

LIFE SCIENCES 11

NONVASCULAR PLANTS

General Characteristics

- gametophyte is the dominant generation
- do not have true roots, stems or leaves → have root-like, stem-like and leaf-like structures
- flagellated sperm swim in a thin film of water to the egg → zygote develops into a sporophyte that is attached to the gametophyte shoot for nutrients
- spores dispersed by the wind
- low lying plants → lack efficient means to transport water very high

Division Anthocerotophyta (Hornworts)

- grow as a thin rosette or ribbon-like thallus 1 to 5 cm in diameter
- chloroplasts fused with other organelles to form a pyrenoid → manufactures and stores food (algae characteristic)

Division Hepatophyta (Liverworts)

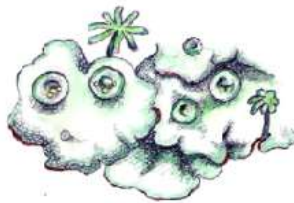
- 10 000 species
- have a leafy appearance
- asexual reproduction is by gemmae on the surface of the thallus
 - gemmae are groups of cells that can become detached and grow into a new plant
- sexual reproduction involves male and female gametophores

Division Bryophyta (Mosses)

- 12 000 species
- most found in damp, shaded locations → require water for sexual reproduction
- can reproduce asexually by fragmentation
- their lack of conducting tissue prevents their growth to a few centimeters in height
- sporophyte is dependant upon the more conspicuous gametophyte; that means it is the gametophyte generation that photosynthesizes and the sporophyte generation draws its nourishment from the gametophyte generation



Moss

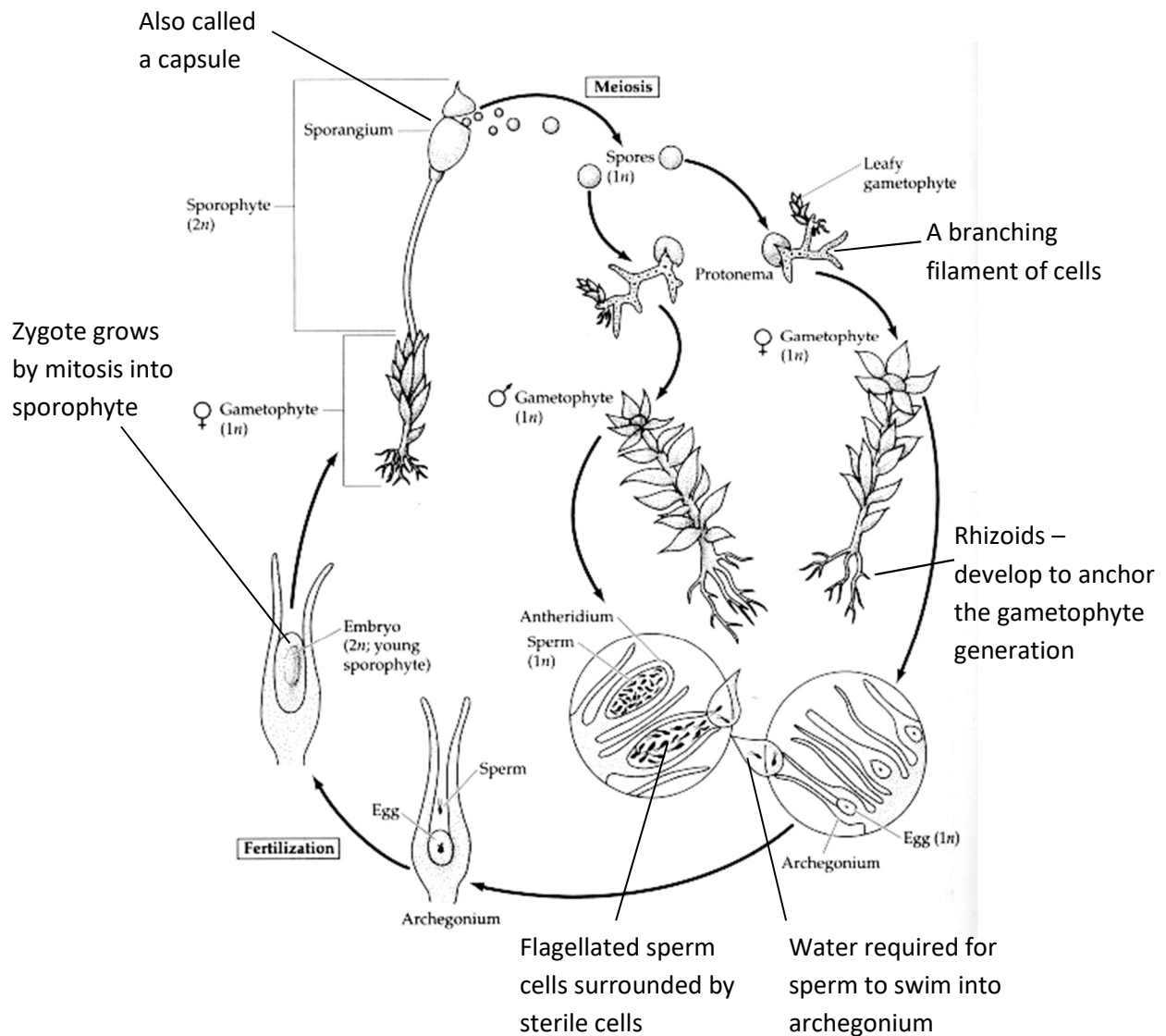


Liverwort



Hornwort

- Moss Life Cycle



Adaptations & Uses of Nonvascular Plants

- able to colonize bare rock where they help to break down that rock into soils
- dead mosses in bogs (ex: *Sphagnum* moss) do not decay → called peat or bog moss
 - used by First Nations for baby hygiene
 - used in gardens to improve water-holding capacity of soils