Pterophytes (Ferns) LAB

►Overview

Last week we looked at nonvascular plants (bryophytes and charophytes). This week, we're studying two major plant groups that have well-differentiated vascular tissue (xylem, which transports water and nutrients, and phloem, which transports sugars and other metabolites).

1. The first group, known as **seedless vascular plants**, consists of two phyla: **P. Pterophyta** (ferns, horsetails and whisk ferns).



**►Station 1: Examine the transport tissue**

|  |  |  |
| --- | --- | --- |
|  | **Xylem** | **Phloem** |
| Draw |  |  |
| Describe Structure- does one have thicker edges? |  |  |
| Function |  |  |

* Question: Why are vascular plants able to grow much taller than non-vascular plants?

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Transpiration:

* 1. What is transpiration
	2. Why do plants use transpiration?
	3. Are there any cons to transpiration?
	4. Draw the flowers and celery

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| **Draw the Celery** |
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* 1. Explain why this experiment is showing transpiration

**►Station 2: Sori**

1. Take a small piece of leaf from the fern indicated by your instructor make a wet mount of the sore, see if you can see the individual spores

2. Draw the sporangium and some spores below.

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| Magnification: \_\_\_\_\_x |

1. How are seeds different than spores?

**►Station 3: Examine Ferns**

1. Observe and compare the live specimens of ferns.

* Fern species are often distinguished by the location of the spores under the leave. The spores are clumped into a structure called a **sori** (sing. ***sorus***) on the leaf.

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|  | #1 | #2 | #3 |
| **Drawing** |  |  |  |
| **Location of Sori** |  |  |  |

**►Station5: Pollen Grain**

1. Examine the picture of **pollen grains**.

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| **Description of cells**(See bold words below) | **What they do** |
| 1.  |  |
| 2.  |  |
| 3/4 |  |

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| 2. Pine pollen consists of a cell and two air bladders for wind dispersal and can travel great distances. Look for germinated pollen with a **pollen tube** that has grown out of the pollen grain. You can make out the tube nucleus inside the pollen tube. The **generative nucleus** is found in its own cell in the pollen grain. Once the pollen tube reaches the female egg in an special female cone, the tube nucleus will divide into two **sperm cells**.  |

Draw a germinated pollen grain and **label** **air bladders**, **pollen tube**, **tube nucleus**, and **generative nucleus**.

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STATION 1: TRANSPORT



STATION 5: Pollen

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| Microscopical view of a stained slide of a pine pollen tube. 1 = Air bags or air bladders, 2 = Generative cell with generative nucleus, 3 = pollen tube, 4 = tube nucleus ([4](http://www.vcbio.science.ru.nl/en/virtuallessons/pollenflowercone/)) | pine-pollentube-labeled.jpg |