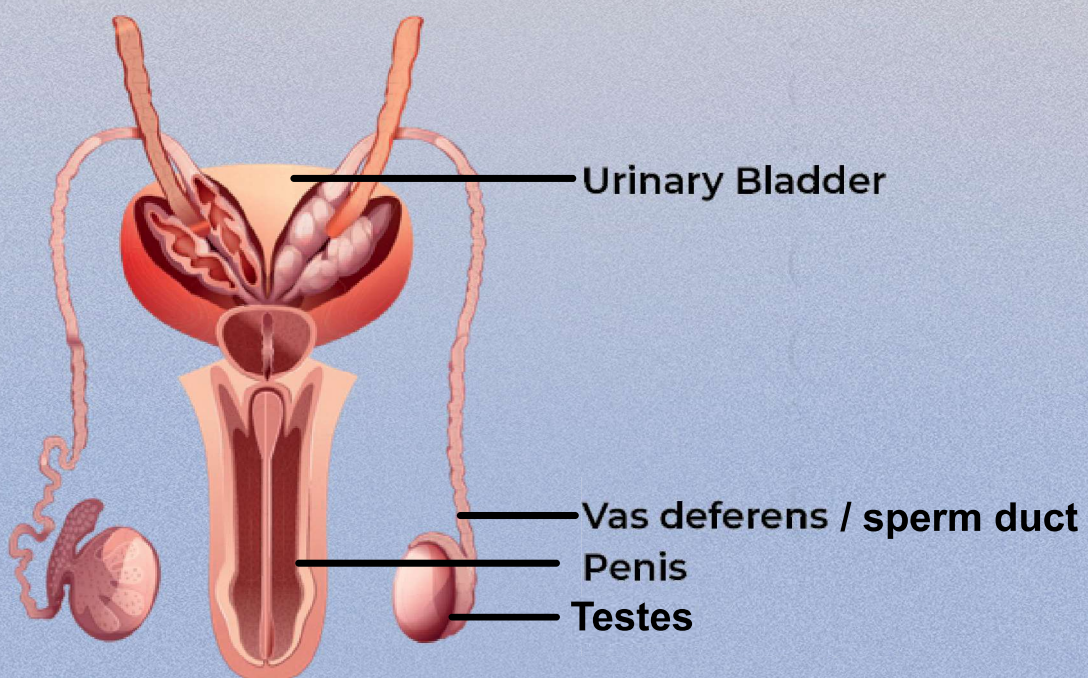
A pair of testes

2

A pair of sperm ducts

3

A penis



Testes

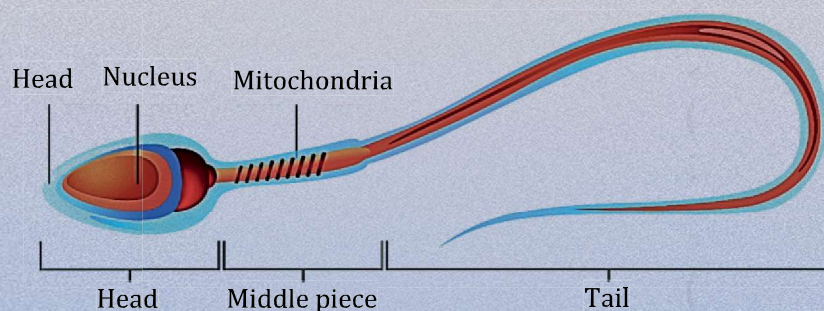
- The testes produce the male gamete called sperm which lie in the scrotal sac.
- Scrotal sac keeps the testes temperature at 2°C lower than the body temperature.

Note

As sperm travel through vas deferens, secretions from various glands pour in it. (secretion + sperm = semen).

Sperm

- A sperm is a single celled male gamete with three parts:
 - (a) Head: contains nucleus.
 - (b) Middle piece: contains numerous mitochondria.
 - (c) Long tail: helps in movement.



Note

Testes secrete the male sex hormone called testosterone and ovary secretes the female sex hormones called estrogen and progesterone.

Sperm duct

- Also known as vas deferens.
- Two sperm ducts through which sperm leave the testes and reach penis.

Penis

- The muscular organ having a drainage duct through which urine and sperm are pushed out.

Female reproductive system

- The female reproductive system includes-

1

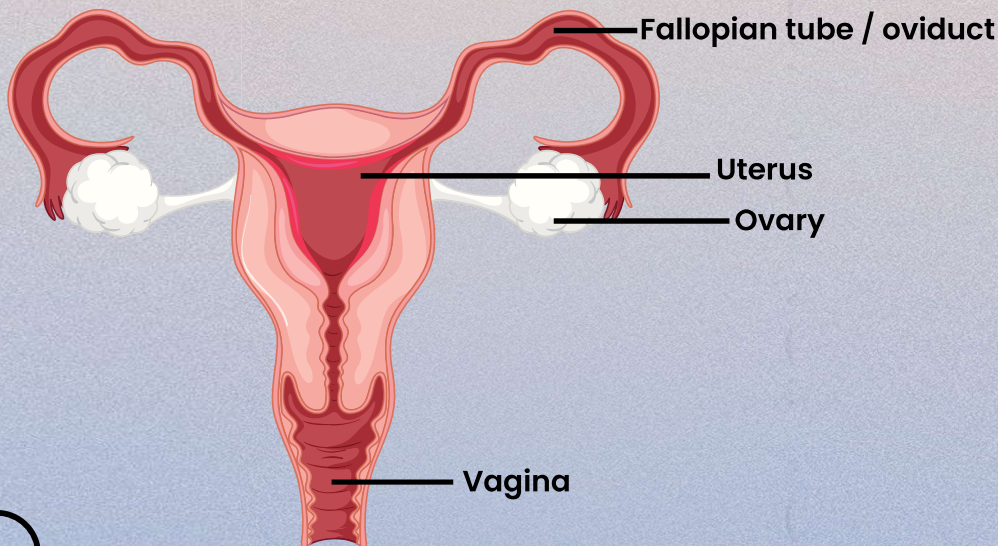
A pair of ovaries

2

A pair of oviducts (fallopian tube)

3

Uterus

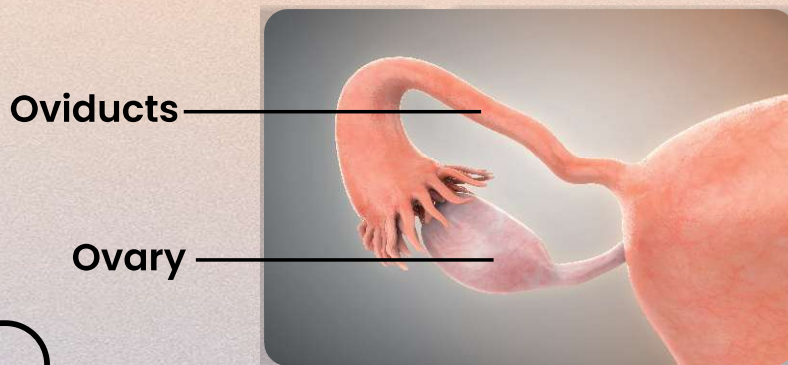


Ovaries

- Both the ovaries lie in the lower part of the abdominal cavity.
- Either of the ovary produces one ovum every month. Egg is also known as ova (singular ovum) or female gamete.
- This egg passes through the Fallopian tube to reach the uterus. An egg is a single cell

Oviduct

- Also called fallopian tube.
- Each oviduct has funnel shaped opening which helps to pick up and push the released ovum into the oviduct.
- Oviducts are the site of fertilization. The process of releasing the ovum by female is called ovulation.



Uterus

- It is muscular structure commonly known as womb. The uterus acts as life support system.
- The place where fertilized ovum (zygote) becomes implanted (fixed), receives nourishment and develops into an infant.

Fertilization

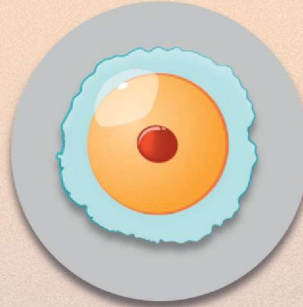
- The fusion of male gamete and female gamete to form a zygote during sexual reproduction is called fertilization.
- When sperms come in contact with egg, one of the sperm may fuse with the egg.
- During fertilization the nuclei of the sperm and the egg fuse to form single nucleus.
- This results in the formation of zygote or fertilized ovum.



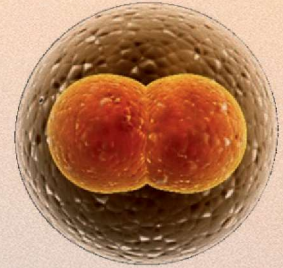
Fertilization



Male gamete / Sperm



Female gamete (Egg Cell/Ova)



Zygote

Type of Fertilization

Internal Fertilization

- Fertilization which occurs inside the body of female is called internal fertilization.
e.g. human, cow, dogs and hens.

External Fertilization

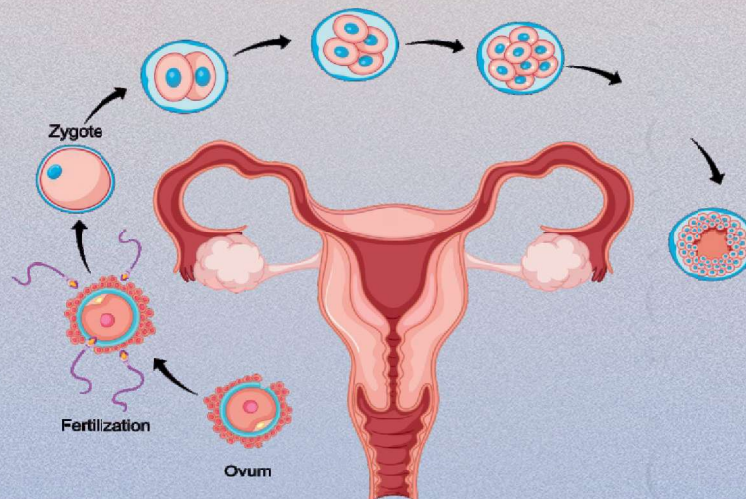
- Fertilization which occurs outside the body of female is called external fertilization.
e.g. frogs, toads, fish, star fish

Note

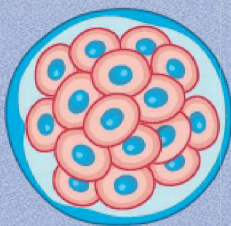
The process of hatching the eggs by sitting on them is called incubation.

Development of embryo

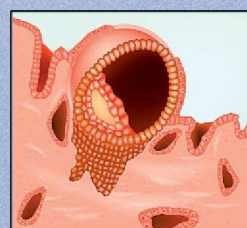
- After fertilization, zygote is formed and begins to develop into an embryo.
- It starts dividing repeatedly to produce a hollow ball of cell which begins to form a group that develop into different tissues and organs of the body. This developing structure is termed as embryo.
- The embryo attaches to the wall of uterus or gets embedded in the wall of uterus for further development.
- Inside the womb the umbilical cord connects the baby with mother's placenta which provides nutrition to the foetus. Here it develops over the nine months.
- The developing embryo gradually differentiates into different body parts such as hands, legs, head, eyes, ears etc. The stage of the embryo in which all the body parts can be identified is called as foetus.



(Zygote formation and development of an embryo from the zygote)



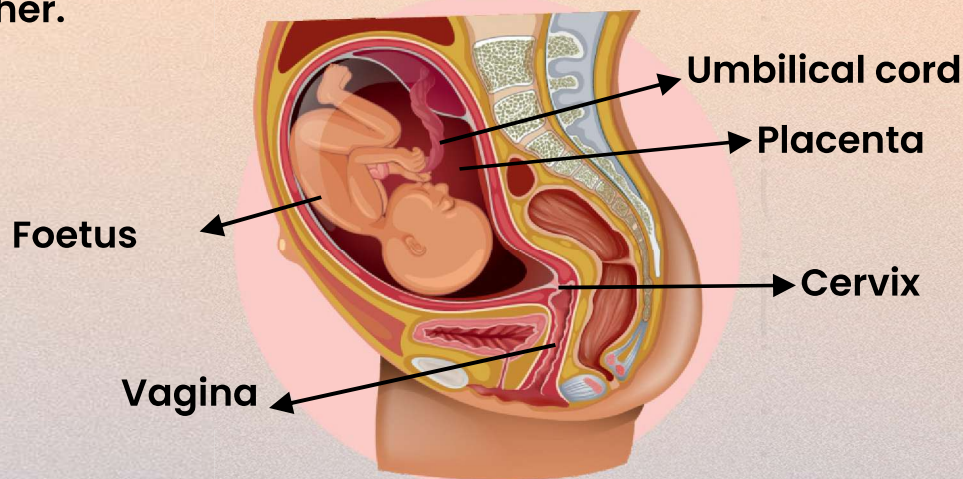
Ball of cells (enlarged)



Embedding of the embryo in the uterus(enlarged)

Gestation period

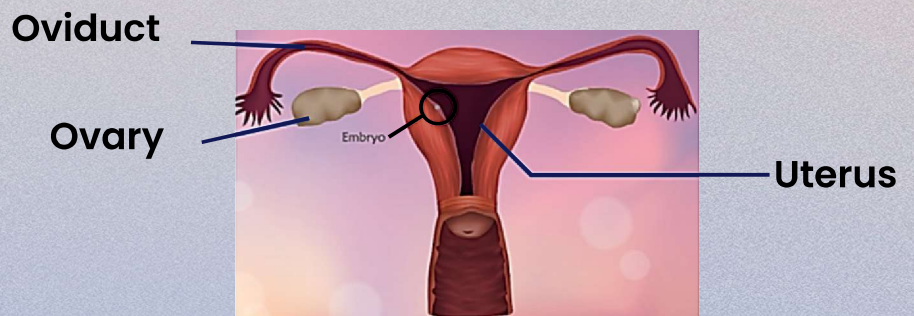
- A period from fertilization to birth. In human beings, it is of about nine months (270 days).
- Period growth and development of embryo takes place inside the womb of the mother.



Foetus Inside Mother's Womb

Implantation

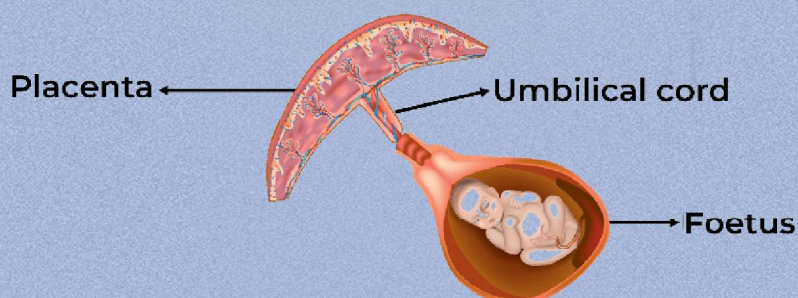
- Attachment of fertilized egg to the lining of uterus.



Implantation

Placenta

- An organ that connects the developing foetus to uterine wall to allow nutrient uptake, waste elimination & gas exchange through mother's blood supply.



Animals based on birth to their young one

Viviparous animals

The animals which give birth to young ones are called viviparous animals.

E.g. dog, cat, cow, elephant and human beings.



Oviparous animals

Those animals which lay eggs are called oviparous.

E.g. insects, frogs, snakes, turtles and birds.



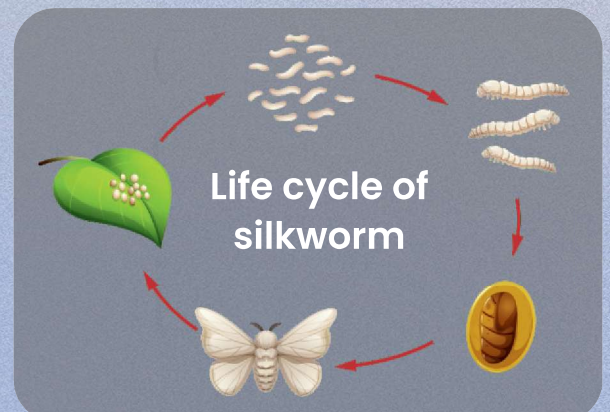
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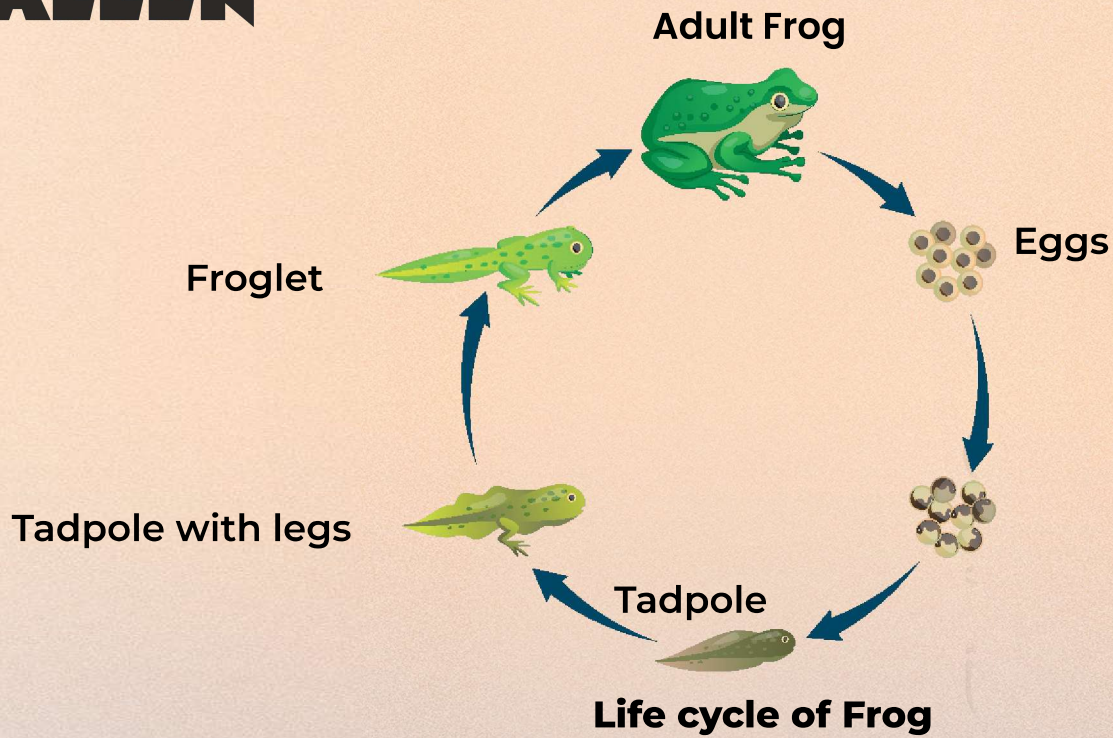
Ovoviviparous animals produce eggs but retain them inside the female body until hatching, so that 'live' offspring are born. E.g. Shark

The process of laying egg in large number is called spawning.

Young Ones to Adult

- All egg laying animals are called oviparous animals.
- The new individual which are born or hatched from the egg, continue to grow till they become adult.
- The transformation of the larva into adult through drastic change is called metamorphosis.





Asexual Reproduction

- In asexual reproduction, the offspring arises from single parent.
- The production of a new organism from a single parent without the involvement of gametes is called asexual reproduction.
- Amoeba, Hydra and Yeast (unicellular fungi) reproduces asexually.

Note

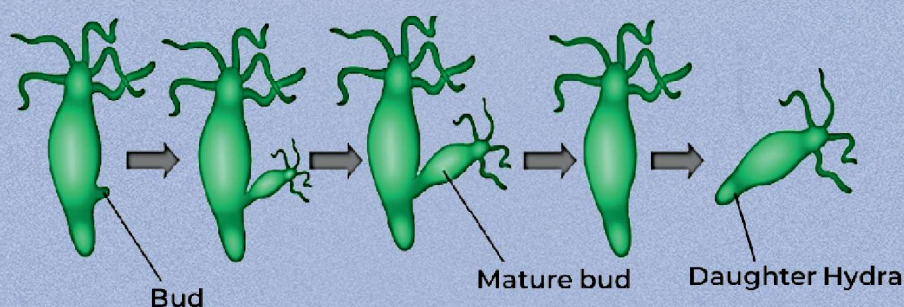
In asexual reproduction, the offsprings are completely identical to the parent.

Asexual reproduction

Budding

Binary fission

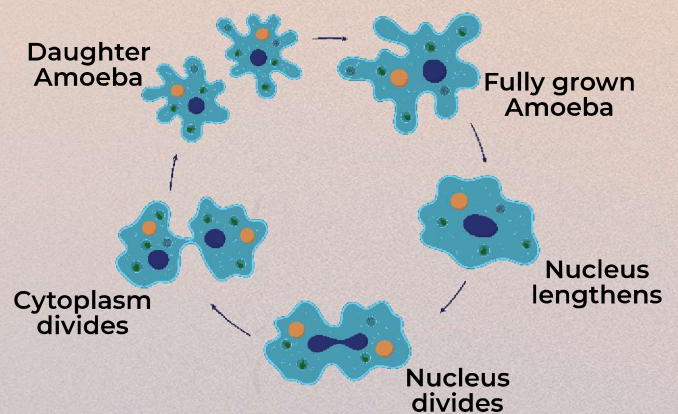
Budding



- Budding amongst animals is commonly seen in Hydra.
- In this type of reproduction, one or more small bulb like outgrowth or bulges are formed on the body.
- These are called buds and are responsible for giving rise to new individual.
- The bud detaches itself from the parent body. It grows to full size and becomes a new individual.
- This method of asexual reproduction in which individual develops from the bud is called budding.

Binary fission

- An animal reproduces by dividing into two individuals is called binary fission, it begins by division of its nucleus into two nucleus, followed by division of its body. E.g.: Amoeba, Paramecium, Bacteria etc.



Differences between sexual and asexual reproduction

Sexual reproduction	Asexual reproduction
It is usually bi-parental.	It is always uniparental.
Gametes are always formed.	Gametes are not formed.
Fertilization takes place.	Fertilization does not take place.
Zygote is formed.	No zygote formation.
Offspring genetically differ from the parents.	Offspring are genetically identical to the parents.

Cloning

The production of an exact copy of a cell, any other living part, or a complete organism. Cloning of an animal was successfully performed for the first time by Ian Wilmut and his colleagues at the Roslin Institute in Edinburgh, Scotland. They successfully cloned a sheep named Dolly. Dolly was born on 5th July 1996 and was the first mammal to be cloned.

