

***Chapter 9***  
***Reproduction In Animals***

# ***Topics to be covered:***

- Modes of Reproduction
- Male and female reproductive organs
- Process of Fertilization
- Types of fertilization
- Development of embryo
- Oviparous and viviparous animals
- Metamorphosis
- Asexual reproduction- Budding, Binary Fission

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graph TD; A[Modes of reproduction] --> B[Sexual Reproduction]; A --> C[Asexual Reproduction];
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# Modes of reproduction

Sexual  
Reproduction

Asexual  
Reproduction

- **Sexual reproduction-** The type of reproduction in which fusion of male and female gamete takes place is called as sexual reproduction.
- **Asexual reproduction-** The type of reproduction in which there is no fusion of mal and female gametes and only a single parent is involved is known as asexual reproduction.



**Male reproductive  
organs**

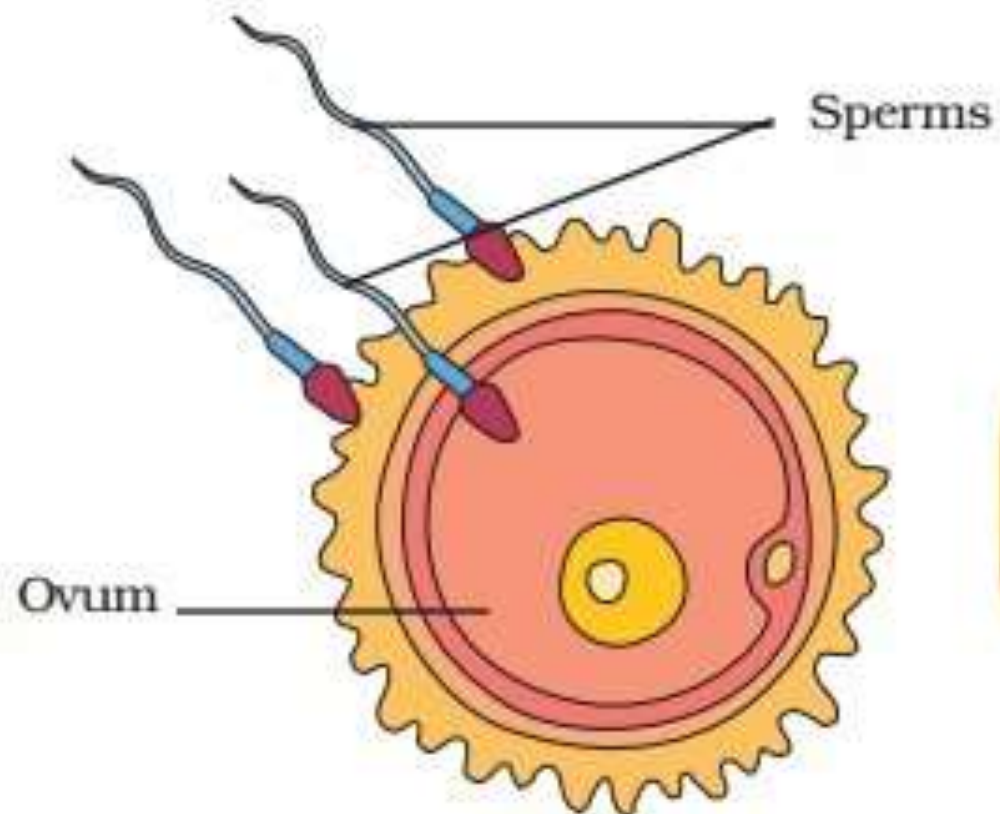
- A pair of testes (singular, testis),
- two sperm ducts
- a penis

**Female reproductive  
organs**

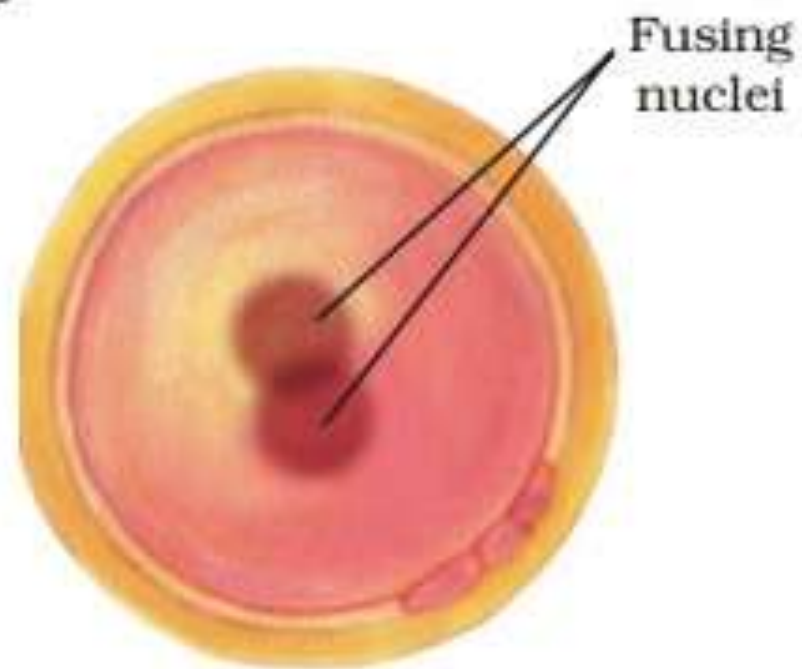
- a pair of ovaries,
- oviducts (fallopian tubes) and
- the uterus

# ***Fertilization***

- The first step in the process of reproduction is the fusion of a sperm and an ovum. When sperms come in contact with an egg, one of the sperms may fuse with the egg. Such fusion of the egg and the sperm is called **fertilisation**.
- During fertilisation, the nuclei of the sperm and the egg fuse to form a single nucleus.
- This results in the formation of a fertilised egg or **zygote**.



**Fertilization**



**Zygote**

# Types of Fertilization

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graph TD; A[Types of Fertilization] --> B[Internal Fertilization]; A --> C[External Fertilization];
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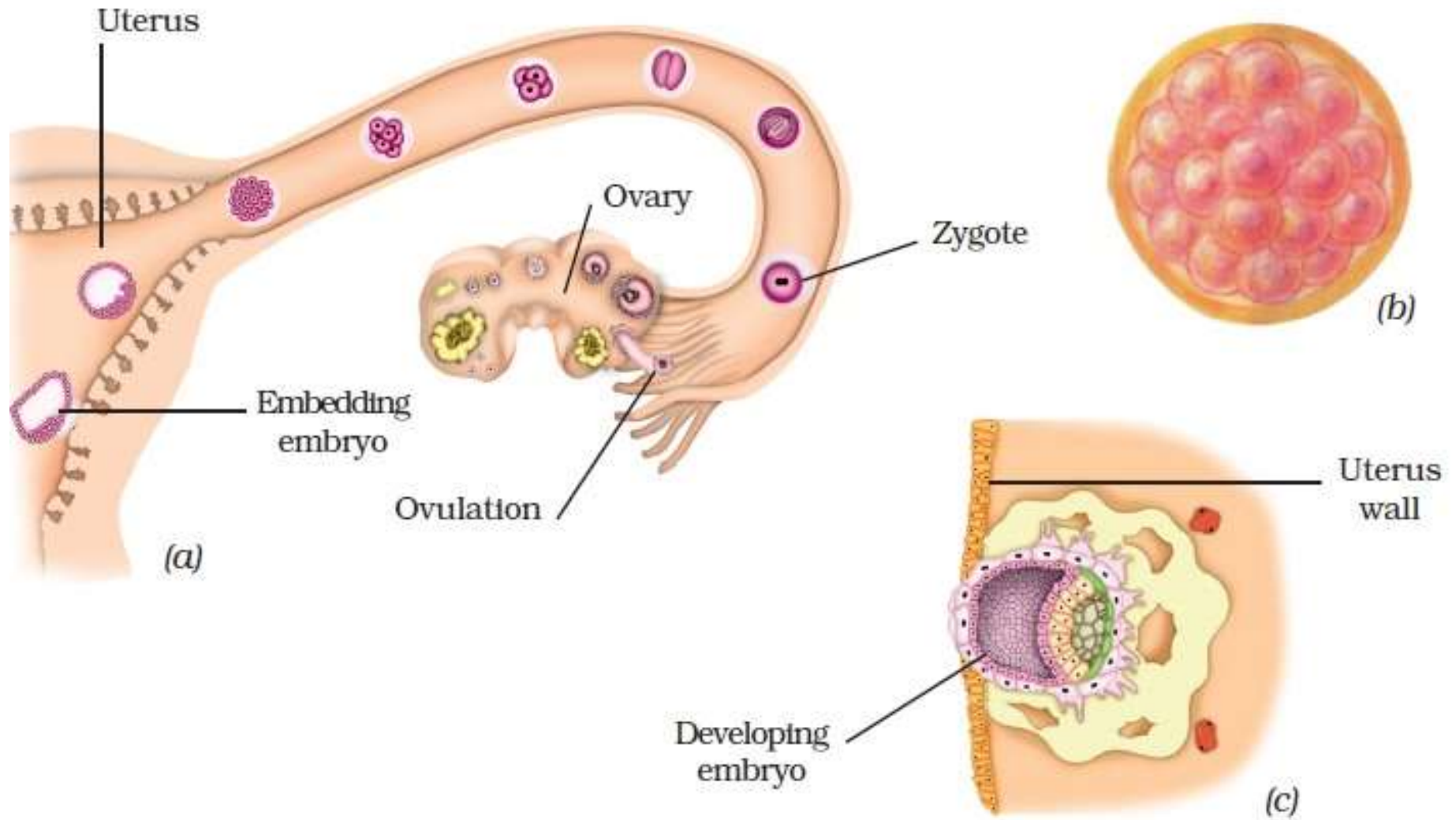
Internal  
Fertilization

External  
Fertilization

- **Internal fertilization-** Fertilisation which takes place inside the female body is called internal fertilisation. Internal fertilisation occurs in many animals including humans, cows, dogs and hens.
- **External fertilization** - The type of fertilisation in which the fusion of a male and a female gamete takes place outside the body of the female is called external fertilisation. It is very common in aquatic animals such as fish, starfish, etc.

# ***Development of Embryo***

- The zygote divides repeatedly to give rise to a ball of cells. The cells then begin to form groups that develop into different tissues and organs of the body. This developing structure is termed an embryo.
- The embryo gets embedded in the wall of the uterus for further development.
- The stage of the embryo in which all the body parts can be identified is called a foetus.
- When the development of the foetus is complete, the mother gives birth to the baby.



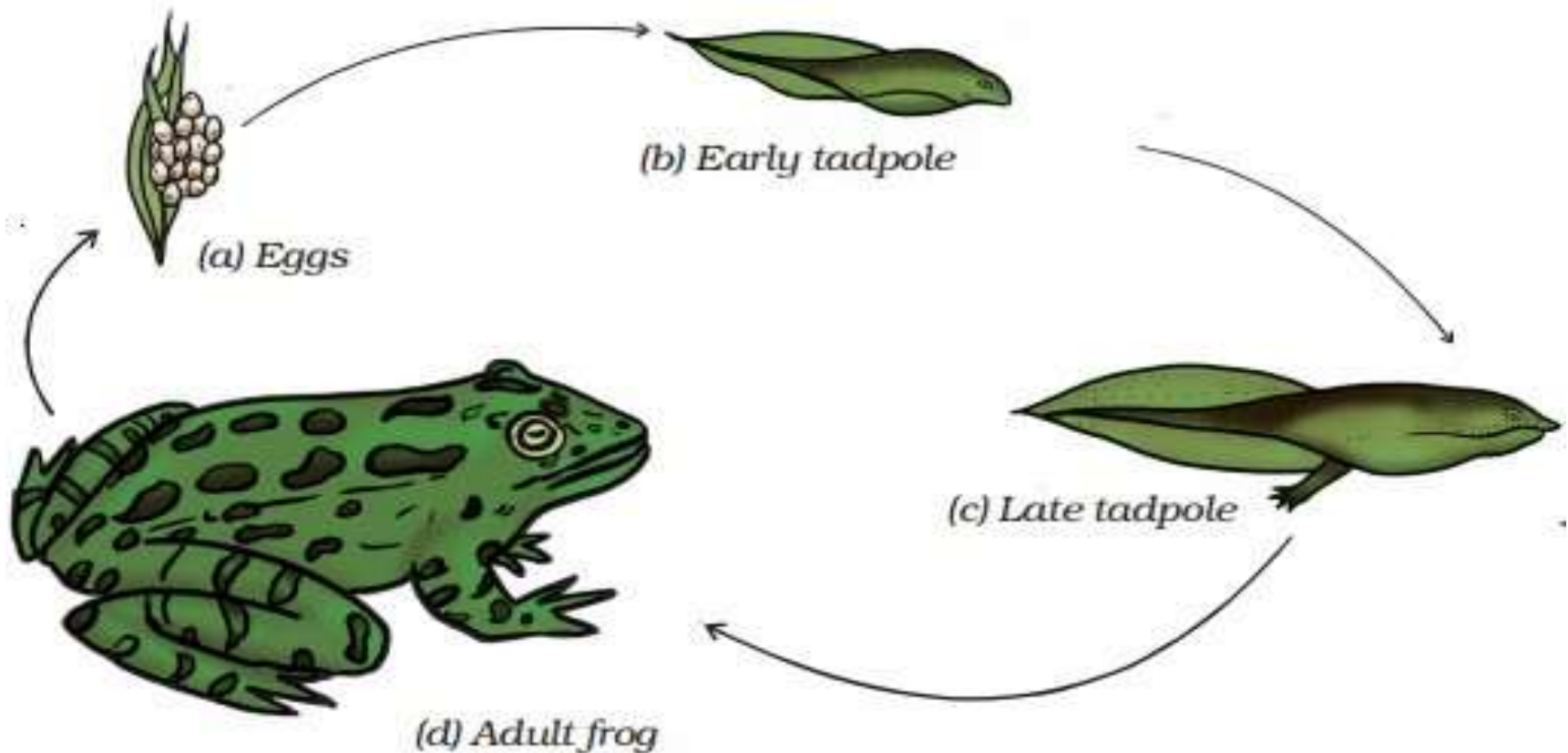
***(a) Zygote formation and development of an embryo from the zygote; (b) Ball of cells (enlarged); (c) Embedding of the embryo in the uterus (enlarged)***

# ***Oviparous and Viviparous animals***

- **Oviparous animals** – Those animals which lay eggs are called oviparous animals.
- **Viviparous animals** - The animals which give birth to young ones are called viviparous animals.

# *Metamorphosis*

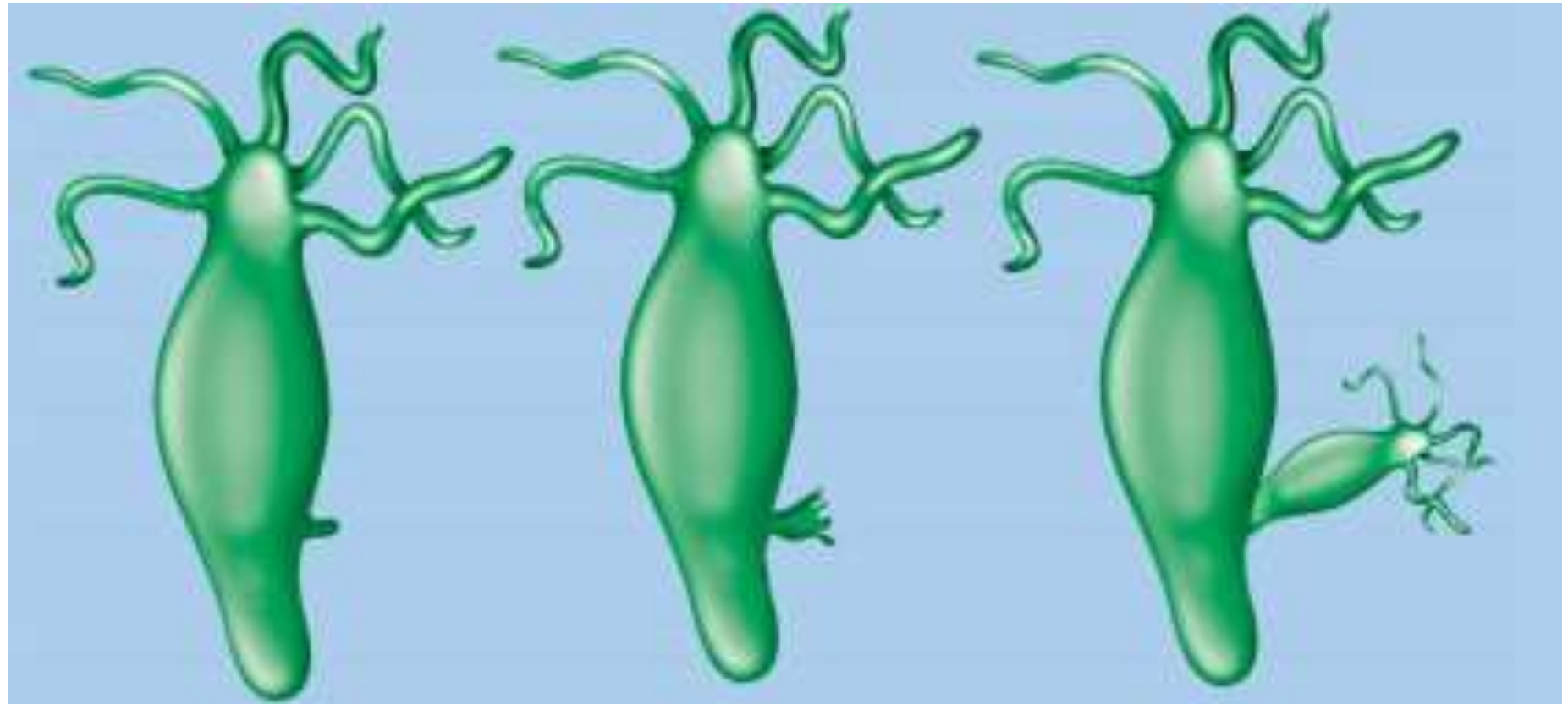
- The transformation of the larva into an adult through drastic changes is called metamorphosis.



**Life cycle of frog**

# ***Asexual Reproduction- Budding***

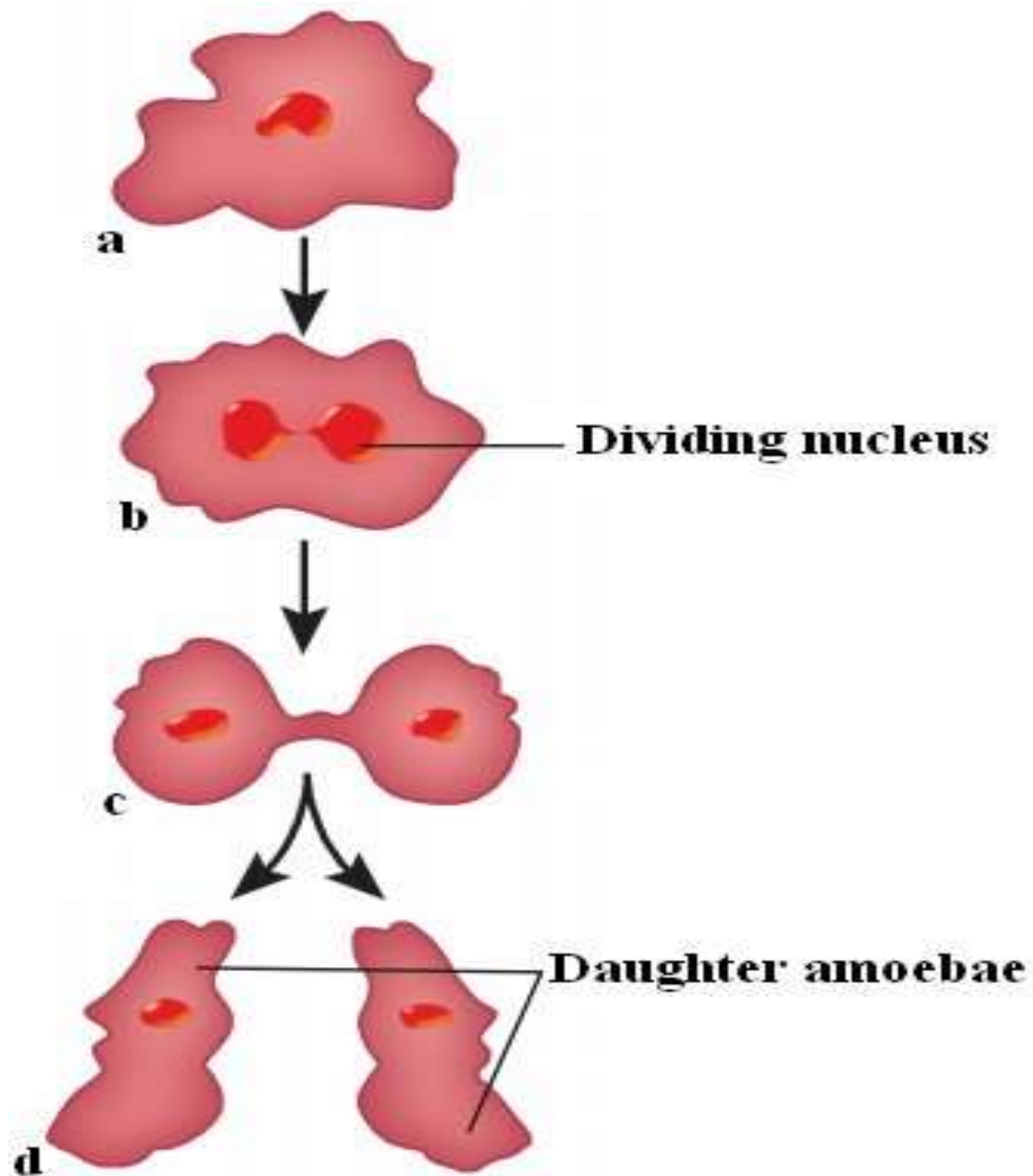
- In each hydra, there may be one or more bulges. These bulges are the developing new individuals and they are called buds.
- In hydra, the new individuals develop as outgrowths from a single parent.
- The type of reproduction in which only a single parent is involved is called asexual reproduction.
- Since new individuals develop from the buds in hydra, this type of asexual reproduction is called **budding**.



**Budding in Hydra**

# ***Asexual reproduction – Binary Fission***

- It begins the process of reproduction by the division of its nucleus into two nuclei.
- This is followed by division of its body into two, each part receiving a nucleus.
- Finally, two amoebae are produced from one parent amoeba.
- This type of asexual reproduction in which an animal reproduces by dividing into two individuals is called **binary fission**.



**Binary fission in Amoeba**

***THANK YOU***