

## Laboratory 6 Peatmosses, Pincushion moss, and peristome

### Objectives

Last week you examined various mosses to gain an understanding of the general architecture of their body and in particular of their leaf. Today we will examine two other architectural types, build around dead cells.

As you know most mosses develop a peristome, a set of teeth, contributing to the control of spore release.

### Warm-up exercise! (5 min max)

Last week you observed what poikilohydry means. If you are not convinced, take a stem of *Racomitrium lanuginosum* and move it to a drop of water while you watch it under the **dissecting scope**. What happen and why is this an important observation to understand the biology of mosses in general?

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Now remove a few leaves and observe under the compound scope. The shape of the cell and in particular the cell walls is diagnostic of this genus.

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How would you describe the cells of the hyaline awn (the glass hair)? \_\_\_\_\_  
What may be the function of the hair? \_\_\_\_\_

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### Sphagnopsida (peatmosses) – *Sphagnum austinii*

Peatmosses (*Sphagnum*) are widely distributed and are abundant at higher altitudes in the tropics and at high latitudes, especially in Eurasia and North America. The Sphagnopsida comprises four genera, of which *Sphagnum* (until recently the only genus) is the most speciose, counting at least 300 species. Many (and hence not all) of the species are peat-forming and hence dominate the vegetation in peatlands.

Observation of *Sphagnum* leaf and stem architecture is best completed after the plants have been stained in Gentian violet. *Be careful as the stain will not only stain the plant but also your hands.*

***You should each get one stained and one unstained individual (you only need a branch).***

**Unstained individual:** *Sphagnum* plants are characterized by a unique plant body architecture and leaf architecture. The branching pattern of *Sphagnum* is unlike that of other mosses in that the branches are clustered, in bundles, with typically branches spreading away from the stem and others hanging down along the stem. Also at the tip the clusters are themselves clustered so that all clusters form a capitulum. Subsequently, the stem cells between the clusters may elongate and the clusters are then more evenly spread.

Remove a branch and mount some leaves on a slide, observe and describe. The leaves are highly concave; make sure you lay some with the concave surface up and others down. The areolation (the way cells are shaped and laid out in a lamina is very different from the other mosses you observed)

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How many cell types make up the lamina? \_\_\_\_\_

Challenge! Try to make a cross section of a single leaf. This is not easy but essential to uncover how the leaf is indeed built.

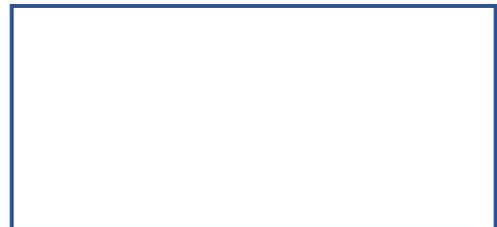
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So, how many cell types make up the leaf? \_\_\_\_\_ do these differ? \_\_\_\_\_

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Now prepare a slide with the stained leaves. Record your observations

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