

# ARCHEGONIATES



Archegoniate probably originated from an ancestral green alga

◦ assemblage of Bryophytes, Pteridophytes and Gymnosperms having archegonia.

➤ a hollow container housing the egg cell.

➤ The egg cell is the precursor of the sporophytic generation.

➤ The archegonium is differentiated into venter and neck

➤ sexual reproduction in the archegoniates is the emergence of heterospory

➤ This phenomenon leads to the formation of spores of two sizes, microspores and megaspores

➤ The zygote, a product of fertilization of the egg cell in the archegonium is the progenitor of the sporophytic generation

➤ **Def.** - Archegoniates are the group of primitive plants, which bears the female reproductive organ is an archegonium (a multicellular, often flask-shaped, egg-producing organ) occurring in mosses, liverworts, ferns, and most gymnosperms

## **: Unifying characters of archegoniates:**

1. The archegoniates seem too have originated from a monophyletic group of ancient stock of aquatic green algae.
2. Present of sexual organs the female called archegonium and the male called the antheridium.
3. The presence of Chloroplasts containing chlorophyll a, b and carotene.
4. The presence of multicellular gametophytic and sporophytic generation.
5. Heteromorphic alternation of generation.
6. The morphological reduction of the sexual or the gametophytic phase was evident in the life cycle of archegoniate.
7. Provides protection to their embryo.
8. Male gametes are flagellated and motile in bryophytes, pteridophytes, (Cycadales, Ginkgoales) while the female gamete (egg) is non-motile.

## **: Unifying characters of archegoniates:**

9. Bryophytes and Pteridophytes depend upon the presence of “fluid water” for fertilization. In gymnosperms, pollen grains germinate to form a pollen tube (siphonogamy) which is not dependent on external fluid water to reach the archegonial neck.
10. The transmigration of plants to the land habit led to specialization coupled with varied spore dispersal mechanisms leading to their successful spread on land with genetic variation.
11. Plants adapted to life on land by internalizing the external atmosphere and exploring the soil in an intensive way.
12. Spores also became resistant to desiccation through further specialization in seed plants.
13. Differentiated rhizoids and roots to provide strong anchorage and efficient supply of water and mineral nutrients.

## **: Unifying characters of archegoniates:**

14. Increased the green surface area to provide more chlorophyll for efficient photosynthesis.
15. Developed an efficient vascular system to provide water to every part of the plant body.
16. Evolved the mechanism of transpiration to regulate the internal temperature.
17. Developed waxy cuticle to restrict water loss and formed stomatas to regulate gaseous exchange.
18. Differentiated tissues with thickened cell walls (collenchyma) and lignified walls (sclerenchyma) to support the erect habit.
19. Efficient spore dispersal mechanism.
20. The archegoniates evolved several adaptive strategies to survive on land