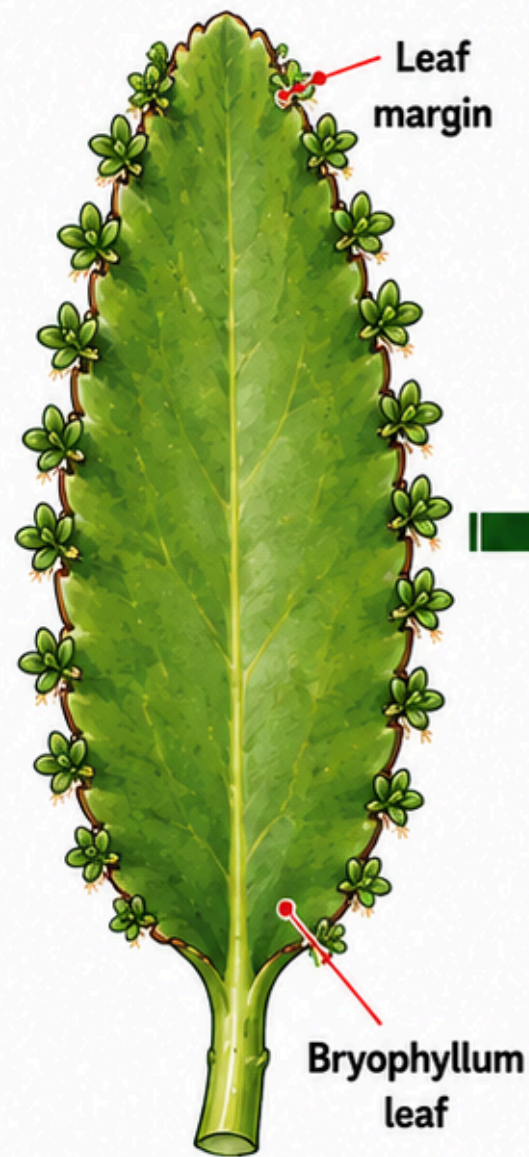


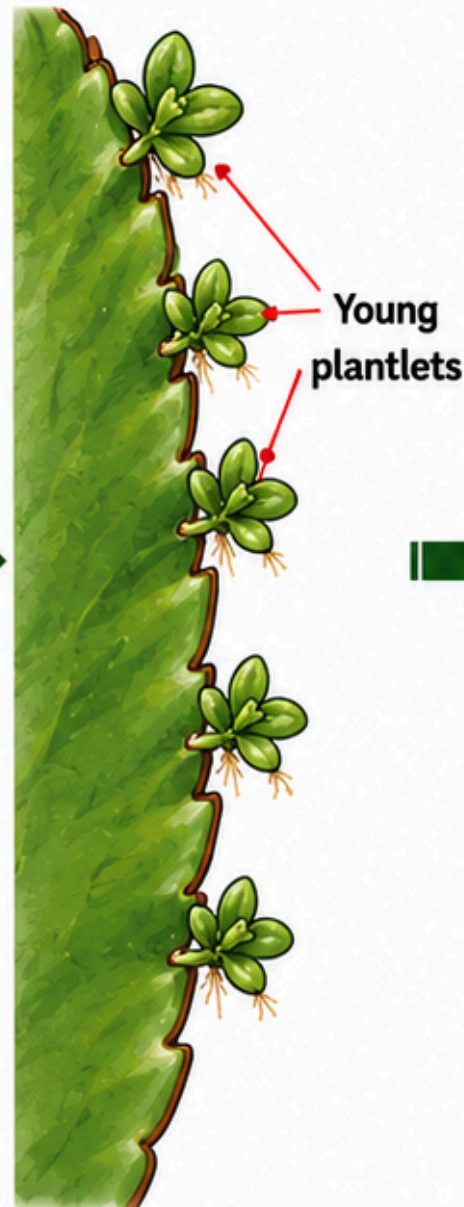
BRYOPHYLLUM – VEGETATIVE PROPAGATION

In Bryophyllum, tiny plantlets develop along the leaf margins. These plantlets grow, develop roots and shoots, and form new plants.

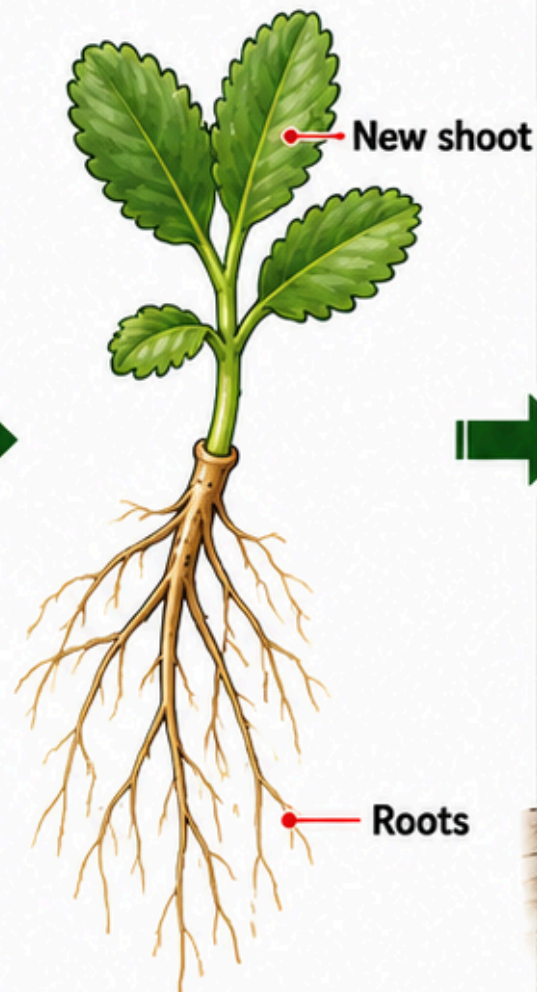
1 Bryophyllum Leaf



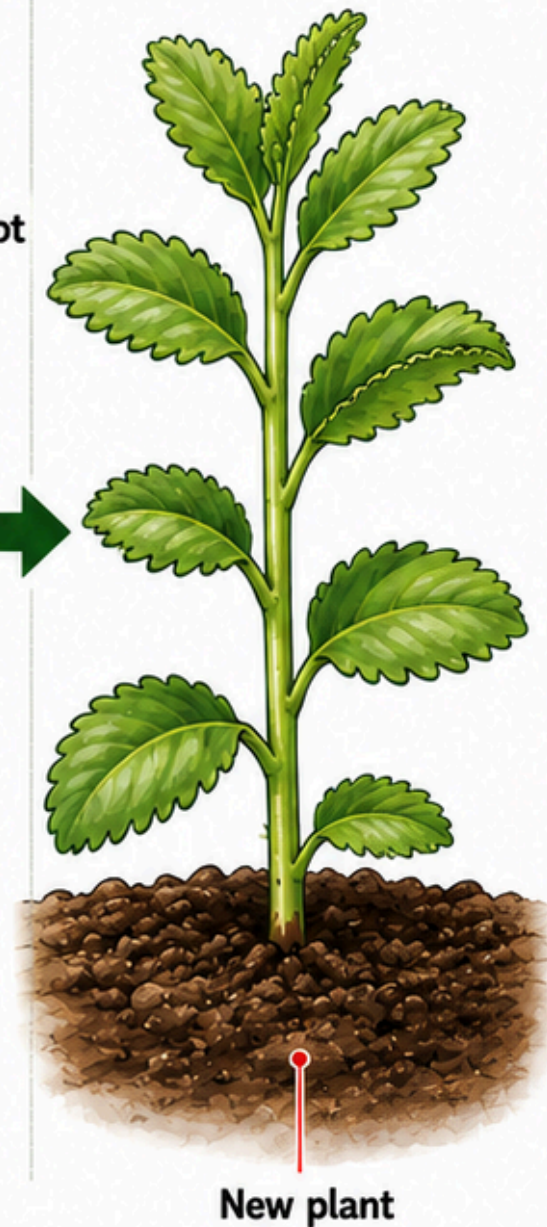
2 Young Plantlets



3 Roots and Shoots Develop



4 New Plant



KEY POINT



- ★ Bryophyllum reproduces **asexually** by leaves.
- ★ Tiny plantlets are produced on the **leaf margins**.
- ★ These plantlets grow, develop **roots and shoots**, and form new plants.



One leaf can give rise to many new plants!



CUTTING – VEGETATIVE PROPAGATION

In **cutting**, a stem piece (**cutting**) from the parent plant is planted in soil. It develops **roots** and grows into a **new plant**.

STEPS

1 Select the parent plant



A healthy, disease-free and mature plant is selected.

2 Take the cutting



A portion of the stem with 2–4 nodes (leaf joints) is cut with a sharp blade.

3 Plant the cutting in soil



The cutting is planted in moist, loose soil so that at least one node is below the soil.

4 Roots develop



Roots develop from the node below the soil after some days.

5 New plant is formed



The cutting grows into a new plant with roots, stem and leaves.

EXAMPLES OF PLANTS PROPAGATED BY CUTTINGS



Hibiscus



Rose



Bougainvillea



Sugarcane



Money Plant

KEY POINTS



- ✦ Cutting is an artificial method of **asexual reproduction**.
- ✦ It is **simple**, **quick** and economical.
- ✦ The new plant is genetically **identical** to the parent plant.
- ✦ It is widely used in **horticulture**.

Remember!

A small cutting today,
a beautiful plant
tomorrow.

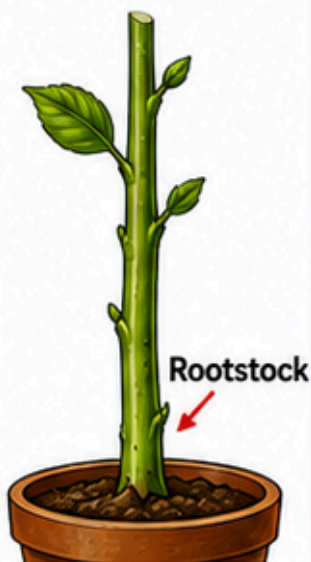


GRAFTING – STEPS

Grafting is a vegetative propagation method in which a stem piece (**scion**) from the desired plant is joined to another plant (**rootstock**) so that they grow as a **single plant**.

STEPS OF GRAFTING

1 Select Rootstock



Select a healthy plant with a strong stem to act as the rootstock.

2 Select Scion



Select a healthy shoot (scion) from the desired plant having 2–4 buds.

3 Prepare Rootstock



Make a vertical cut on the rootstock and open it gently in a V-shape.

4 Prepare Scion



Cut the base of the scion into a wedge shape to fit into the V-cut.

5 Join Scion to Rootstock



Insert the scion wedge into the V-cut of the rootstock so that the cambia touch.

6 Tie and Protect



Tie the union firmly with tape or polythene strip and coat with grafting wax. After some days, it grows as a single plant.

BEFORE GRAFTING



Rootstock
(Plant with roots)

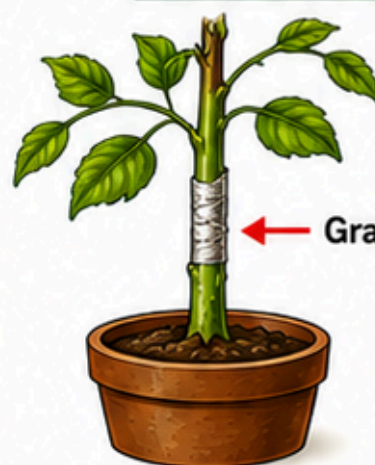
+



Scion
(Desired plant stem)



AFTER GRAFTING



← Graft union

Both grow together as a single plant.

KEY POINTS



- ✓ Grafting is an artificial method of vegetative propagation.
- ✓ It combines the desirable qualities of both scion and rootstock.
- ✓ It is commonly used in fruit plants like mango, citrus, rose, apple, etc.
- ✓ It helps in early bearing, disease resistance and improved quality.

EXAMPLES

- Mango
- Guava
- Rose
- Citrus (Orange, Lemon)
- Apple



LAYERING – VEGETATIVE PROPAGATION

In layering, a low, flexible branch of the parent plant is bent to the ground and a part of it is covered with soil. Roots are formed on the buried part. The rooted branch is then cut from the parent plant and grows as a **new plant**.

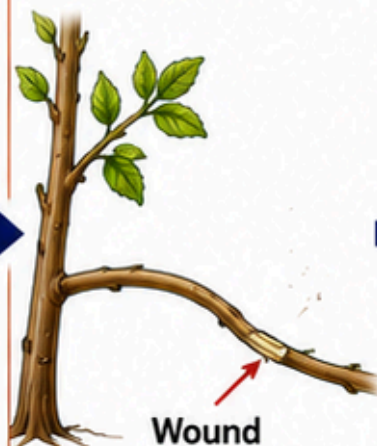
STEPS OF LAYERING

1 Select a suitable branch



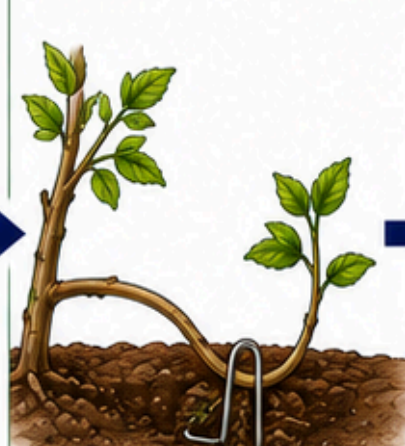
Select a healthy, low, flexible branch of the parent plant.

2 Make a wound



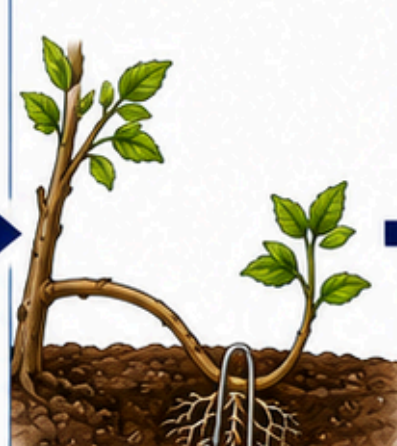
Make a small cut or remove a ring of bark (wound) on the lower side of the branch.

3 Bend and cover with soil



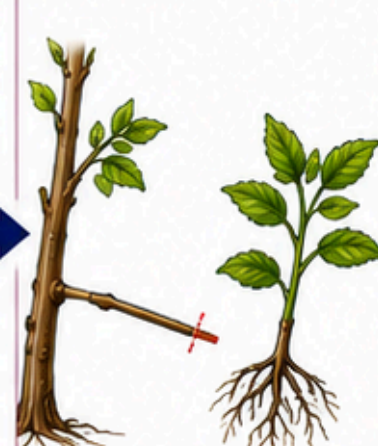
Bend the branch to the ground and cover the wounded part with soil. Fix it with a U-shaped peg.

4 Roots develop



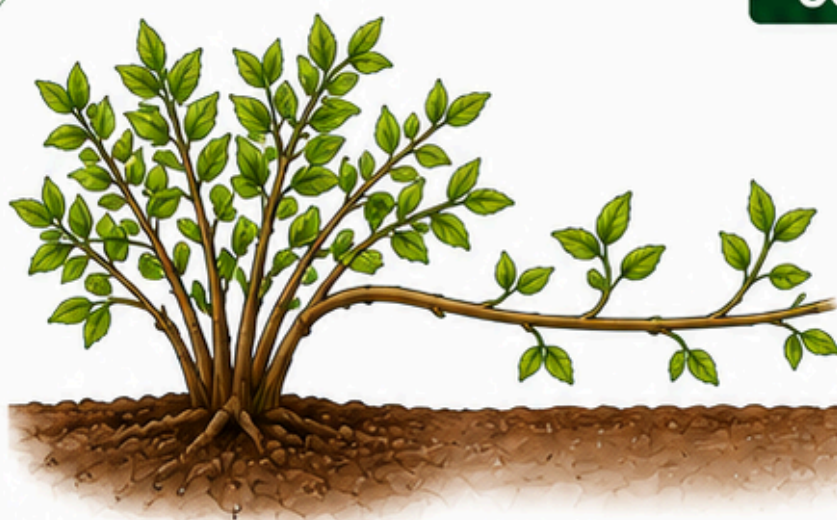
Roots develop from the wounded part after some time.

5 New plant is formed



Cut the new plant from the parent plant. It grows as an independent new plant.

COMPLETE PROCESS

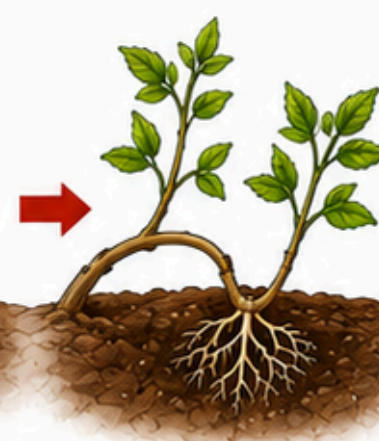


Parent plant

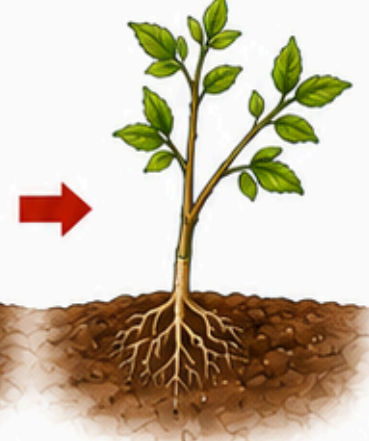


Branch selected

Branch bent and covered with soil



Roots formed



New plant (separated)

KEY POINTS



- Layering is a **natural** method of vegetative propagation.
- Roots** are formed on the buried part of the branch.
- The new plant is **genetically identical** to the parent plant.
- Commonly used in plants like **jasmine, guava, litchi**, etc.

EXAMPLES OF PLANTS PROPAGATED BY LAYERING



Jasmine



Guava



Litchi



Hibiscus



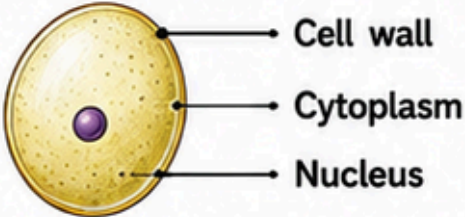
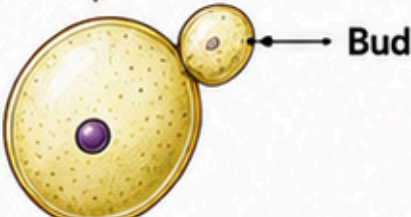
BUDDING IN YEAST & HYDRA

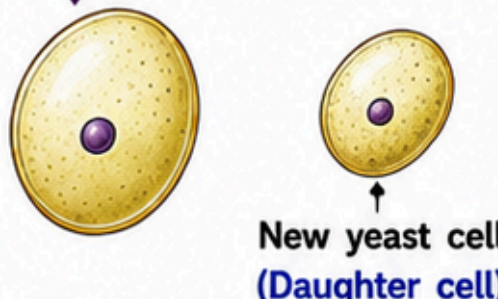


Budding is a type of **asexual reproduction** in which a small outgrowth or bud develops on the parent organism. The bud grows and detaches from the parent and becomes a **new individual**.

BUDDING IN YEAST

Yeast is a unicellular fungus.
Bud develops on the parent cell.

- 1 Parent cell**
Yeast cell is oval in shape.

- 2 Bud appears**
A small bud appears on the parent cell.

- 3 Bud grows**
The bud grows larger.

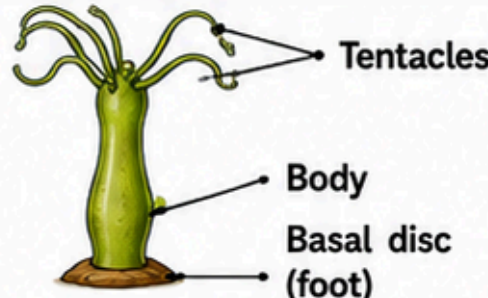
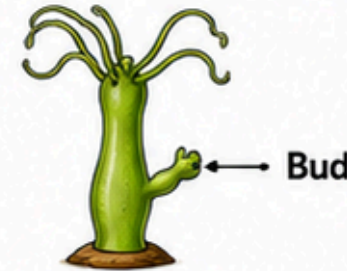
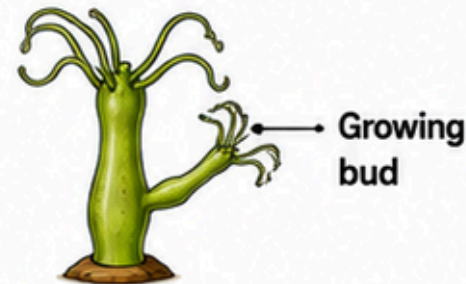
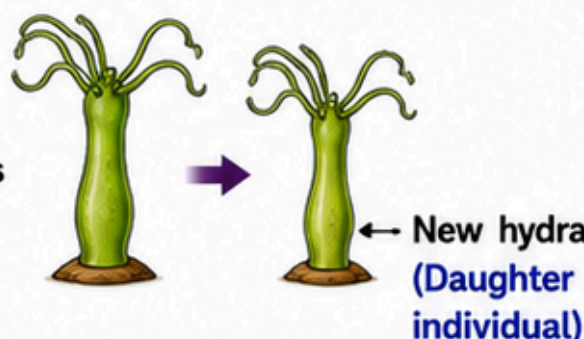
- 4 Bud separates**
The mature bud separates from the parent cell and becomes a new yeast cell.




Example: *Saccharomyces* (baker's yeast) used in baking and fermentation.

BUDDING IN HYDRA

Hydra is a small freshwater animal.
Bud develops on the body of the parent.

- 1 Parent hydra**
Hydra is attached to a surface with its basal disc.

- 2 Bud appears**
A small bud appears on the side of the body.

- 3 Bud grows**
The bud grows larger.

- 4 Bud detaches**
The mature bud detaches from the parent and becomes a new hydra.




Example: *Hydra vulgaris*

KEY POINTS



- ★ Budding involves only one parent.
- ★ It is a common method of **asexual reproduction**.
- ★ Offspring are genetically identical to the parent.
- ★ It occurs in organisms like yeast, hydra, some plants and many others.

Budding produces new individuals without the formation of gametes.



SPORE FORMATION IN BREAD MOULD

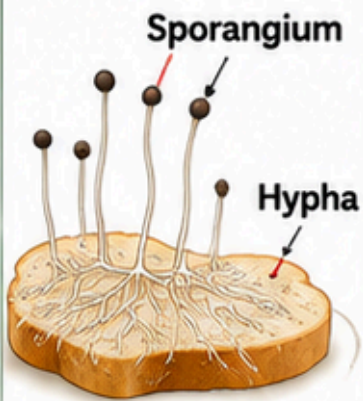


Bread mould (*Rhizopus*) reproduces **asexually** by the formation of **spores**. Spores are tiny, light, round structures that are produced in large numbers. They are released in the air and grow into **new bread mould** when they land on a suitable surface.

STEPS OF SPORE FORMATION IN BREAD MOULD

1

**Mycelium
(Vegetative body)**



The bread mould consists of thread-like **hyphae**. Some hyphae grow upright and form spherical structures at their tips called **sporangia**.

2

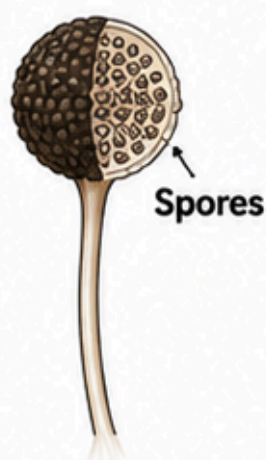
**Mature
Sporangium**



The sporangium grows in size and becomes mature. It is filled with a large number of spores.

3

**Spores
Formation**



Many tiny, round spores are produced inside the sporangium.

4

**Release of
Spores**



The mature sporangium bursts open and releases the spores into the air.

5

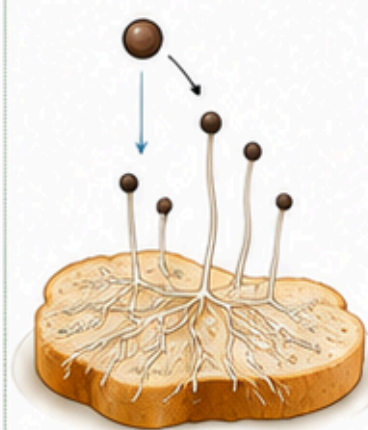
Dispersal



The spores are dispersed by air (wind), water, insects or other agents to distant places.

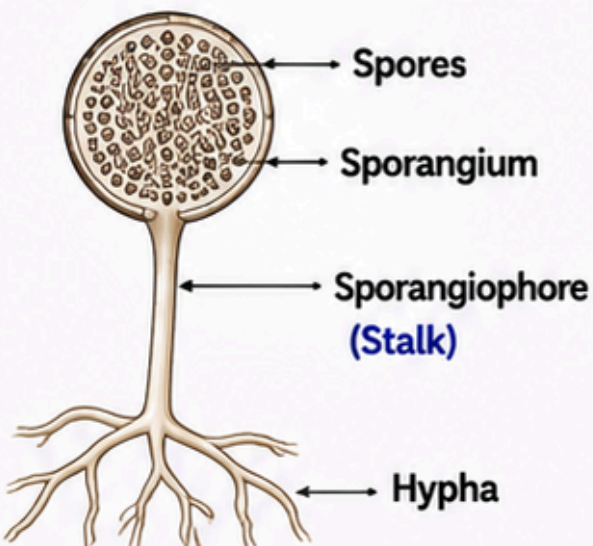
6

**Germination and
New Mycelium**



When a spore lands on a suitable moist surface, it germinates and grows into a new mycelium.

STRUCTURE OF SPORANGIUM



KEY POINTS

- ★ Bread mould reproduces **asexually** by the formation of **spores**.
- ★ Spores are produced in **sporangia** at the tips of hyphae.
- ★ The sporangium bursts open and releases spores in large numbers.
- ★ Spores are dispersed by **air, water** or **insects**.
- ★ Each spore germinates under favourable conditions and produces a **new bread mould**.

OBSERVATION

Keep a slice of bread in a moist place for a few days. You will see black or dark brown spherical structures on thin stalks.

These are sporangia containing spores.



Spores are tiny but very important because each one can grow into a new organism!





STRUCTURE OF A BISEXUAL FLOWER



A bisexual flower has both **male (stamens)** and **female (pistil or carpel)** reproductive parts in the same flower.

MALE PART (STAMEN)

1. Anther

The anther is the top part of the stamen. It produces pollen grains.

2. Filament

The filament is the stalk of the stamen. It holds the anther in position.

OTHER PARTS

1. Petal (Corolla)

Brightly coloured part that attracts insects for pollination.

2. Sepal (Calyx)

Green, leaf-like part that protects the flower bud.

3. Receptacle (Thalamus)

The swollen end of the pedicel where all floral parts are attached.

4. Pedicel (Flower stalk)

The stalk that attaches the flower to the plant.

FEMALE PART (PISTIL OR CARPEL)

1. Stigma

The sticky top part of the pistil that receives pollen grains.

2. Style

A long, slender tube that connects the stigma to the ovary.

3. Ovary

The swollen basal part of the pistil. It contains ovules.

4. Ovules

Small structures inside the ovary. Each ovule contains an egg cell.

Since it has both stamens and pistil, it is called a **bisexual flower**.

SUMMARY

- **Stamens** = Male part
- **Pistil/Carpel** = Female part
- **Petals** = Attract pollinators
- **Sepals** = Protect the bud
- Together they help in reproduction of the plant.

KEY POINTS



- ★ A bisexual flower contains **both male** and **female** reproductive parts.
- ★ **Stamens** produce pollen grains (male gametes).
- ★ **Pistil** contains ovules (female gametes).
- ★ Pollination and fertilisation lead to the formation of fruits and seeds.
- ★ **Example** of bisexual flowers: Hibiscus, Mustard, Petunia, China rose, etc.

EXAMPLES



Hibiscus



Mustard



Petunia



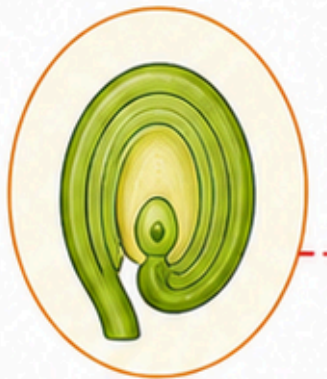
China rose

STRUCTURE OF A PISTIL

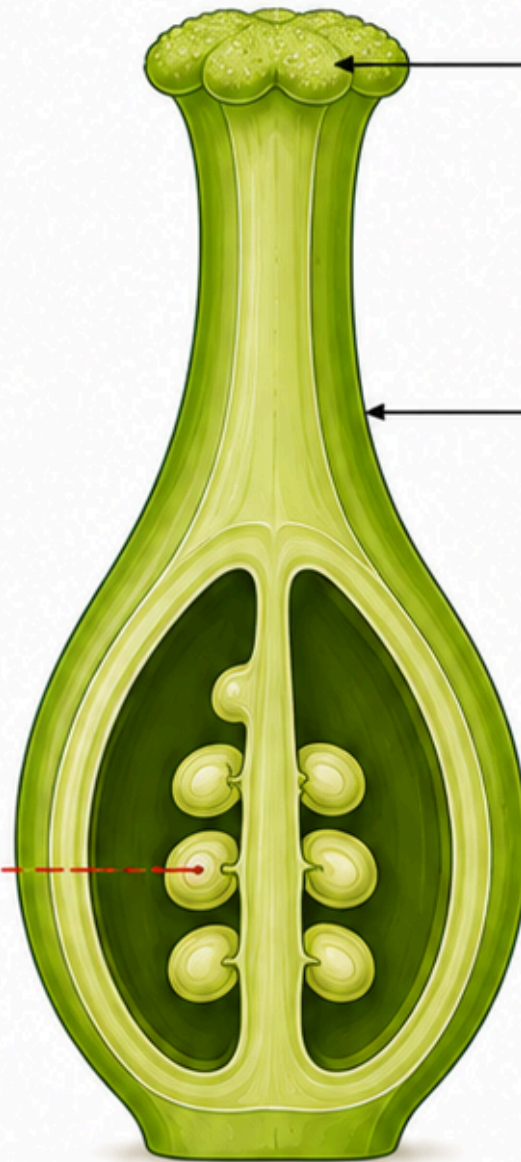
The **pistil (carpel)** is the female reproductive part of a flower. It consists of three main parts: **stigma**, **style** and **ovary**.

OVULE (Inside Ovary)

Each ovule contains an egg cell. After fertilisation, the ovule develops into a seed.



Ovule
(contains egg cell)



1. STIGMA

The topmost part of the pistil. It is sticky and receives pollen grains during pollination.

2. STYLE

A long, slender tube that connects the stigma to the ovary. It provides a passage for pollen tubes to reach the ovary.

3. OVARY

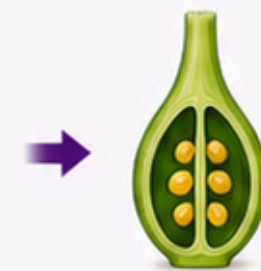
The swollen basal part of the pistil. It contains one or more ovules.

ROLE OF PISTIL

- Stigma receives pollen grains.
- Style allows the pollen tube to reach the ovary.
- Ovary contains ovules; after fertilisation, ovules form seeds and ovary forms fruit.
- Together, pistil helps in sexual reproduction in flowering plants.



Pistil



After fertilisation
Ovules → Seeds



Ovary → Fruit

KEY POINTS



- ★ Pistil is the female part of a flower.
- ★ It is made up of stigma, style and ovary.
- ★ It bears ovules that contain egg cells.
- ★ After fertilisation, ovules become seeds and the ovary becomes fruit.

EXAMPLES



Hibiscus



Mustard



Petunia



Lily



Rose



SELF-POLLINATION VS CROSS-POLLINATION

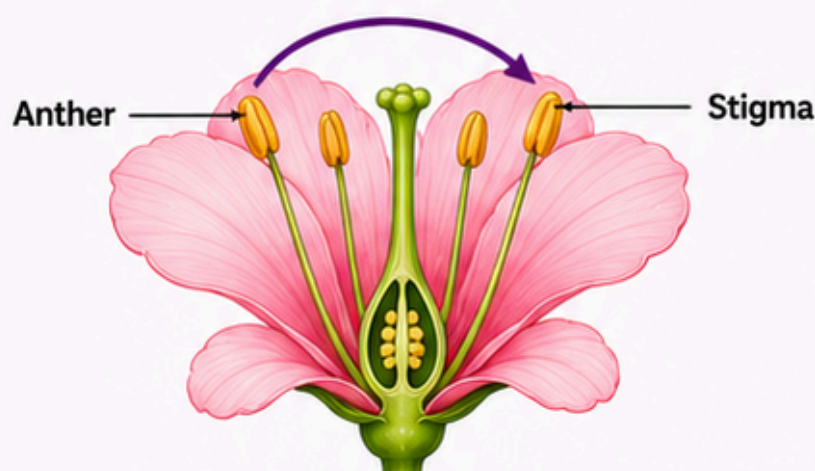


Pollination is the transfer of pollen grains from the anther to the stigma of a flower. It can occur in the **same flower** or between **different flowers**.



SELF-POLLINATION

Transfer of pollen grains from the anther to the stigma of the **same flower** or another flower on the **same plant**.



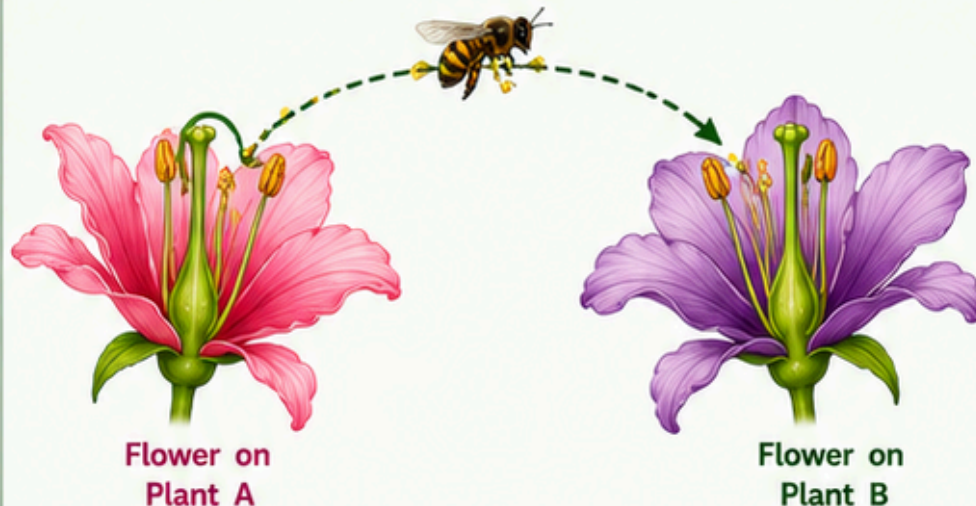
Pollen is transferred **within** the same flower.

TYPES

- ◆ **Autogamy** – Pollen from anther falls on the stigma of the same flower.
- ◆ **Geitonogamy** – Pollen from anther of one flower reaches the stigma of another flower on the same plant.

CROSS-POLLINATION

Transfer of pollen grains from the anther of a flower to the stigma of a flower on a **different plant** of the same species.



Pollen is transferred to a flower on a different plant of the same species.

AGENTS

Wind • Water • Insects • Birds • Other animals



KEY DIFFERENCES

Aspect	Self-Pollination	Cross-Pollination
Definition	Pollen transfer within the same flower or same plant.	Pollen transfer between flowers on different plants of the same species.
Genetic Variation	Very little or no variation. Offspring are nearly identical to parent.	High variation. Offspring show new combinations of traits.
Dependence on Agents	Does not depend on external agents.	Depends on external agents (wind, insects, water, animals, etc.).
Amount of Pollen	Less pollen is needed.	More pollen is needed.
Offspring / Seeds	Fewer and may be weaker.	More and generally stronger.
Examples	Pea, Wheat, Rice, Tomato, Groundnut, Bean	Maize, Papaya, Cucumber, Pumpkin, Sunflower, Apple
Advantage	Assures seed formation even in isolation. Maintains pure lines.	Increases variation and adaptability. Produces healthier and vigorous offspring.

KEY POINTS



- ★ Self-pollination occurs in the same flower or the same plant.
- ★ Cross-pollination occurs between flowers on different plants of the same species.
- ★ Cross-pollination leads to genetic variation and better adaptation.
- ★ Self-pollination helps in seed production even in the absence of pollinating agents.

EXAMPLES

SELF-POLLINATION



Pea



Wheat



Tomato



Groundnut

CROSS-POLLINATION



Maize



Sunflower



Apple



Cucumber

POLLEN GERMINATION & POLLEN TUBE

After pollination, the pollen grain lands on the **stigma** of a pistil, germinates and produces a pollen tube. The pollen tube grows down through the **style** and reaches the **ovule** in the ovary to bring about **fertilisation**.

STEPS OF POLLEN GERMINATION & POLLEN TUBE GROWTH

1 Pollination

Pollen grains are transferred from the anther to the stigma.



2 Pollen grain on stigma

The pollen grain lands on the sticky stigma.



3 Pollen germination

The pollen grain absorbs moisture and germinates. A pollen tube emerges out of it through a germ pore.



4 Pollen tube growth

The pollen tube grows down through the style towards the ovary.



5 Entry into ovary

The pollen tube enters the ovary through the ovule (via micropyle).

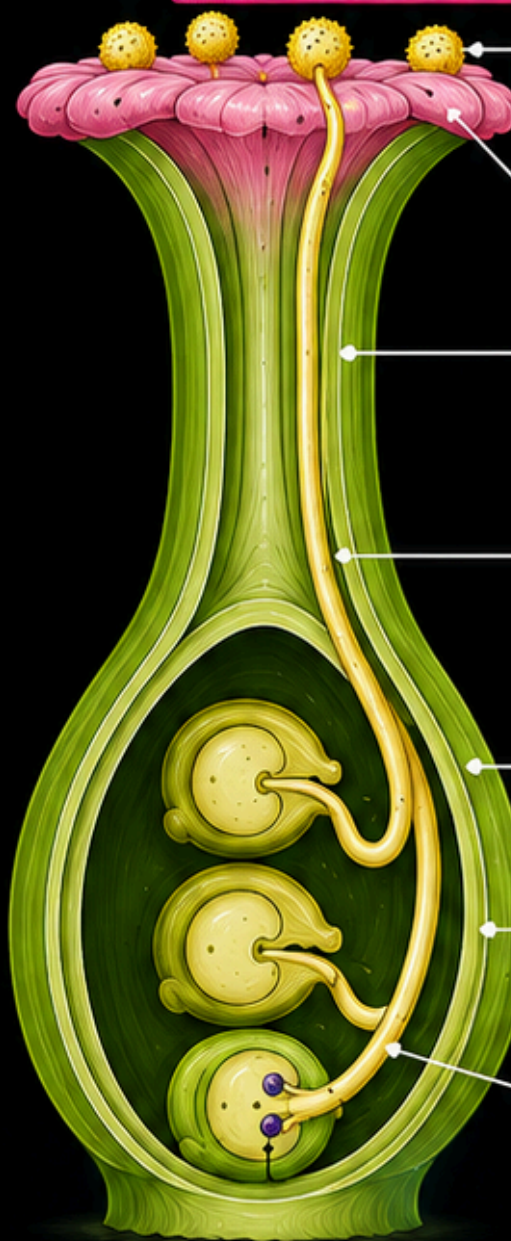


6 Reaches the ovule

The pollen tube reaches the embryo sac and releases the male gametes for fertilisation.



PATH OF POLLEN TUBE



Pollen grain

Male gametophyte (microspore)

Stigma

Sticky surface that receives pollen.

Style

Slender tube that provides passage for the pollen tube.

Pollen tube

Narrow tube formed from the pollen grain; it grows down the style.

Ovary

Swollen basal part containing ovules.

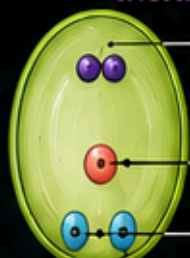
Ovule

Each ovule contains the female gametophyte (embryo sac).

Micropyle

A small opening through which the pollen tube enters the ovule.

Inside the Ovule (Embryo Sac)



Two polar nuclei (fuse to form secondary nucleus)

Egg cell

Synergids

The pollen tube tip releases two male gametes into the embryo sac for fertilisation.



KEY POINTS

- ★ Pollen germination requires moisture, warmth and a suitable surface.
- ★ The pollen tube grows through the style by the action of enzymes.
- ★ It carries the two male gametes to the ovule.
- ★ This process is essential for fertilisation and seed formation.

IMPORTANCE

- ✓ Ensures delivery of male gametes to the ovule.
- ✓ Leads to fertilisation, seed formation and continuation of the species.
- ✓ Basis of sexual reproduction in flowering plants.

From a tiny **pollen grain** to a tiny **pollen tube** — nature ensures the **journey of life!**



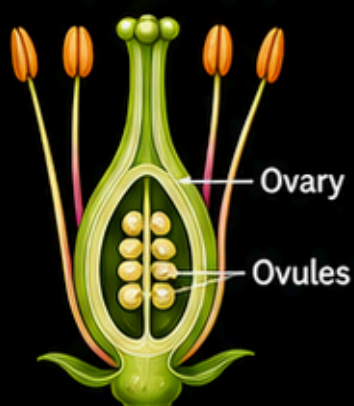
TRANSFORMATION OF OVARY INTO FRUIT



After fertilisation, the **ovary** of a flower develops into a **fruit**.
The **ovules** inside the ovary develop into **seeds**.

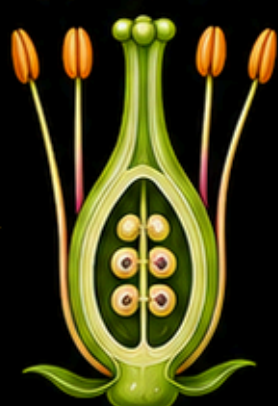
STAGES OF TRANSFORMATION

1. BEFORE FERTILISATION



The ovary contains ovules.

2. AFTER FERTILISATION



Ovules are fertilised by pollen grains.

3. OVARY BEGINS TO GROW



The ovary enlarges. Ovules start developing into seeds.

4. OVARY BECOMES FRUIT



The ovary wall ripens and becomes the fruit wall (pericarp).

5. RIPE FRUIT



The fruit is fully mature. Ovules become seeds.

WHAT CHANGES DURING TRANSFORMATION?

PART	BEFORE FERTILISATION	AFTER FERTILISATION	RESULT
Ovary	Small, green and soft.	Enlarges and ripens.	Becomes the fruit .
Ovules	Small structures inside the ovary.	Fertilised and grow.	Become the seeds .
Ovary Wall	Thin and tender.	Thickens and hardens.	Forms the pericarp (fruit wall).
Flower Parts (Petals, Stamens etc.)	Bright and attractive.	Wither and fall off.	No longer needed.

EXAMPLES

TOMATO



Ovary Fruit

Ovary develops into a juicy berry.

MANGO



Ovary Fruit

Ovary develops into a fleshy drupe.

PEA



Ovary Fruit (Pod)

Ovary develops into a dry pod.

APPLE



Ovary Fruit

Ovary develops into a pome.

COCONUT



Ovary Fruit

Ovary develops into a fibrous drupe.

KEY POINTS

- ★ Fertilisation is the starting point of fruit formation.
- ★ **Ovary** grows and ripens to become the **fruit**.
- ★ **Ovules** develop into **seeds**.
- ★ Other flower parts usually wither and fall off.



Flower



Fertilised Flower



Fruit



Seeds



Thus, the **ovary** of the flower transforms into a **fruit**, ensuring protection and dispersal of **seeds** for the continuation of life.



MALE REPRODUCTIVE SYSTEM

The male reproductive system is responsible for the production of male gametes (**sperms**), secretion of **male hormones** and **delivery** of sperms into the female reproductive tract.



1 TESTES (Testicles)

Pair of oval organs located in the scrotum. They produce sperms and the hormone testosterone.

2 SCROTUM

A loose pouch of skin that holds the testes outside the body. It keeps them at a temperature lower than body temperature, which is necessary for sperm production.

3 EPIDIDYMIS

A long, coiled tube on the back of each testis. Sperms mature and are stored here temporarily.

4 VAS DEFERENS

A thick muscular tube that carries sperms from the epididymis to the ejaculatory duct.

5 SEMINAL VESICLES

Pair of glands that produce a fluid rich in fructose which nourishes sperms and forms a major part of semen.

6 PROSTATE GLAND

A gland that secretes a milky fluid which activates sperms and helps in their movement.

7 COWPER'S (BULBOURETHRAL) GLANDS

Pair of small glands that secrete a lubricating fluid which neutralizes acidity in the urethra.

8 URETHRA

A tube that passes through the penis. It carries urine from the urinary bladder and semen from the male reproductive organs to the outside of the body.

9 PENIS

The copulatory organ. It helps in the transfer of semen into the female reproductive tract.

FUNCTIONS

- ✓ Produces sperms (male gametes).
- ✓ Secretes male hormones (testosterone).
- ✓ Delivers sperms into the female reproductive tract.

SPERM (Male Gamete)



Head – Contains genetic material (nucleus)

Middle Piece – Rich in mitochondria (provides energy)

Tail – Helps in movement

- ★ Sperms are tiny, motile cells.
- ★ They are produced in large numbers in testes.
- ★ They carry genetic information from the father to the egg.

DID YOU KNOW?



Millions of sperms are produced every day, but only a few reach and fertilize the egg during reproduction.

SUMMARY TABLE

Part	Function
Testes	Produce sperms and testosterone.
Scrotum	Keeps testes at a lower temperature.
Epididymis	Maturation and storage of sperms.
Vas deferens	Transports sperms to ejaculatory duct.
Seminal vesicles	Add fructose-rich fluid to nourish sperms.
Prostate gland	Adds milky fluid to activate sperms.
Cowper's glands	Secrete lubricating fluid.
Urethra	Carries urine and semen to outside.
Penis	Transfers semen into the female tract.

IMPORTANT



A healthy lifestyle, proper nutrition and hygiene are important for a healthy reproductive system.



FEMALE REPRODUCTIVE SYSTEM



The female reproductive system is responsible for the production of **eggs (ova)**, secretion of **female hormones** and nourishing and supporting the development of a baby during **pregnancy**.

1 FALLOPIAN TUBE (OVIDUCT)

Pair of thin tubes that pick up the egg from the ovary. It is the site where fertilisation usually occurs.

2 OVARY

Pair of almond-shaped organs that produce eggs (ova) and secrete female hormones – estrogen and progesterone. It contains thousands of immature eggs.

3 UTERUS (WOMB)

A hollow, muscular organ where the fertilised egg implants and the baby grows and develops until birth. Its lining is thick and spongy.

4 ENDOMETRIUM

The inner lining of the uterus. It thickens every month to prepare for the implantation of a fertilised egg.

5 CERVIX

The lower, narrow part of the uterus that opens into the vagina. It remains closed during pregnancy and dilates during labour.

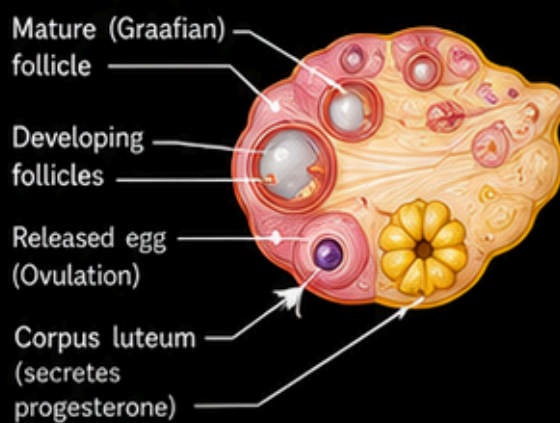
6 VAGINA

A muscular tube that connects the cervix to the outside of the body. It receives the penis during intercourse and is the birth canal during delivery.

FUNCTIONS

- ✓ Produces eggs (ova).
- ✓ Secretes female hormones (estrogen and progesterone).
- ✓ Provides the place for fertilisation.
- ✓ Nourishes and protects the developing baby.
- ✓ Helps in childbirth.

INSIDE THE OVARY



During each menstrual cycle, usually one egg matures and is released from the ovary.

MENSTRUAL CYCLE



If fertilisation does not occur, the thick lining (endometrium) of the uterus breaks down and comes out through the vagina in the form of blood and tissue.

This is called **menstruation**.

This cycle repeats every **28–30** days.

SUMMARY TABLE

Part	Function
Fallopian tube	Carries egg from ovary to uterus; site of fertilisation.
Ovary	Produces eggs and secretes estrogen and progesterone.
Uterus	Site of implantation and development of the baby.
Endometrium	Inner lining of uterus; helps in implantation; sheds during menstruation.
Cervix	Connects uterus to vagina; remains closed during pregnancy.
Vagina	Receives penis during intercourse; birth canal during delivery.

DID YOU KNOW?



- ★ A girl is born with about **1–2** million immature eggs in her ovaries.
- ★ At puberty, about **300,000–400,000** eggs remain.
- ★ Only about **400–500** eggs are released during a woman's reproductive years.

IMPORTANT



A healthy lifestyle, proper nutrition, hygiene and regular exercise are important for a healthy female reproductive system. ❤️



A **healthy** reproductive system is the key to a **healthy woman** and a **healthy future!**





FERTILISATION

EGG + SPERM → ZYGOTE



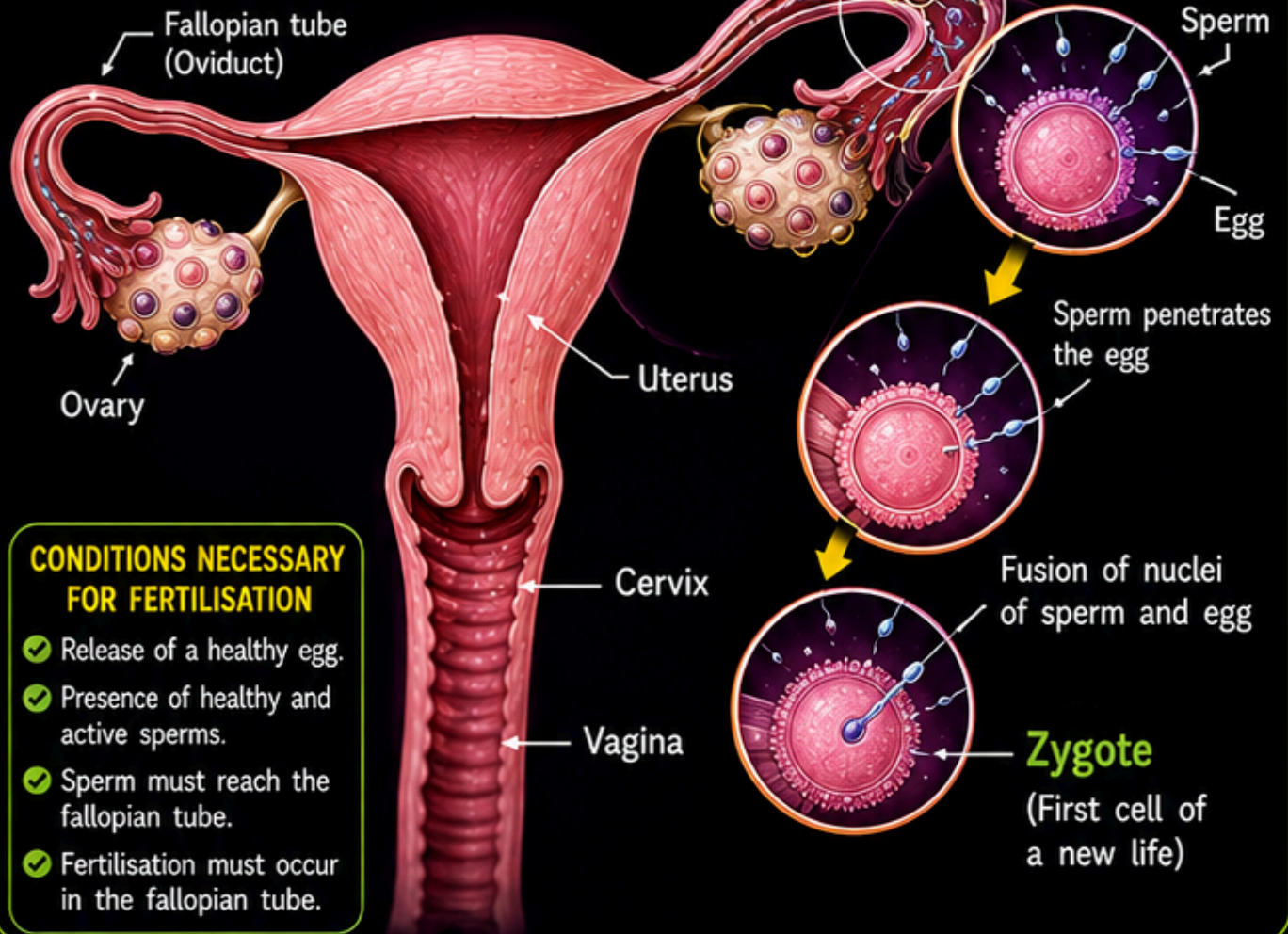
Fertilisation is the fusion of a male gamete (**sperm**) with a female gamete (**egg**) to form a single cell called a **zygote**. It is the first step in the development of a new life.

WHAT IS FERTILISATION?

When a sperm and an egg unite, their nuclei fuse to form a single cell called a **zygote**. This zygote develops into an embryo and then a baby.

WHERE DOES FERTILISATION OCCUR?

Fertilisation usually occurs in the **ampulla** (a wider part) of the fallopian tube.



THE PROCESS OF FERTILISATION

- 1 During sexual intercourse, millions of sperms are deposited in the vagina near the cervix.
- 2 The sperms swim through the cervix and uterus and reach the fallopian tube (oviduct).
- 3 If an egg is present in the fallopian tube, a sperm penetrates the egg.
- 4 The nuclei of the sperm and the egg fuse together.
- 5 A single cell called **zygote** is formed. This is the beginning of a new life.

CONDITIONS NECESSARY FOR FERTILISATION

- ✓ Release of a healthy egg.
- ✓ Presence of healthy and active sperms.
- ✓ Sperm must reach the fallopian tube.
- ✓ Fertilisation must occur in the fallopian tube.

FROM EGG + SPERM TO ZYGOTE

1. EGG (OVUM)



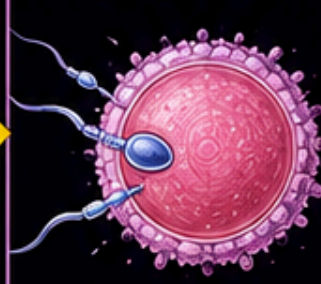
A mature egg is released from the ovary.

2. SPERM



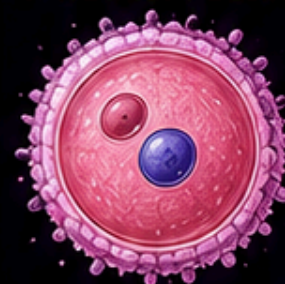
Millions of sperms are released. They swim towards the egg.

3. FUSION



One sperm penetrates the egg and their membranes fuse.

4. NUCLEI FUSION



The male nucleus (23 chromosomes) and the female nucleus (23 chromosomes) fuse.

5. ZYGOTE



A zygote is formed with 46 chromosomes. It starts dividing and developing.



KEY POINTS

- ★ Fertilisation results in the formation of a **zygote**.
- ★ The zygote divides repeatedly and becomes an embryo.
- ★ The embryo gets implanted in the uterus and grows into a baby.
- ★ It is a natural process that ensures the continuation of the species.



DID YOU KNOW?

A sperm is only visible under a microscope, but it is powerful enough to start a new life!





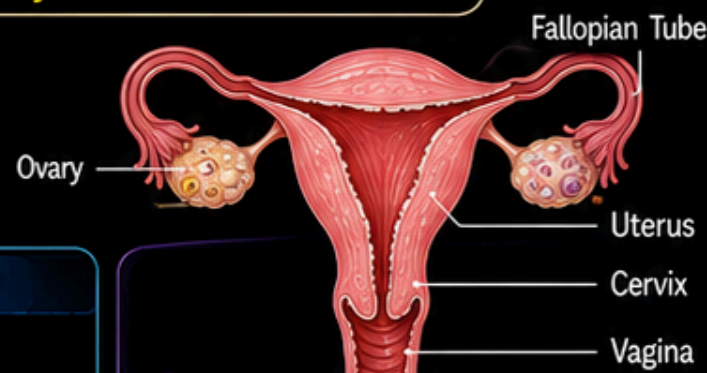
MENSTRUAL CYCLE



A menstrual cycle is the **monthly series of changes** in the female reproductive system that **prepares the body for pregnancy**.

OVERVIEW OF THE MENSTRUAL CYCLE

The average menstrual cycle is about **28** days.
It can range from **21** to **35** days.



1 MENSTRUAL PHASE

Days 1–5 (Average)

- The lining of the uterus (endometrium) sheds and comes out through the vagina as bleeding.
- A new cycle begins.



2 FOLLICULAR PHASE

Days 1–13 (Average)

- FSH stimulates the ovary to grow follicles.
- One follicle becomes dominant and an egg (ovum) matures.
- The uterus lining begins to rebuild.



3 OVULATION

Around Day 14

- A surge in LH causes the mature egg to be released from the ovary.
- The egg travels into the fallopian tube.



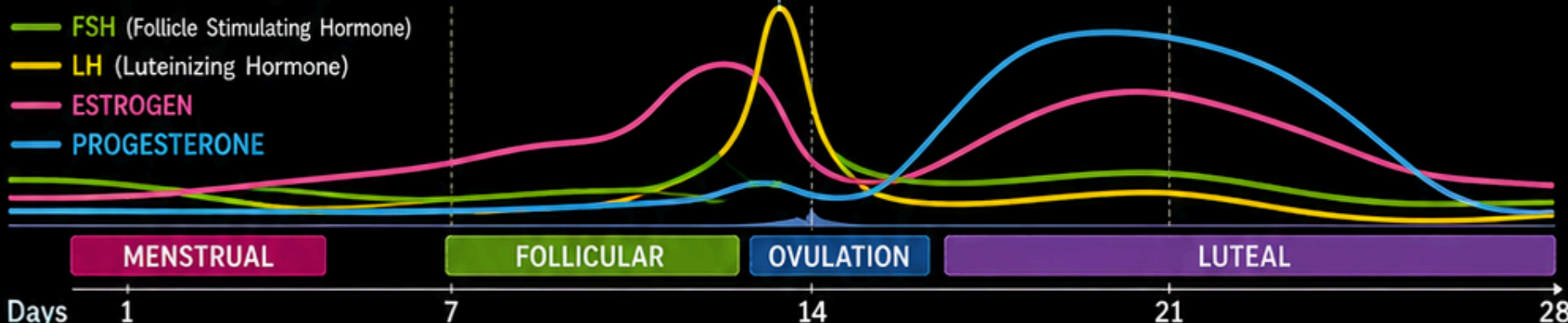
4 LUTEAL PHASE

Days 15–28 (Average)

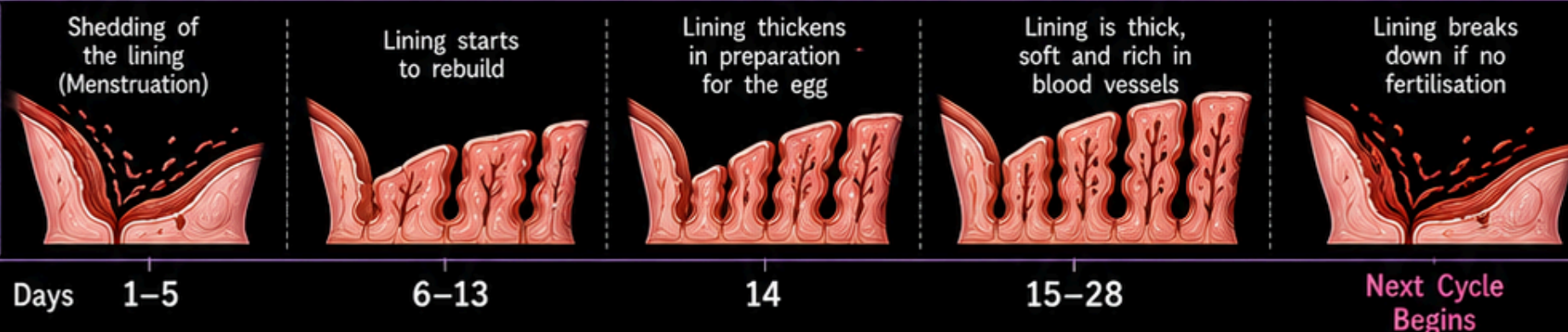
- The ruptured follicle forms the corpus luteum.
- It secretes progesterone which maintains the uterine lining.
- If fertilisation doesn't occur, the corpus luteum breaks down and the lining sheds.



HORMONE LEVELS



CHANGES IN UTERUS LINING



KEY POINTS

- ★ A normal cycle length is 21–35 days.
- ★ Ovulation usually occurs around day 14.
- ★ If the egg is fertilised, pregnancy occurs and menstruation does not happen.
- ★ If not fertilised, the cycle repeats.

COMMON SYMPTOMS



- ✓ Cramps
- ✓ Bloating
- ✓ Mood changes
- ✓ Headache
- ✓ Fatigue
- ✓ Breast tenderness

TIPS FOR A HEALTHY CYCLE

- 🍎 Eat a balanced diet
- 💧 Drink plenty of water
- 🏃 Exercise regularly
- 🧘 Manage stress
- 🌙 Get enough sleep



Every woman's cycle is unique. Listen to your body and take care of your health.



STAGES OF PREGNANCY

Pregnancy is the period when a baby develops inside the mother's uterus. It lasts about **40 weeks** or **9 months** from conception to birth.

THE THREE TRIMESTERS

1ST TRIMESTER



Weeks 1–12
(Month 1–3)

The baby's organs begin to form. The mother may experience morning sickness, tiredness and frequent urination. A new cycle begins.

MONTH 1 (Weeks 1–4)



- Fertilization occurs.
- The fertilized egg implants in the uterus.
- The baby is the size of a sesame seed.

MONTH 2 (Weeks 5–8)



- Heart begins to beat.
- Arms and legs start to form.
- The baby is the size of a kidney bean.

MONTH 3 (Weeks 9–12)



- All major organs are formed.
- Fingers and toes develop.
- The baby is the size of a lime.

2ND TRIMESTER



Weeks 13–26
(Month 4–6)

The baby grows rapidly. The mother may feel better and can feel the baby's movements.

MONTH 4 (Weeks 13–16)



- Bones begin to harden.
- Baby can move and suckle.
- The baby is the size of an avocado.

MONTH 5 (Weeks 17–20)



- Baby can hear sounds.
- Vernix (a protective coating) forms.
- The baby is the size of a banana.

MONTH 6 (Weeks 21–26)



- Eyes open and close.
- Lungs develop further.
- The baby is the size of a papaya.

3RD TRIMESTER



Weeks 27–40
(Month 7–9)

The baby continues to grow and gain weight. The body prepares for labour and delivery.

MONTH 7 (Weeks 27–30)



- Brain develops rapidly.
- Baby can survive if born prematurely.
- The baby is the size of a coconut.

MONTH 8 (Weeks 31–36)



- Body fat increases.
- Lungs are almost mature.
- The baby is the size of a pineapple.

MONTH 9 (Weeks 37–40)



- Baby puts on more weight.
- Head moves down into the pelvis.
- The baby is the size of a watermelon.

KEY FACTS

- ✓ Pregnancy lasts about 40 weeks from the first day of the last menstrual period.
- ✓ Regular check-ups are important for a healthy pregnancy.
- ✓ A balanced diet, rest and emotional well-being are essential.
- ✓ Every pregnancy is unique!

WHAT HAPPENS AT BIRTH?

When the baby is fully developed, the uterus contracts and the baby moves through the birth canal and is born.



A NEW LIFE BEGINS!

CARE DURING PREGNANCY



Eat nutritious food (fruits, vegetables, proteins)



Drink plenty of water



Take rest and avoid stress



Exercise gently (as advised by doctor)



Attend regular antenatal check-ups

A healthy mother brings a healthy baby. Take care, stay happy!