

Chapter 2: Reproduction in Plants and Animals

Reproduction is the process by which living organisms produce offspring to continue their species. It can be **asexual** or **sexual** in both plants and animals.

1. Reproduction in Plants

Asexual Reproduction (Only one parent is involved, no fusion of gametes)

- **Binary Fission:** One parent cell divides into two identical cells. (*Example: Bacteria*)
 - **Budding:** A small bud grows on the parent, detaches, and becomes a new organism. (*Example: Yeast, Hydra*)
 - **Fragmentation:** The body of an organism breaks into fragments, and each fragment grows into a new organism. (*Example: Algae – Spirogyra*)
 - **Spore Formation:** Tiny reproductive spores are released and grow into new plants under favorable conditions. (*Example: Fungi – Rhizopus, Ferns*)
 - **Vegetative Propagation:** New plants grow from roots, stems, or leaves. (*Example: Potato, Bryophyllum – leaves, Ginger – stem, Carrot – root*)
 - **Artificial Propagation by Tissue Culture:** A small part of a plant is grown in a nutrient medium under controlled conditions to form a new plant. (*Example: Orchid, Banana, Rose*)
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Sexual Reproduction in Plants

- Involves **male and female reproductive parts** in flowers.

Parts of a Flower (4 Whorls)

1. **Calyx (Sepals):** Protects the bud.
2. **Corolla (Petals):** Attracts pollinators.
3. **Androecium (Stamens – Male part):** Produces pollen (male gametes).
4. **Gynoecium (Carpel – Female part):** Contains ovary (produces ovules).

Pollination (Transfer of pollen from anther to stigma)

- **Self-Pollination:** Pollen from the same flower fertilizes the ovule. (*Example: Pea, Tomato*)
- **Cross-Pollination:** Pollen is transferred between different flowers of the same species. (*Example: Apple, Sunflower*)

Agents of Pollination & Their Characteristics

Agent	Characteristics of Flowers	Examples
Insect (Bees, Butterflies)	Bright petals, sweet scent, nectar	Rose, Sunflower
Wind	Small, light pollen, no scent, exposed stamens	Maize, Grass
Water	Floating pollen, flowers near water	Lotus, Hydrilla

Fertilization Process (Brief Flowchart)

Pollination → Pollen lands on stigma → Pollen tube forms → Male gamete reaches ovule → Fertilization occurs → Zygote forms → Seed formation

Artificial Pollination

Humans transfer pollen from one flower to another to improve plant breeding.

2. Reproduction in Animals

Sexual Reproduction in Humans

- Involves **male and female reproductive organs**.
- **Male gamete (Sperm)** fuses with **female gamete (Ovum)** to form a zygote, which develops into a baby.

Main Organs of the Reproductive System

- **Male Reproductive System:**
 - ✓ **Testes** – Produce sperm.
 - ✓ **Penis** – Transfers sperm.
 - ✓ **Vas deferens** – Carries sperm.
 - **Female Reproductive System:**
 - ✓ **Ovaries** – Produce eggs.
 - ✓ **Fallopian Tubes** – Site of fertilization.
 - ✓ **Uterus** – Supports embryo development.
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Conclusion

Reproduction ensures the survival of species. Plants reproduce **asexually and sexually**, while animals mainly reproduce **sexually**. Pollination and fertilization are key processes in plant reproduction, while in humans, the reproductive system enables the formation of new life. 🌱👶

