

MOSS

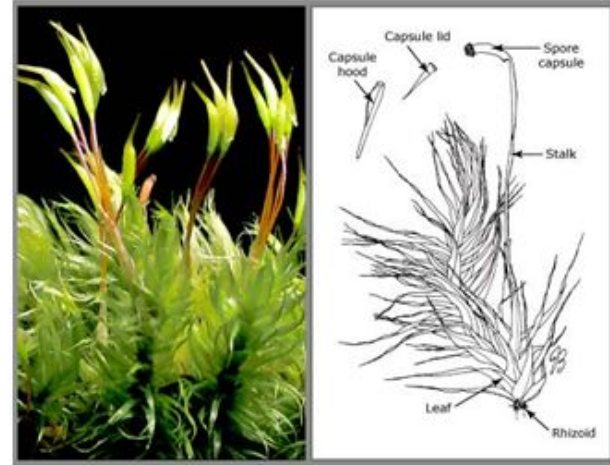
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STRUCTURES

Mosses are small flowerless plants that typically grow in dense green clumps or mats, often in damp or shady locations. Mosses are nonvascular plants in the land plant division Bryophyta. Only a few centimetres tall, herbaceous plants absorb water and nutrients mainly through leaves and harvest carbon dioxide and sunlight to create food by photosynthesis. Vascular plants have two sets of chromosomes in their vegetative cells and said to be diploid. The individual plants are usually composed of simple, one-cell thick leaves, attached to a stem that may be branched or unbranched and has only a limited role in conducting water and nutrients.

STRUCTURES PT 2

Moss leaf is very simple and has one layer of photosynthetic cells. Water and gases from outside pass easily into those cells. It also has elongated cells on its leaf and a central "nerve" that supports the leaf. Moss have sperm cells that must swim through water to fertilize eggs. Moss lack a protective surface covering to keep water from evaporating from their cells. Only one cell thick, plants lose water they contain very quickly if surrounding air is dry. Mosses don't have seeds and after fertilization develop sporophytes.

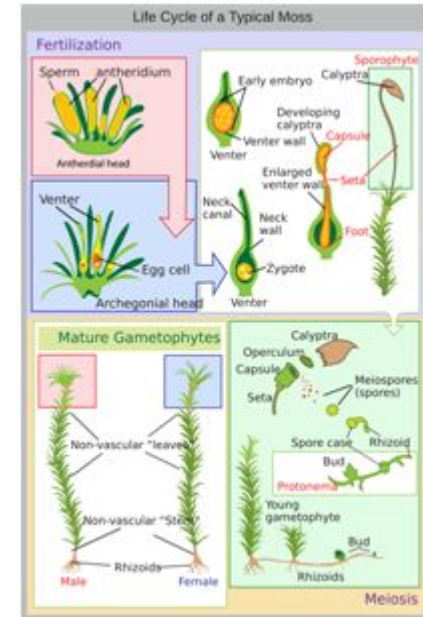


FUNCTION

Moss also helps gather all nutrients to other plants. structures of moss are designed to protect gametes from drying out. Mosses break down exposed substrata, releasing nutrients for the use of more complex plants that succeed them. They aid in soil-erosion control by providing surface cover and absorbing water, and they are important in the nutrient and water economy of some vegetation types. Economically important species are those in the genus *Sphagnum* that form peat.

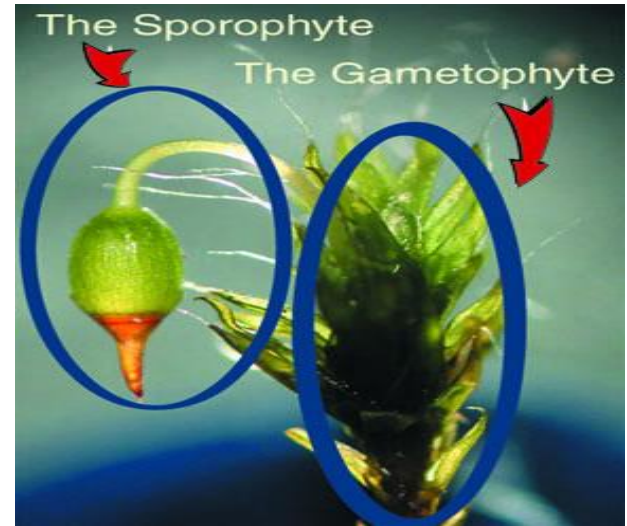
FUNCTION PT 2

Mosses require high levels of moisture to survive because of lack of a vascular system, and need for liquid water to complete fertilization. Many mosses can survive desiccation (drought) sometimes for months, returning back to life within a few hours of rehydration.



TYPES OF MOSS

- The number of moss is constantly changing as new ones are discovered and some become extinct. To this day, there are approximately between 9500 - 14500 species of moss.
- On all moss, you can observe the gametophyte but some may not have the sporophyte.



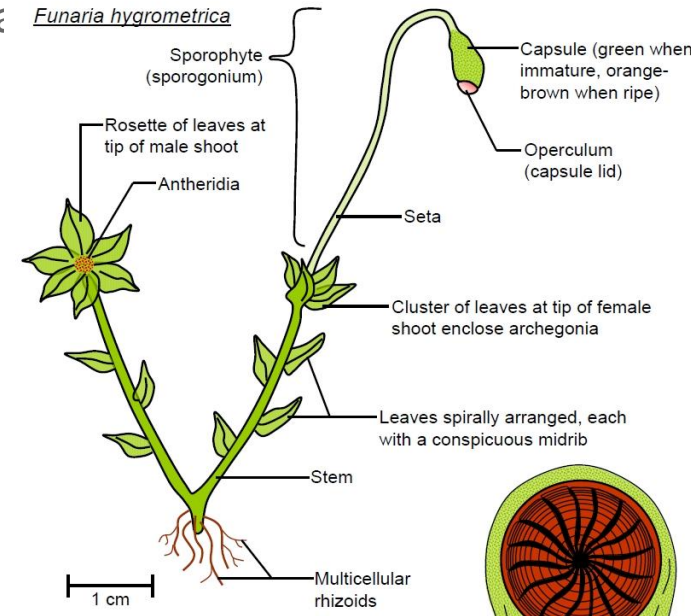
GAMETOPHYTE

- The gametophyte refers to all the organs and tissues that are part of the haploid generation.
- Usually the green layer that is most noticeable and covers an area



SPOROPHYTE

- Refers to the diploid generation of the moss.
- Remains attached to the gametophyte & obtain its nutrients.
- In most mosses, the sporophyte will have these anatomical features; a foot, seta, sporangium, spores, operculum, peristome teeth, and a calyptra.



SPECIES (EXAMPLES)

1. Hedwigia Ciliata - “*medusa moss*”



2. Homalothecium lutescens -
“*yellow feather moss*”



SPECIES (EXAMPLES)

3. *Ptychomitrium polyphyllum*

4. *Barbula convoluta*



REPRODUCTION CYCLE: KEY WORDS

Archegonium: Female plant that **produces eggs**

Antheridium: Male plant that produces **flagellated sperm** cells

Zygote: Where the **sperm meets the egg** and fertilizes it.

Sporophyte: produces **Haploid** germinating spores- protenma

Gametophyte: Haploid stage. **Dominant stage** where the plant will photosynthesis until standing water is present and sexual reproduction occurs.

REPRODUCTION CYCLE: ALTERNATION OF GENERATIONS

DIPLOID ($2N$)

Cycle- No beginning or end point.

Life begins at Fertilization.

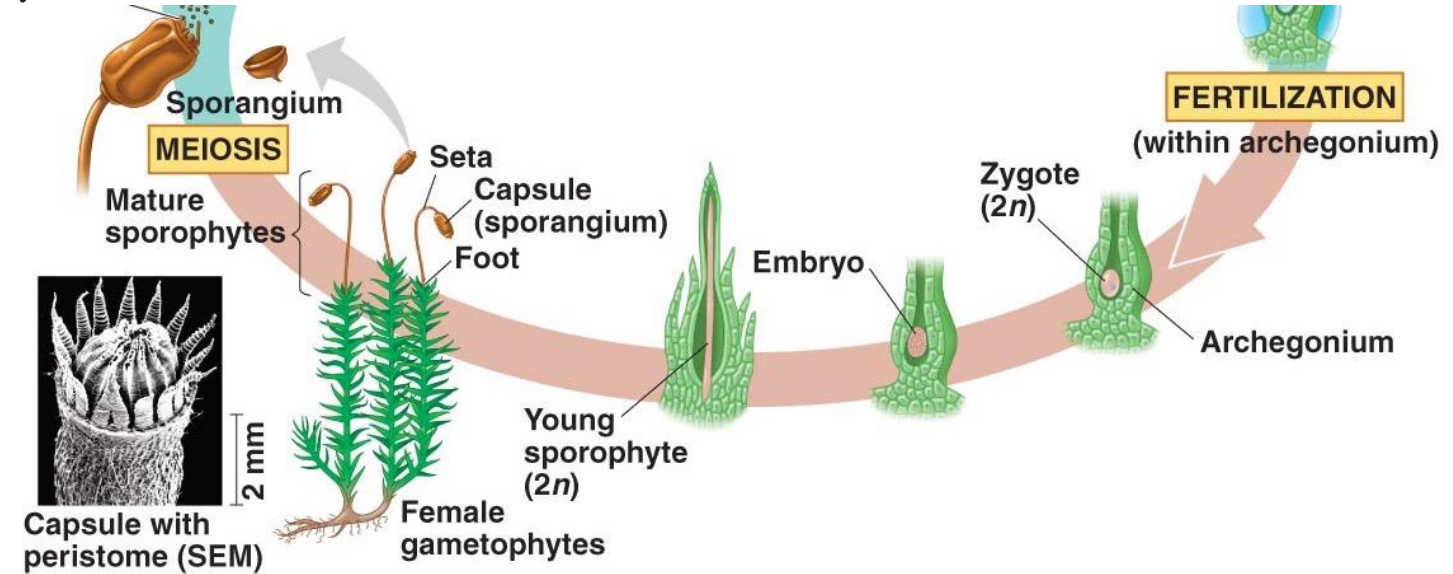
Two haploid cells form together and **form a zygote- Diploid creation.**

This happens within the **archegonium**: holds the **fertilized** egg.

Through **mitosis** the young **sporophyte** grows and develops with identical copies until ready to **release spores from the sporangium.**

REPRODUCTION CYCLE: ALTERNATION OF GENERATIONS

DIPLOID ($2N$)



REPRODUCTION CYCLE: ALTERNATION OF GENERATIONS

HAPLOID (N)

Through Meiosis haploid spores are made. These are not genetically identical to each other. Either protonema or germinating spores

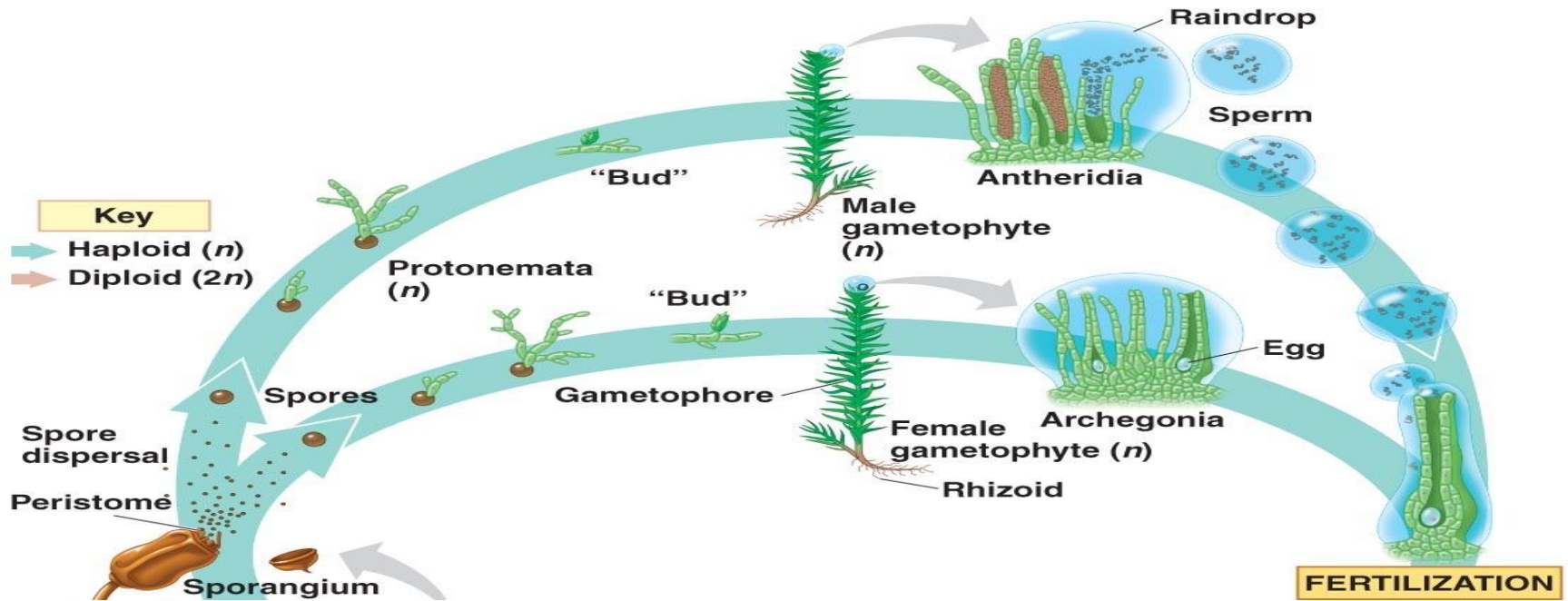
Protonema will become **Archegonia** which will **contain eggs**

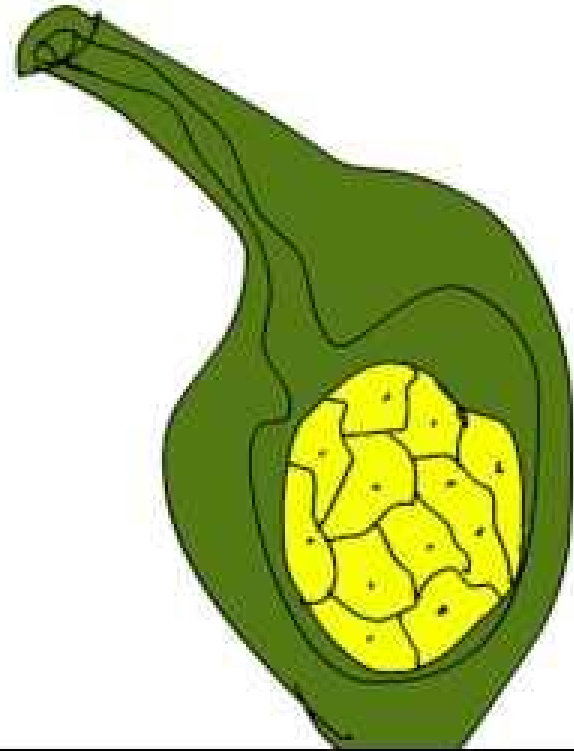
Protonema will become **Antheridia** which produce **flagellated sperm** by mitosis.

These are the **gametophyte** portion of the life cycle: photosynthetic.

REPRODUCTION CYCLE: ALTERNATION OF GENERATIONS

HAPLOID (N)





FUN FACTS

- In WWI, moss was used as first aid dressings on soldiers wounds.
- Dawsonia is the tallest moss in the world, it can grow up to 20 inches in height.
- People used mosses for bedding.
- People also used mosses for basketry, wound dressing, and diapers.
- In Canada people used mosses to fill chinks in wooden long houses.
- Moss was used to clean salmon prior to drying.
- In Mexico, moss is used as a Christmas decoration.

DISCUSSION QUESTIONS

- What does moss provide for the ecosystem?
- Why do mosses require high levels of moisture in order to survive?
- Can the sporophyte survive without the gametophyte? If not, why?
- Where is the fertilized egg held during the moss life cycle ?
- Does the life cycle of moss include mitosis or meiosis?