



1.5 DOMAIN EUKARYA: KINGDOM FUNGI



LEARNING OUTCOMES

a) State the unique characteristics of Fungi

b) State the classification of Fungi phyla based on the spore-bearing structure:

- **Zygomycota (*Rhizopus sp.*),**
- **Ascomycota (*Penicillium sp.*),**
- **Basidiomycota (*Agaricus sp.*)**

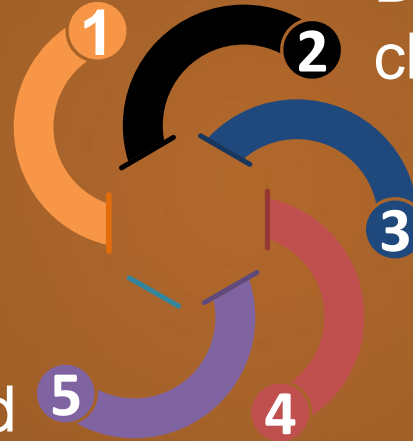
c) State the importance of Fungi:

- i. Decomposer**
- ii. Symbionts**
- iii. Pathogens**
- iv. Commercial importance in food production (fermented food)**
- v. Pharmaceutical (penicillin)**

a) The unique characteristics of Fungi

Eukaryotic

Do not contain chlorophyll



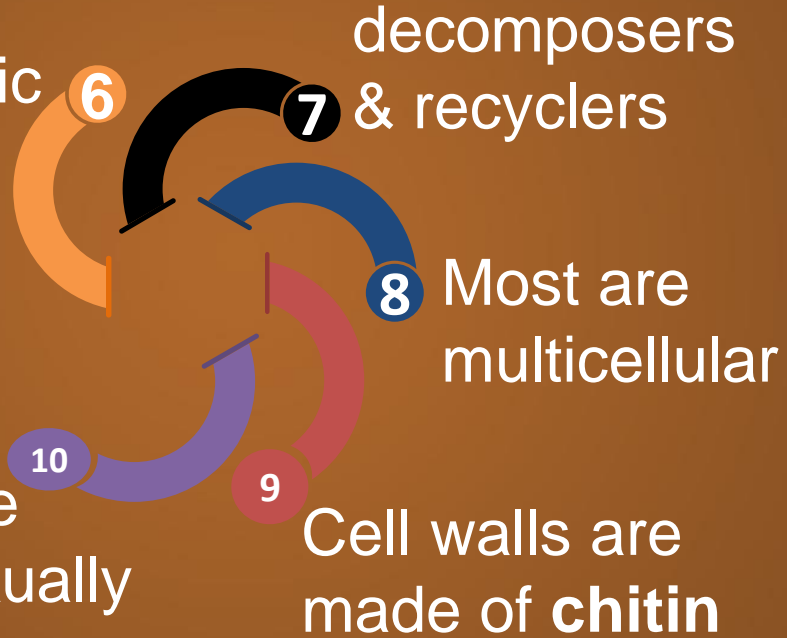
absorptive heterotrophs

Store food energy as glycogen

Release digestive enzymes



Heterotrophic
Mutualist
Saprophytic
Parasitic



Reproduce
both asexually
& sexually

b) The classification of Fungi phyla



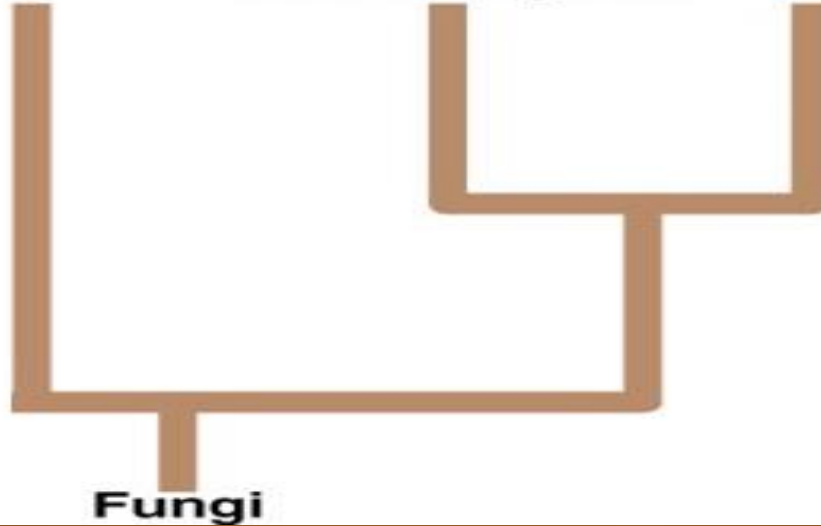
Zygomycota



Basidiomycota



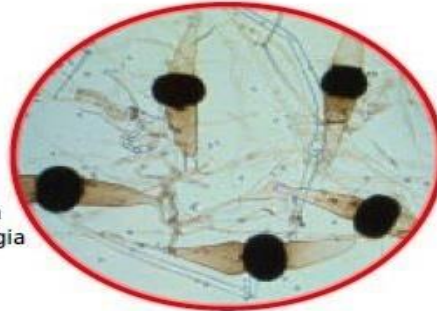
Ascomycota



• Phylum Zygomycota (*Rhizopus* sp.)

During its life cycle, the black bread mold, *Rhizopus stolonifera*, reproduces both asexually and sexually.

A Zygosporangia form where gametangia have fused.

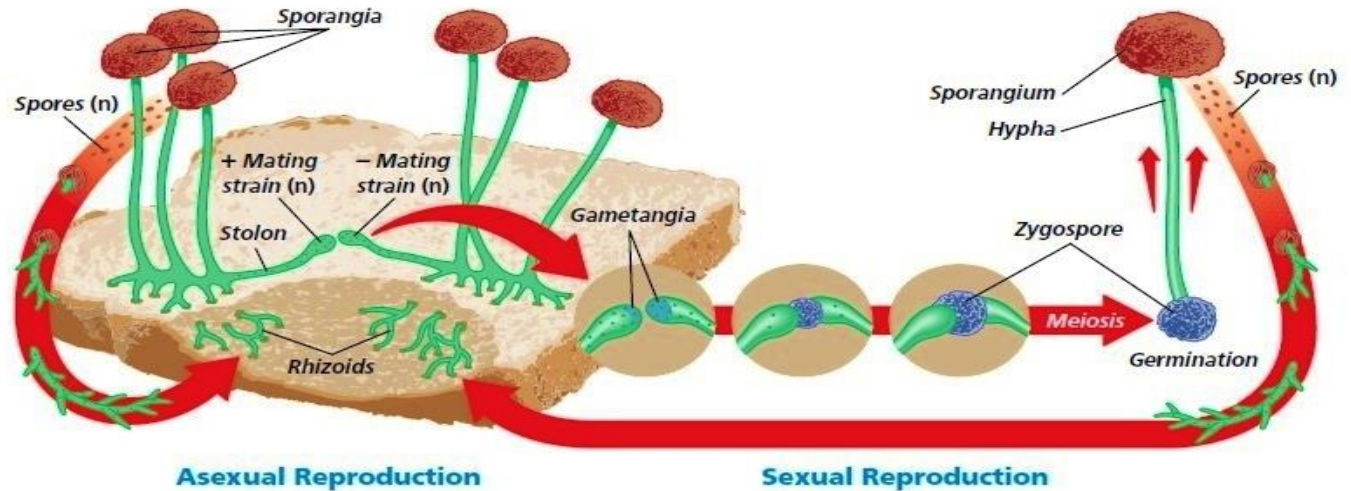


LM Magnification: 100×

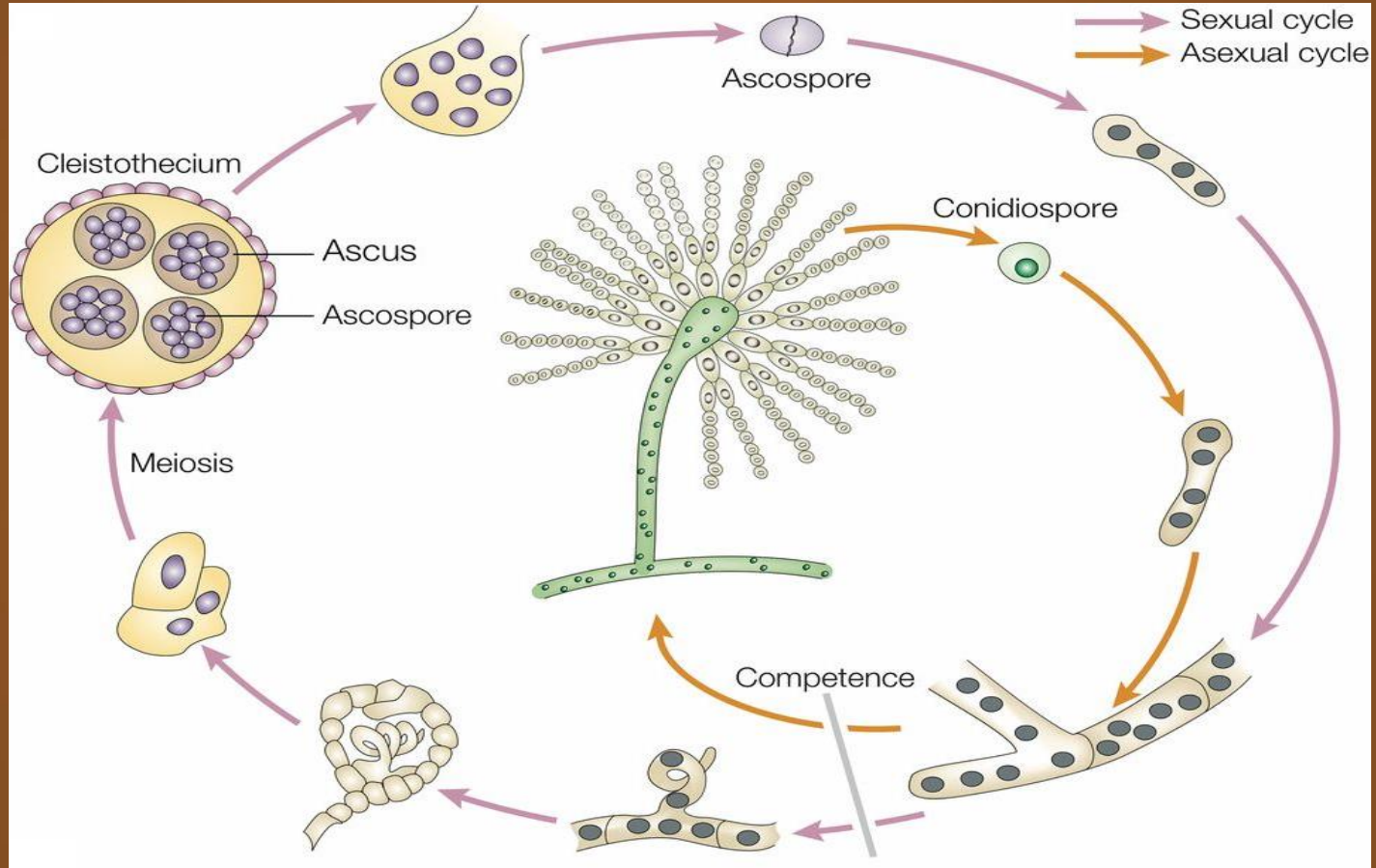
B These *Rhizopus* sporangia are filled with thousands of haploid spores.



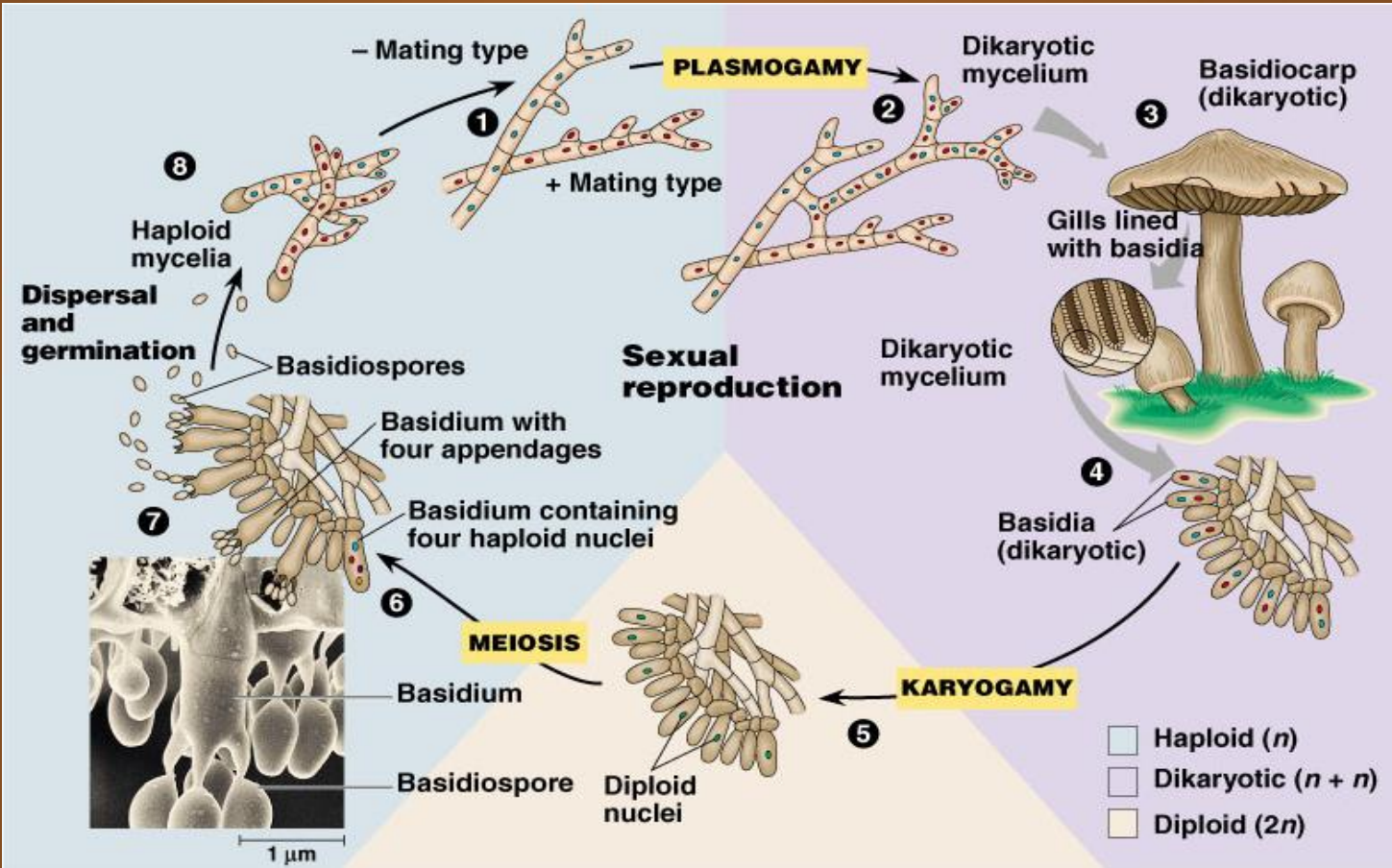
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• Phylum Ascomycota (*Penicillium* sp.)



Phylum Basidiomycota (*Agaricus* sp.)





C) The importance of Fungi

(i) Decomposer



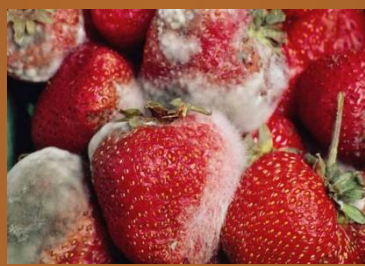
(v) Pharmaceutical (Penicillin)



(ii) Symbionts



(iii) Pathogens



(iv) Commercial importance in food production
Fermented food





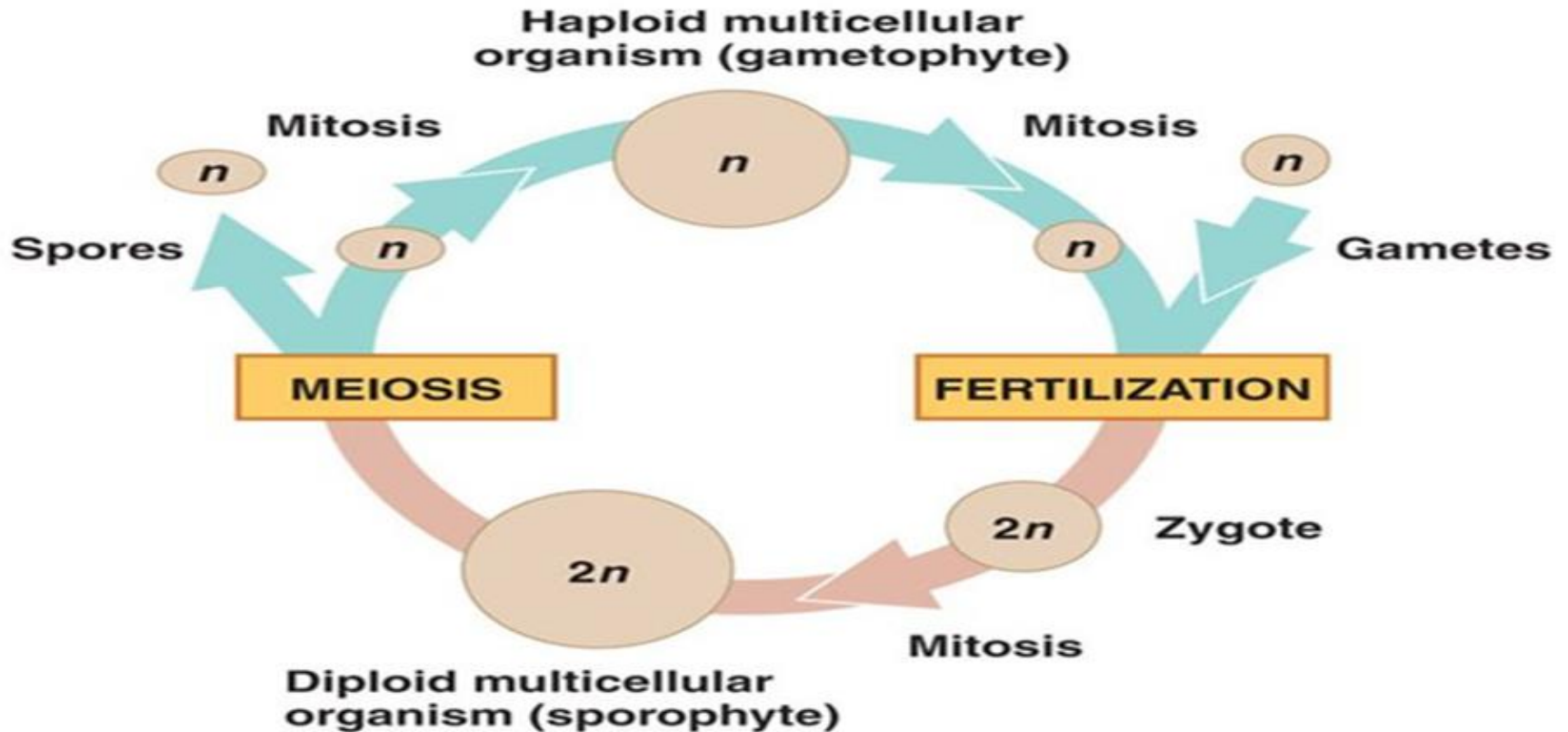
1.6. Domain Eukarya:
Kingdom
Plantae



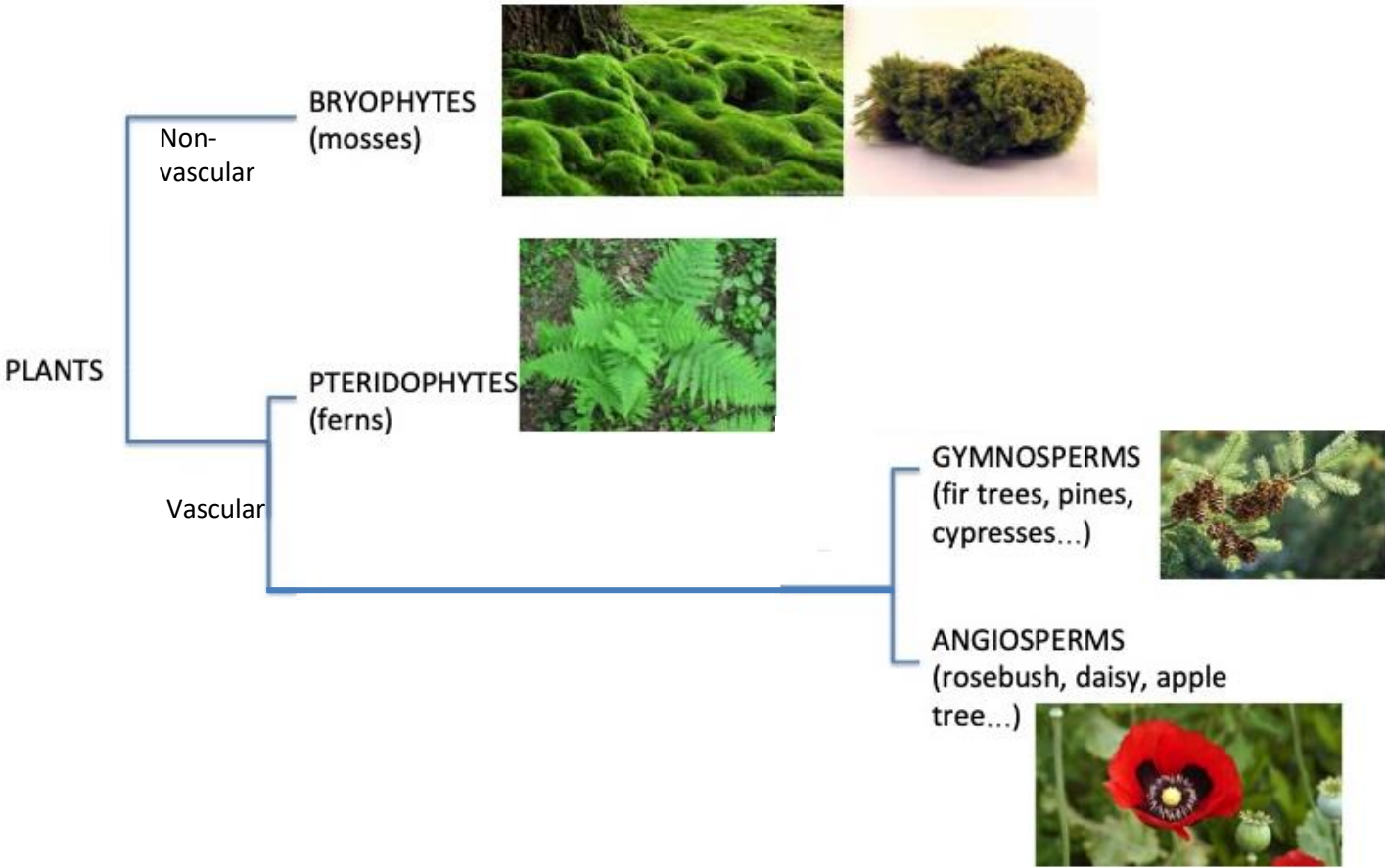
LEARNING OUTCOMES

- (a) Describe alternation of generation as the unique characteristics of Plantae.
- (b) State the classification of Plantae into four groups :-
 - i. Bryophytes
 - ii. Pteridophytes
 - iii. Gymnosperms
 - iv. Angiosperms


a) The alternation of generation as the unique characteristics of Plantae



b) The classification of Plantae into four groups



Bryophytes

- 
- (a) Describe the unique characteristics of bryophytes.
- (b) State the classification of Bryophytes into 3 divisions/ phyla :-
- i. Phylum Hepatophyta (*Marchantia* sp.)
 - ii. Phylum Bryophyta (*Polytrichum* sp.)
 - iii. Phylum Anthoceroophyta (*Anthoceros* sp.)
- (c) State the terrestrial adaptation for bryophytes

a) The unique characteristics

No true roots, stems and leaves

Simplest group of land plants



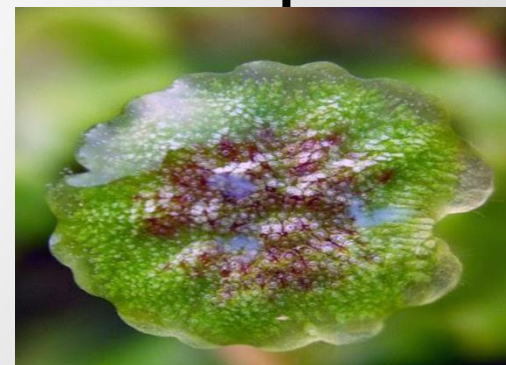
Alternation of generations

Restricted in size

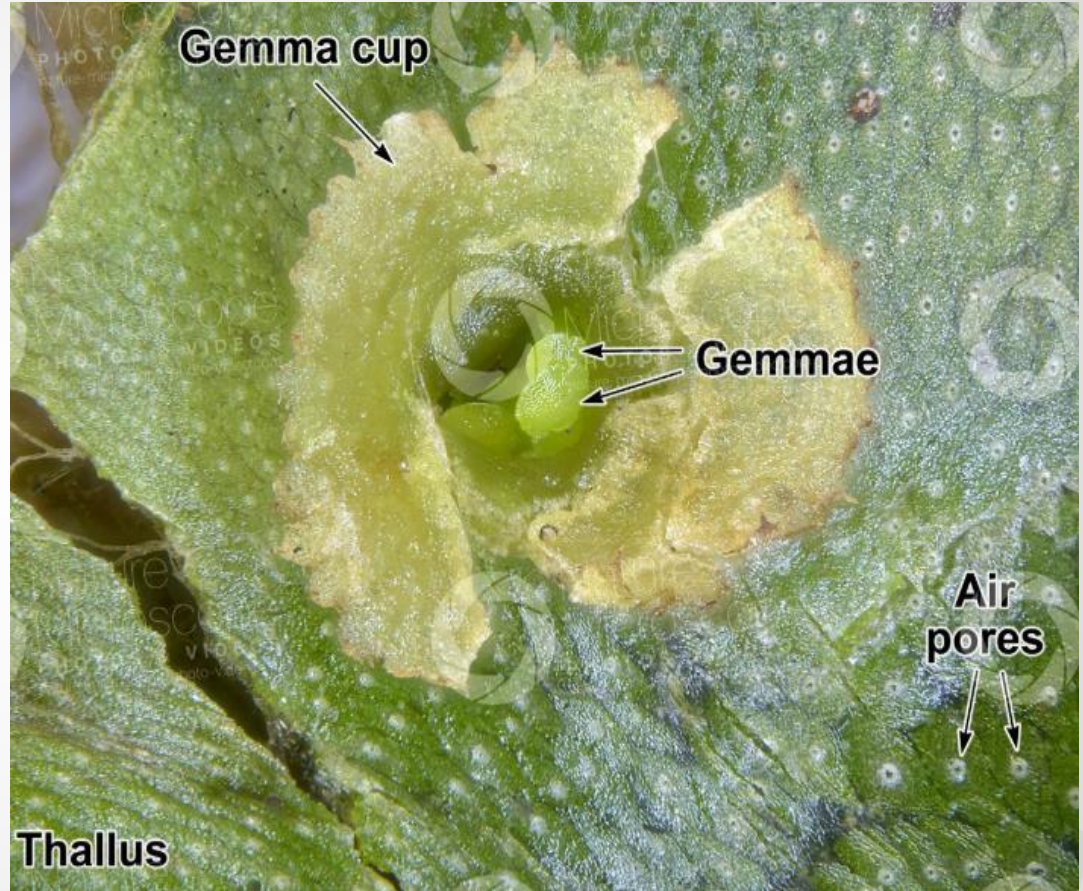
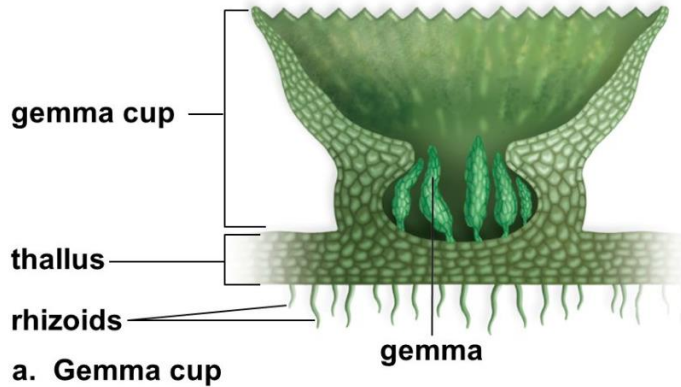
Live in damp, shady places

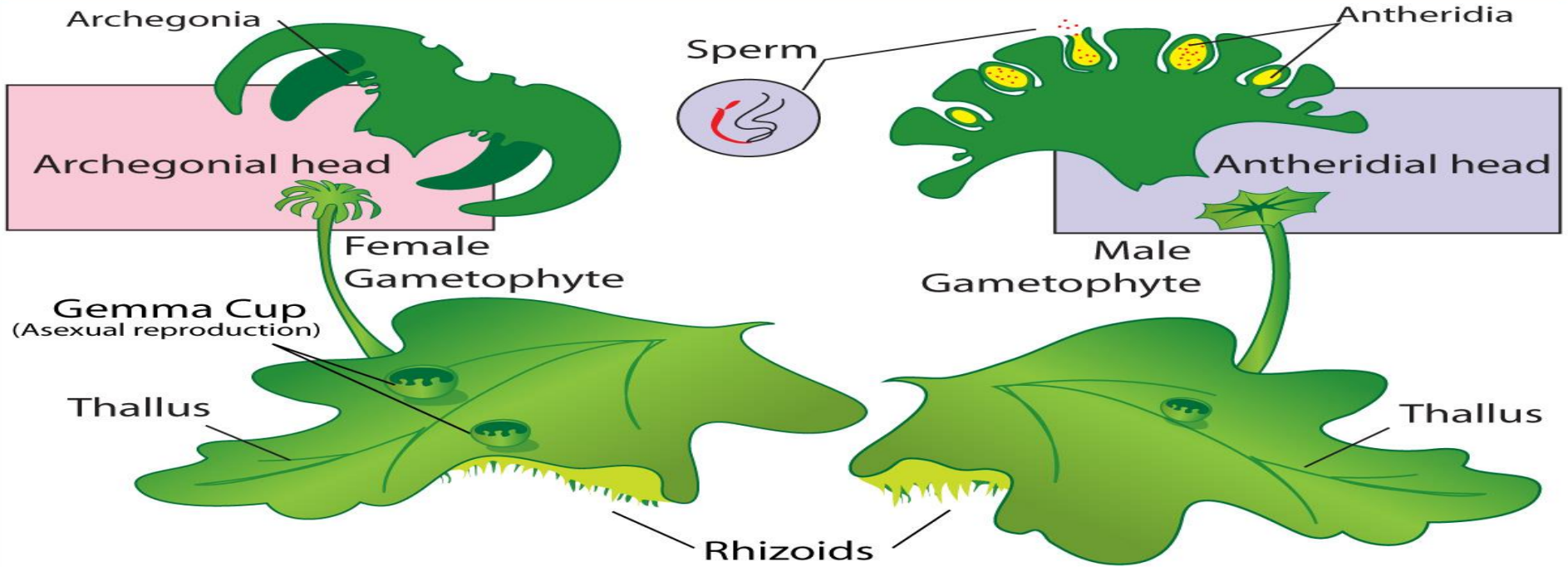
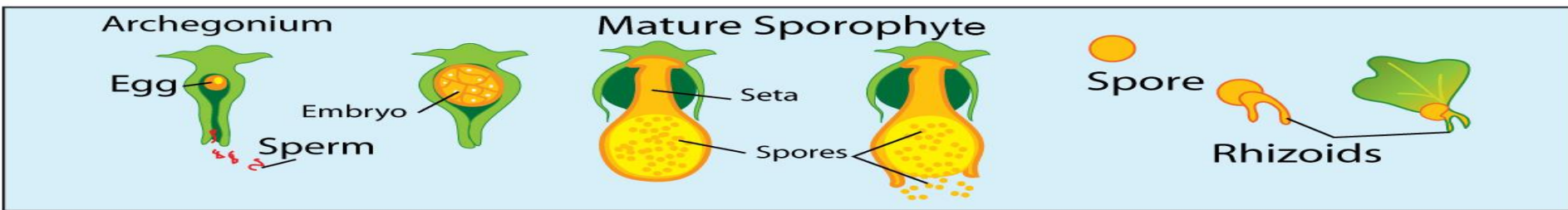


**b) Division Hepatophyta
(*Marchantia* sp.)**



Division Hepatophyta (*Marchantia* sp.)





Liverwort Life Cycle

Archegonia



Division Bryophyta (*Polytrichum* sp.)



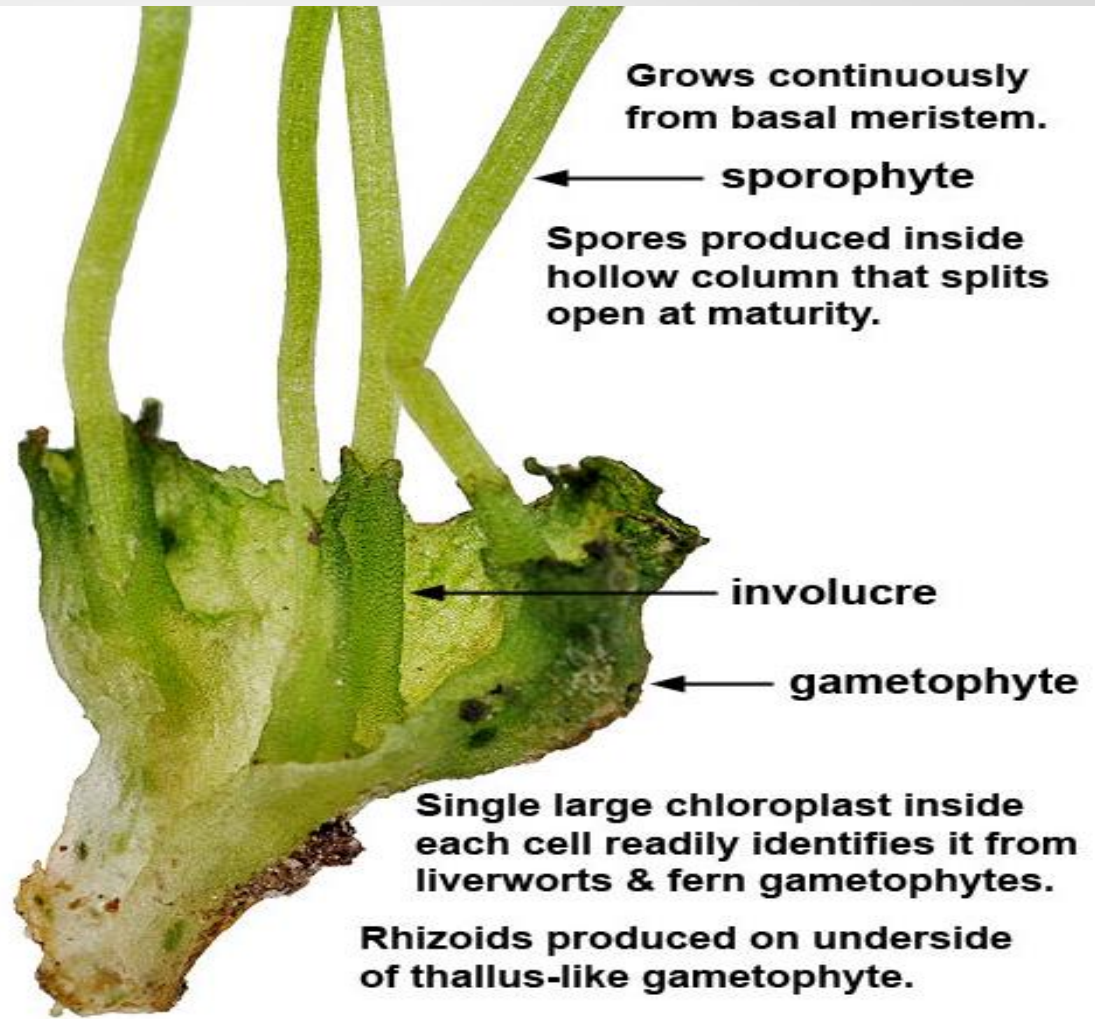
Polytrichum commune,
hairy-cap moss

Capsule } Sporophyte
 } (a sturdy
 } plant that
 } takes months
 } to grow)

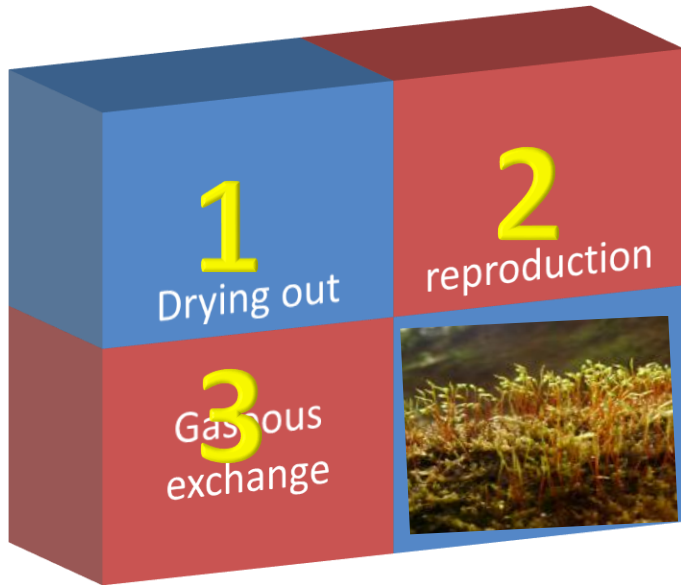
Gametophyte



Division Anthoceroophyta (*Anthoceros* sp.)



c) TERRESTRIAL ADAPTATIONS OF BRYOPHYTES



1

A sterile jacket developed around antheridia and archaegonia which prevent them from drying out


2

Delicate sex cells must be protected by gametangium

3

Presence of stomata facilitate the movement of gasses such as CO_2 and O_2 in and out through the cuticle

Pteridophytes

- 
- (a) Describe the unique characteristics of pteridophytes
- (b) State the classification of pteridophytes into two divisions/ phyla :-
- i. Phylum Lycopodiophyta/ Lycophyta (*Lycopodium* sp., *Selaginella* sp.)
 - ii. Phylum Pteridophyta (*Dryopteris* sp.)

a) The unique characteristics

Vascular
plant

Has true
roots, stems
and leaves



Alternation of
generations

Photosynthetic

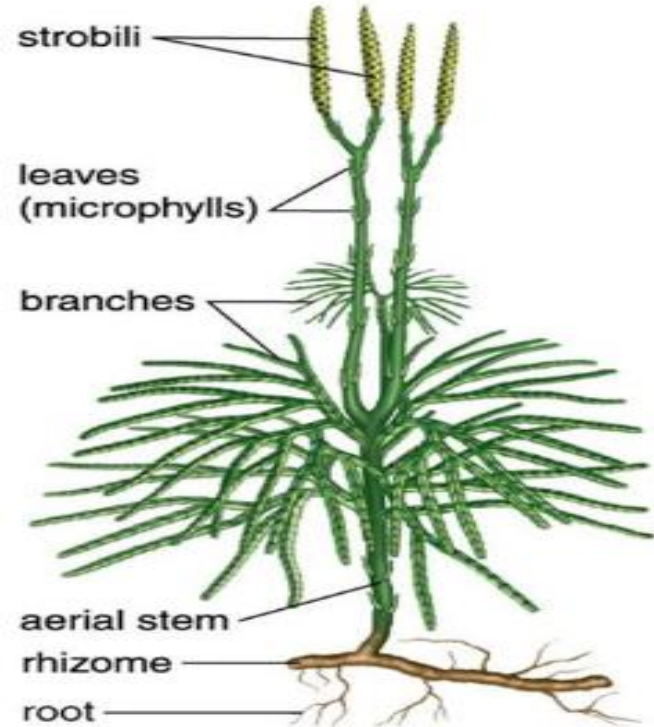
Non-flowering
plants

seedless

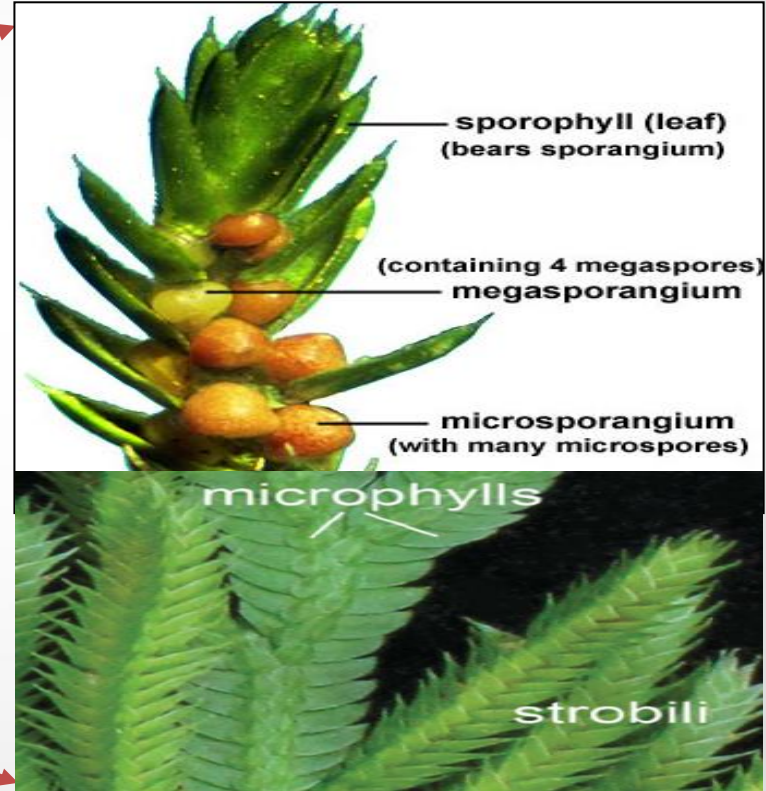
b) Division Lycopodiophyta/Lycophyta



Lycopodium sp.



Division Lycopodiophyta




Division Pteridophyta



Dryopteris sp.



Gymnosperms

- 
- (a) Describe the unique characteristics of gymnosperms.
- (b) State the classification of gymnosperms into four divisions :-
- i. Cycadophyta (*Cycas* sp.)
 - ii. Pinophyta/ Coniferophyta (*Pinus* sp.)
 - iii. Ginkgophyta (*Ginkgo* sp.)
 - iv. Gnetophyta (*Gnetum* sp.)

(a) The unique characteristics

Non-flowering plants

Have vascular tissues

Reproductive organs are usually bear in cones.



Heterosporous

Alternation of generations

Naked seed

Ovules (modified megasporangium)

b) Division Cycadophyta



***Cycas* sp.**



Female



Male

Division Pinophyta/ Conifrophyta



Pinus sp.



Division Ginkgophyta



***Ginkgo* sp.**



Female



Male

Division Gnetophyta



***Gnetum* sp.**



Female strobilus



Male strobilus

Angiosperms

(a) Describe the unique characteristics of Angiosperms (Division/ Phylum Anthophyta)



The unique characteristics

flowering
plants

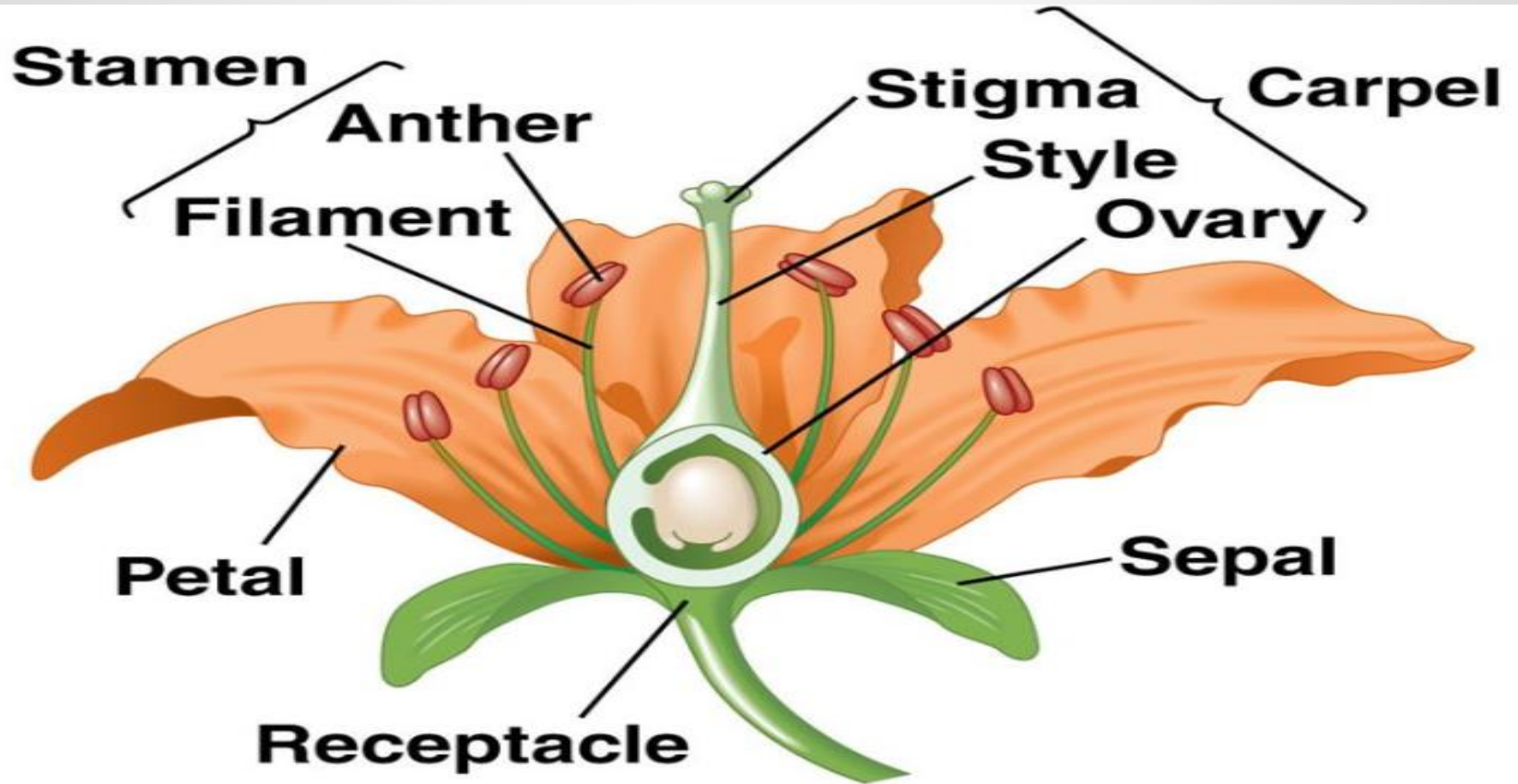


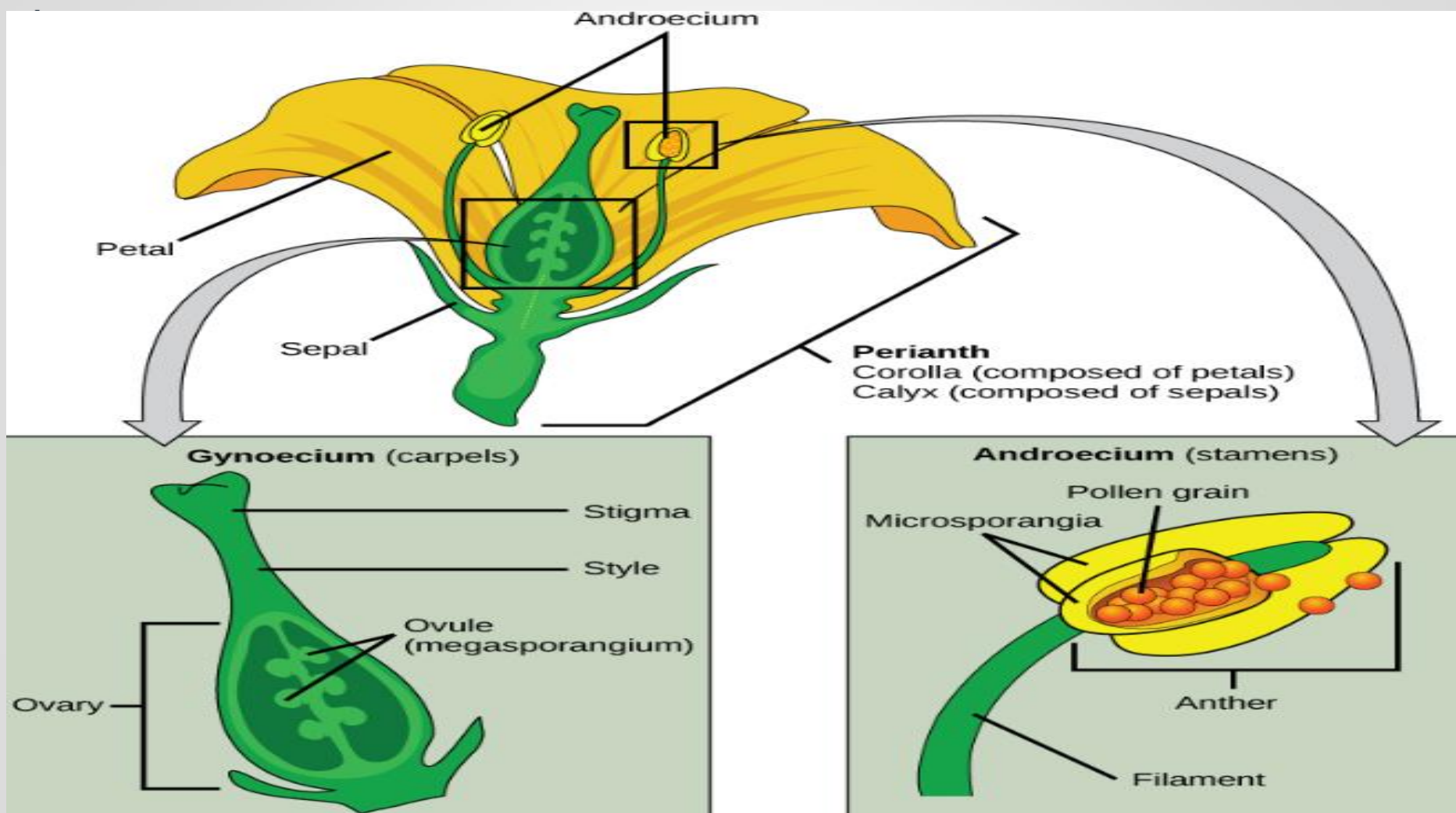
Complete
vascular tissues

Alternation of
generations

Seed plant

Division Anthophyta





1.6.6 EVOLUTIONARY RELATIONSHIPS AMONG GROUPS IN THE PLANT KINGDOM

	BRYOPHYTES	PTERIDOPHYTES	GYMNOSPERMS	ANGIOSPERMS
Size	Very small	Medium	Large	Large
<u>Dominance of gametophytes and sporophytes</u>	Gametophyte	Sporophyte	Sporophyte	Sporophyte
<u>Dependence of gametophytes and sporophytes</u>	Sporophyte depends on the gametophyte for the rest of its life	Sporophyte depends on the gametophyte only at the early development	Sporophyte is totally independent	Sporophyte is totally independent
<u>Water dependence in fertilization</u>	Needed	Needed	Not needed	Not needed

1.6.6 EVOLUTIONARY RELATIONSHIPS AMONG GROUPS IN THE PLANT KINGDOM

	BRYOPHYTES	PTERIDOPHYTES	GYMNOSPERMS	ANGIOSPERMS
<u>Presence of vascular tissues</u>	Absent	Simple vascular tissues	Present Xylem – tracheids only Phloem – Sieve tubes with no companion cells	Present Xylem – tracheids and vessels Phloem- Sieve tubes and companion cells
<u>Embryo protection</u>	Not protected	Not protected	Protected by the seed	Protected by the seed