

THE PLANT KINGDOM

1º ESO

Classification of plants

Kingdom	Archaea	Bacteria	Protoctista	Fungi	Plant	Animal
Type of cell	Prokaryotic	Prokaryotic	Eukaryotic	Eukaryotic	Eukaryotic	Eukaryotic
Cell organisation	Unicellular	Unicellular	Unicellular or multicellular	Unicellular or multicellular	Multicellular	Multicellular
Tissues	No	No	No	No	Yes	Yes
Type of nutrition	Autotrophic or heterotrophic	Autotrophic or heterotrophic	Autotrophic or heterotrophic	Heterotrophic	Autotrophic	heterotrophic
Example	Arqueobacterias or archaea	Bacterias	Protozoa and algae	Yeast, moulds and mushroom	Hepaticae, mosses, ferns and spermatophytes	Invertebrates and vertebrates

Classification of plants

Plants can be classified according to:

1. Conducting vessels
2. Flower /seed

Group	Vascular system	Flower	Seed	Fruit
Hepatica	X	X	X	X
Mosses	Not very developed	X	X	X
Ferns	✓	X	X	X
Gymnosperms	✓	✓	✓	X
Angiosperms	✓	✓	✓	✓

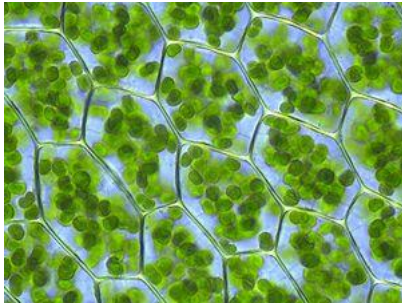


Nutrition

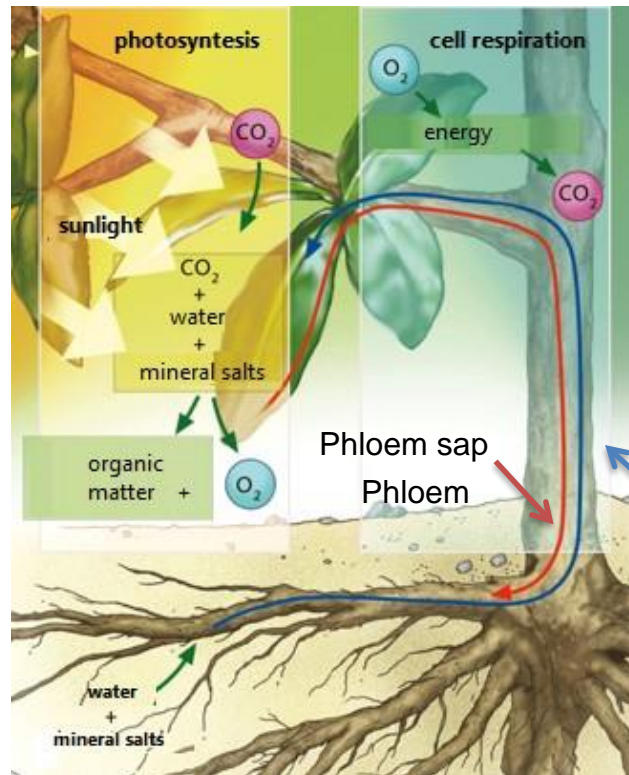
1) Photosynthesis:



Chlorophyllous parenchyma



Chloroplast
(Photosynthesis)






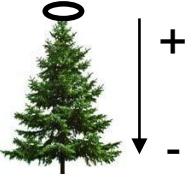
Mitochondria
(Cell respiration)

2) Cell respiration:



Interaction and Reproduction

Plants can react to external environment, as well as to the internal environment. They move and secrete hormones in order to do this.

<p>Movements</p>		<p>Tropisms are the growth responses of plants due to external stimuli. If plants move towards the stimulus, we call it positive tropism. If the movement is away from the stimulus, it's known as negative tropism.</p>	<p>(Hydro/geo/photo) tropism</p>
		<p>Nastic movements are movements in plants that occur as a response to a stimulus but do not depend on the direction of the stimulus. They are usually faster and reversible</p>	<p>Thigmonasty: carnivorous plants Photonasty: sunflower Thermonasty: tulip flower</p>
<p>Hormone</p>		<p>Hormones. Substances secreted by some plant cells. They act as internal stimuli and generate responses in different parts of the plant. They regulate processes such as growth, leaf drop, fruit ripening.</p>	<p>Auxin Ethylene Gibberellin ABA</p> 

Plant reproduction: alternation of generations, asexual, sexual (flower)

Asexual reproduction

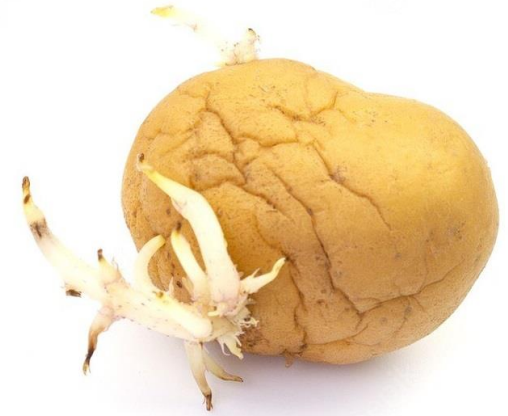
STEM



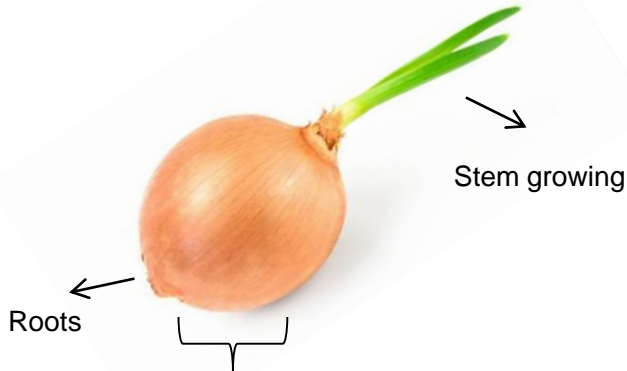
Stolons: strawberry o clover



Vine layering



Tubers: potato



Bulbs: onion, garlic



Rhizomes: iris, ginger

Tissues and organs

TISSUES:

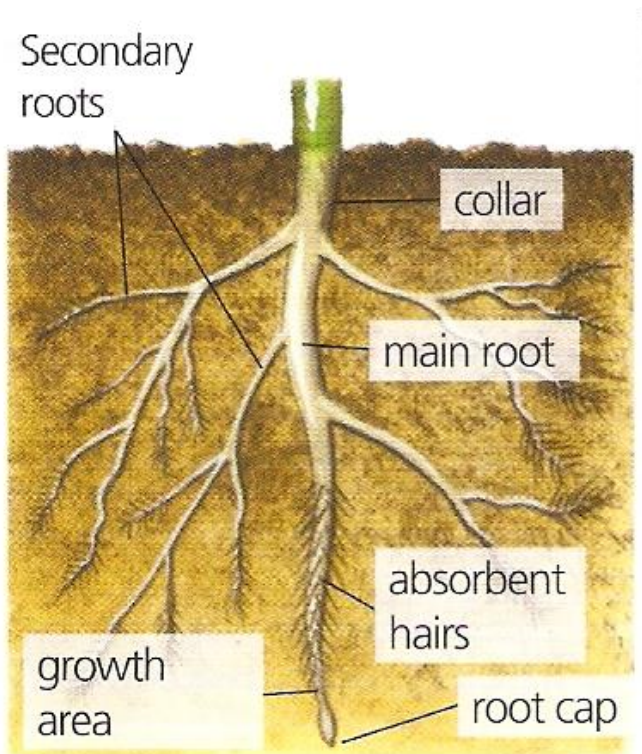
Plants cells forms tissues with different functions:

- Chlorophyll
- Supporting
- Protective
- Conductive

ORGANS:

- Root
- Stem
- Leaf (leaves)
- Flowers

Root: absorption and anchorage



Root morphology

- Absorb mineral salts and water.
- Anchor the plants to the ground.
- Store substances in reserve.

Root: absorption and anchorage

Prop roots

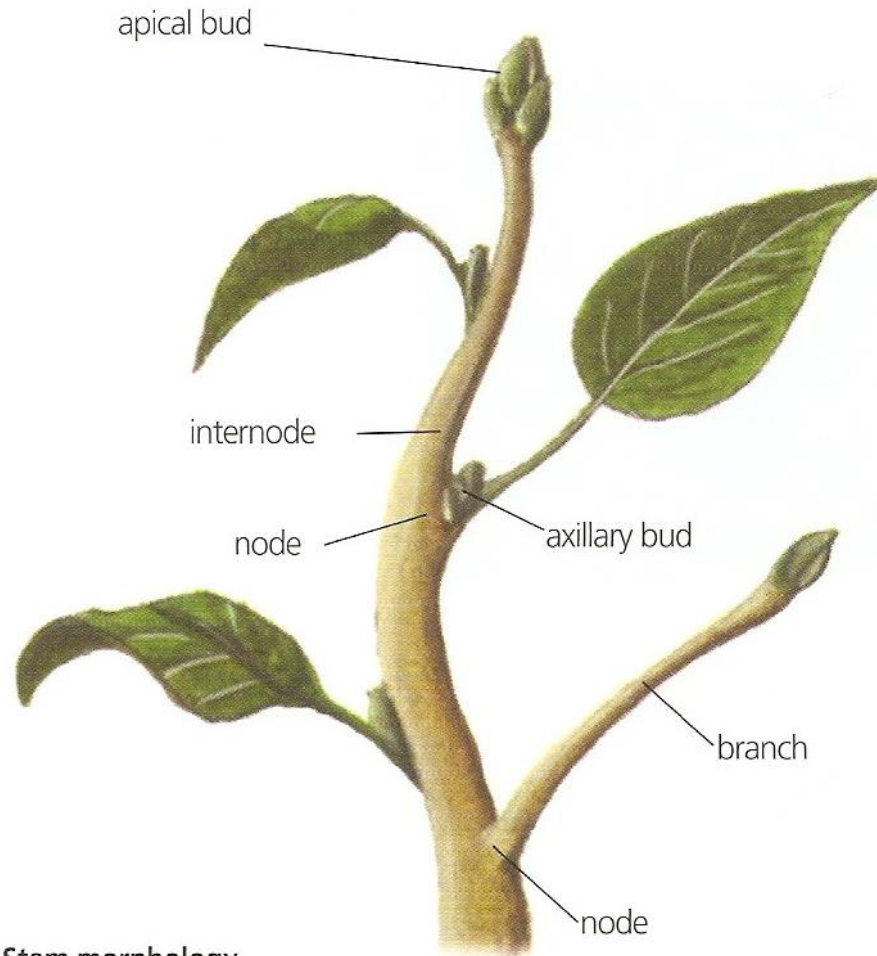
Fibrous roots

Tubercular roots



Root types

Stem: conducting vessels



Stem morphology

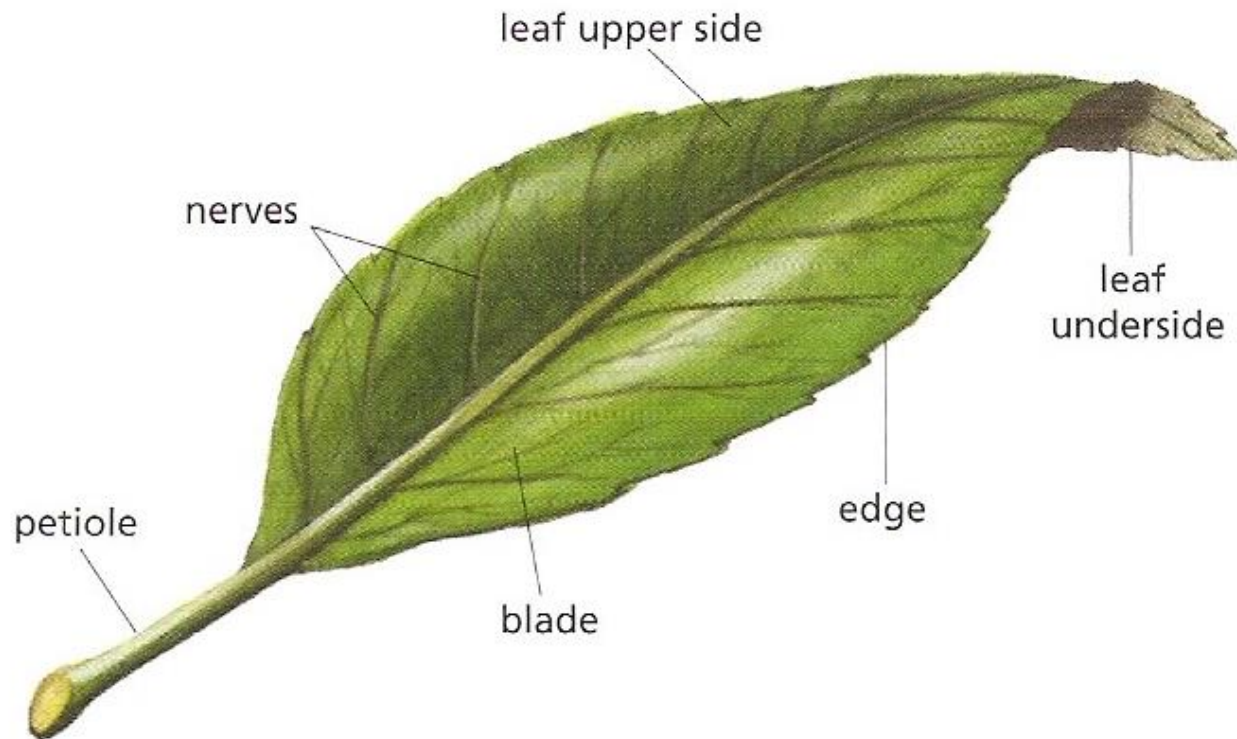
Two main functions:

- Transporting substances:
Xylem and phloem.
Crude sap and phloem sap.
- Supporting the leaves and flowers

Stem Types:

- Annual and perennial.
- Aquatic-aerial-underground.
- Herbaceous and woody.

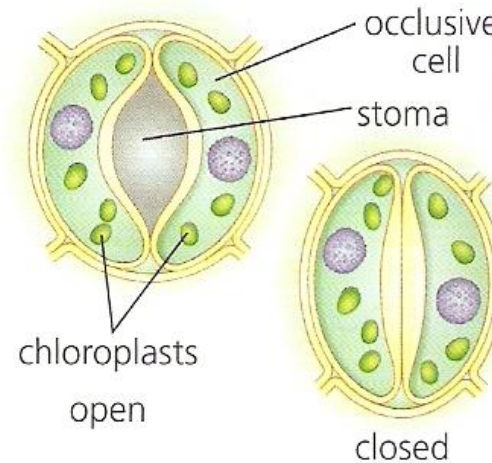
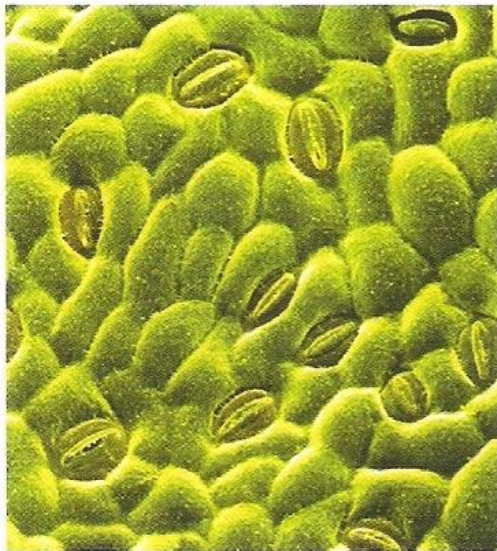
Leaf: synthesis organic matter



Leaf morphology

Leaf: synthesis organic matter

Photosynthesis:

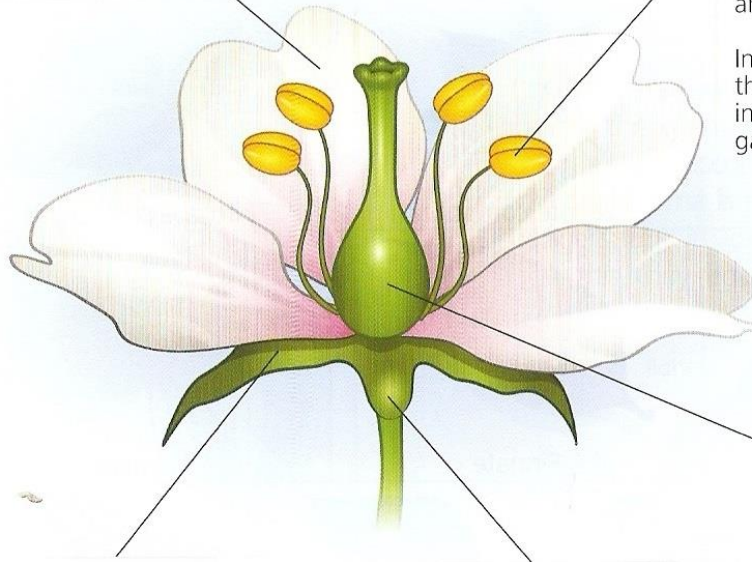


Stomata

Transpiration

Flower: the reproductive organs

The **corolla** is formed by a group of coloured leaves called **petals**.



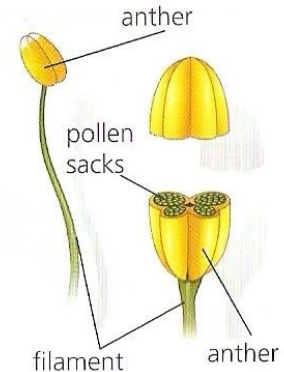
Sepals are the green leaves that protect the plant and form the **calyx**.

The **peduncle** joins the flower to the stem.

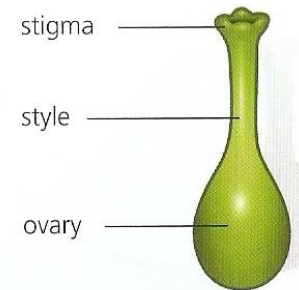
The **stamens** are the male sexual organs.

They consist of a **filament** and an **anther**.

In the anther there are **pollen sacks**, in which the male gametes are produced.



The **pistil** is the flower's female sexual organ. It has three parts: the **stigma** which is situated in the upper part, the **style** which is a longer intermediate part, and the **ovary** in which female gametes or **ovules** are produced.



Complete and incomplete flowers.
Hermaphrodite and unisexual flowers.

Flower: inflorescences



Capitulum type
(daisy)



Glomerula (mentha)



Ament (weeping willow)



Umbel (umbellifers:
fennel)

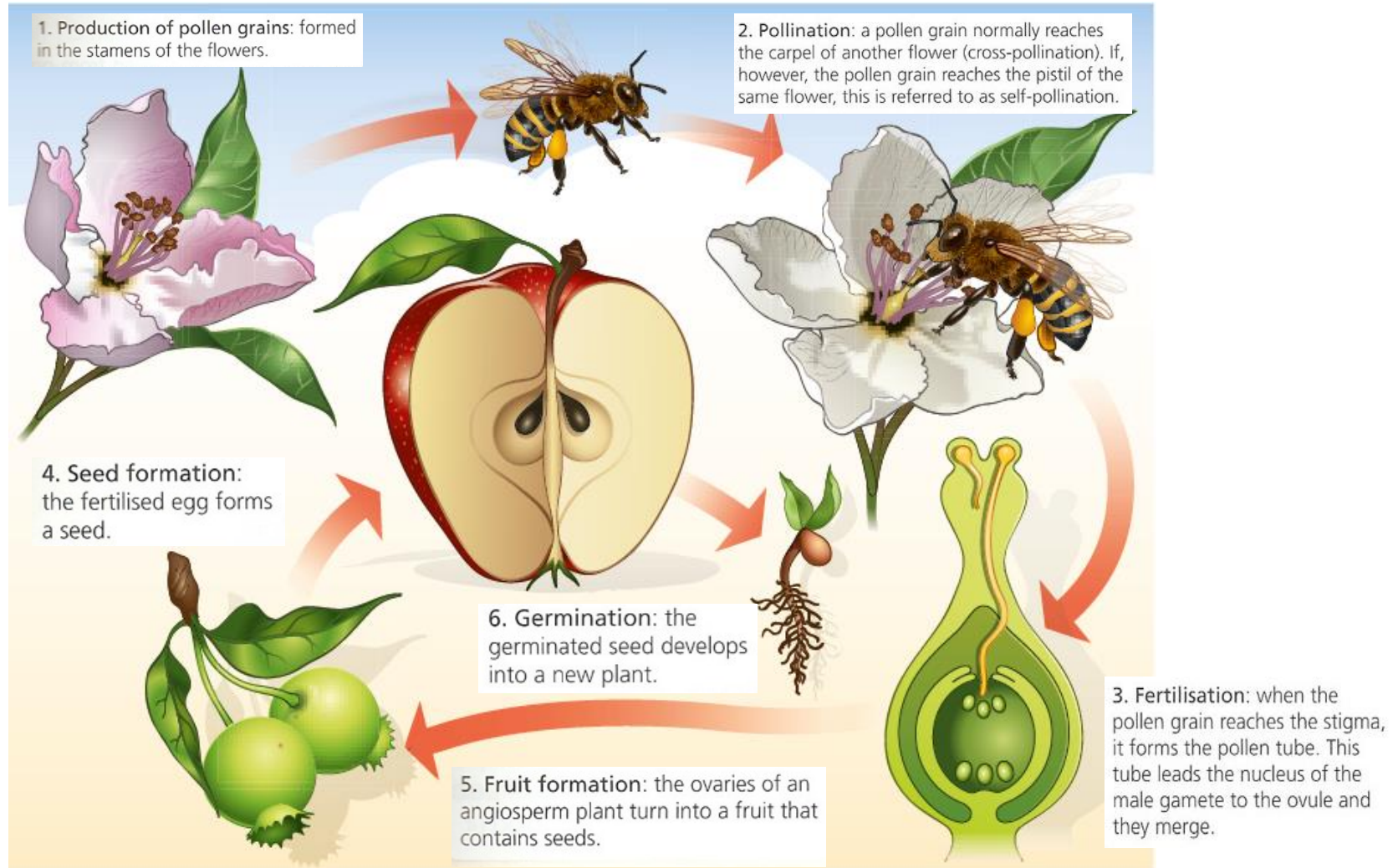


Spadix (calla lilies)

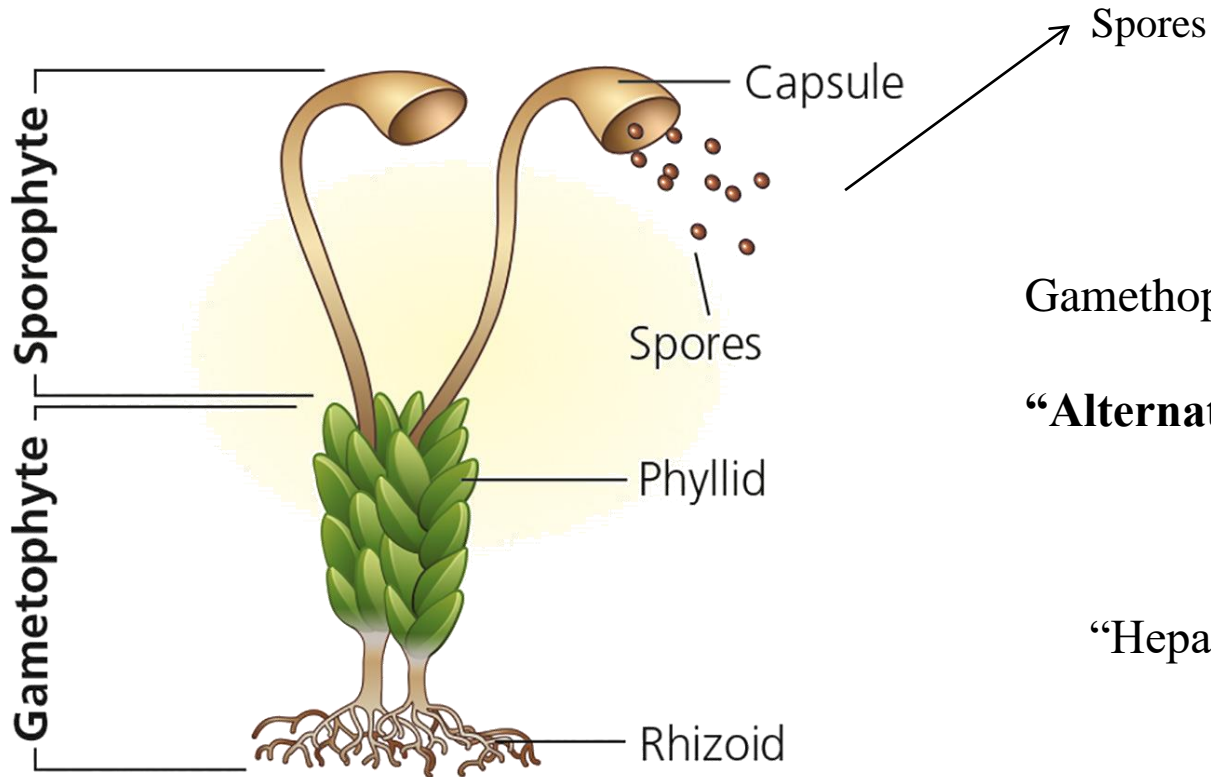


Ear (wheat, barley, rye)

Pollination and fertilisation



Bryophytes: mosses

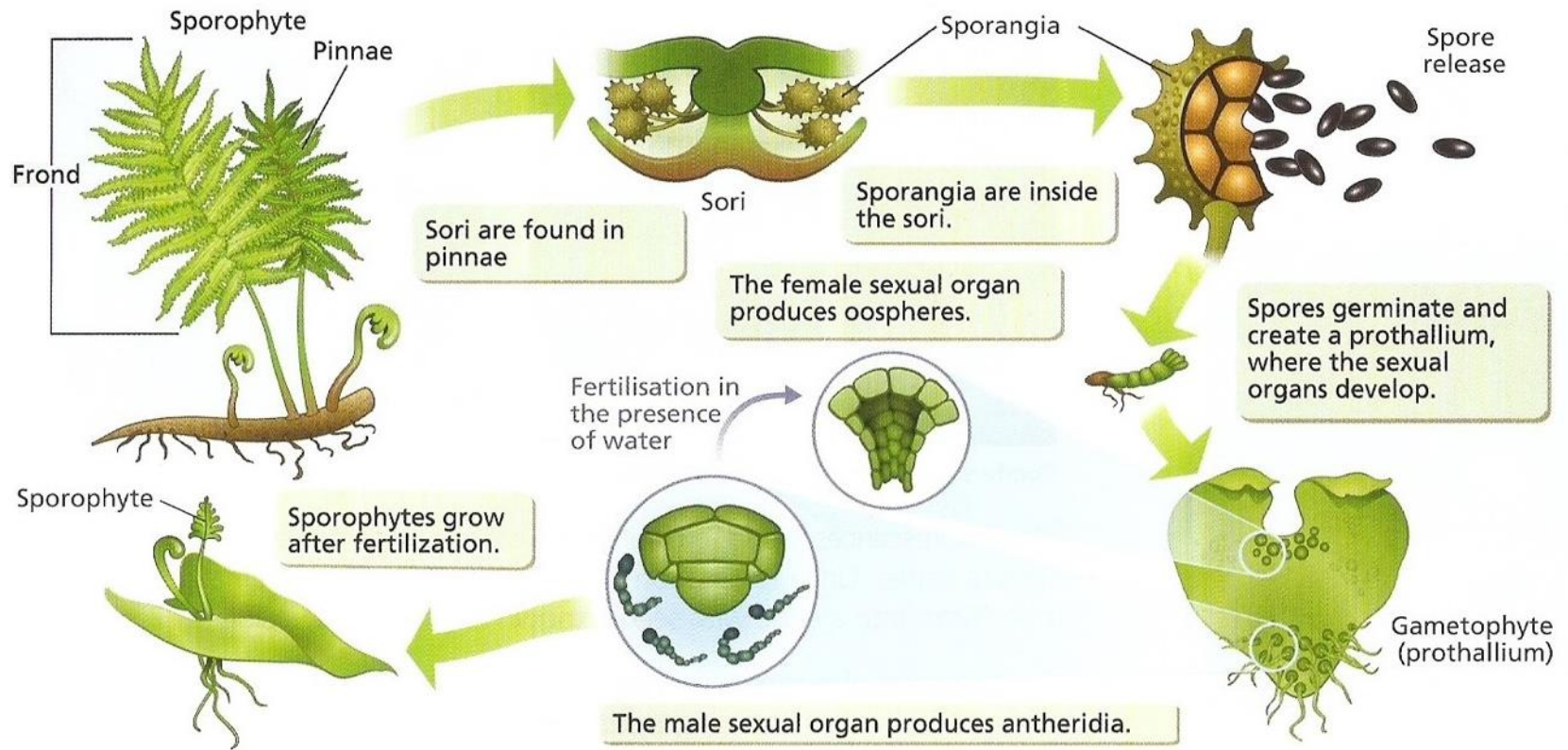


Gamethophyte and sporophyte

“Alternation of generations”

“Hepatica: diffusion”

Pteridophytes (ferns)



Life cycle of a fern

Gamethophyte and sporophyte
“Alternation of generations”

Spermatophytes

GYMNOSPERM PLANTS:

- Without fruit.
- Evergreen plants
- Unisexual flowers (acicular leaves such as pines or scale-like, such as cypresses).
- Anemophilous pollination.
- Inflorescences (cones).
- Seeds (pine nuts).

ANGIOSPERM PLANTS:

- Vascular plants with fruits.
- Fruits are structures that protect seeds and help them to disperse
- Fleshly fruits and dry fruits.

Fruits

TYPES OF FRUITS: Fruits contain, protect and help with seed dispersion.

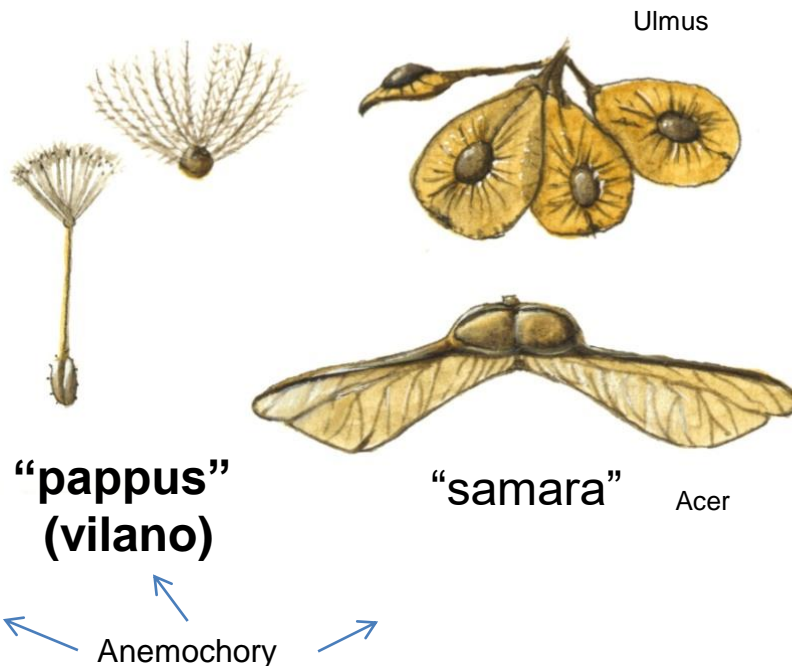
- Dry or Fleshly.

- Seed dispersion: feces, adherence to skin, wind (pappus), water → guarantee of survival.

Zoochory



Tumbleweed



↑
“Hidrochory”

Adaptations

Plant adaptations to the environment



To water



To other living things



Epiphytic

To light



To heat



To cold

Plant uses

How humans use plants

Food



Ornamental



Medicinal



Natural resource



Manufacturing



Anti-pollution

