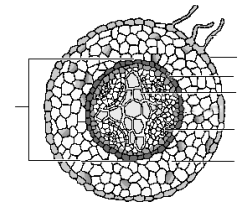
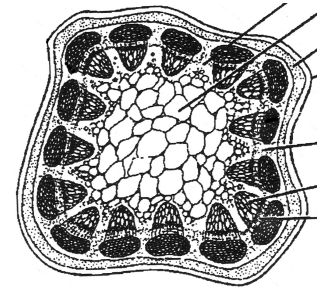


Plant Tissue Slide Lab

This is an observational lab to be completed on this handout. No further analysis is necessary.



Purpose

A. **Background:** Below, write what the reader needs to know about the function of vascular, dermal, ground, and meristem tissues:

B. Purpose:

Procedure

Part A

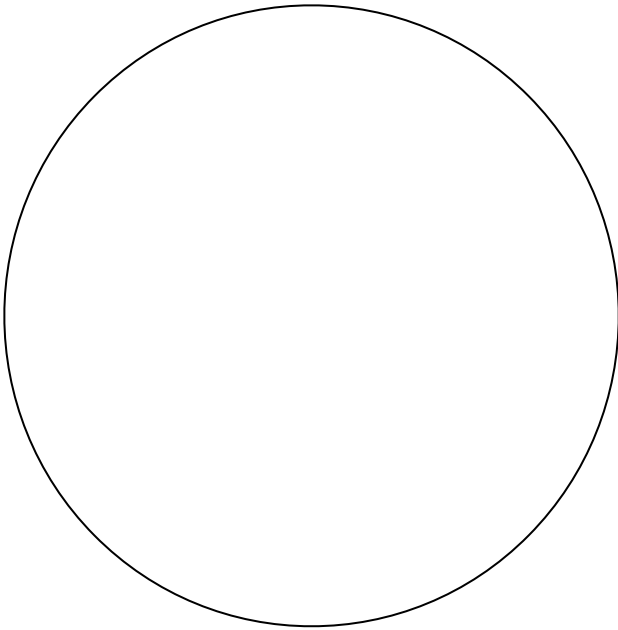
1. Obtain a prepared slide of Monocot and Dicot stems. While the slide will include both monocot and dicot, you only need to record your observations of the dicot.
2. Start your observations at scanning power (40x). Note the location of the following tissues: Dermal, Ground, and Vascular. The vascular tissue will be dispersed into bundles. Focus on one of the bundles and zoom in to low (100x) and then high (400x). Make at least one sketch of a vascular bundle, including and labeling cells from Dermal, Ground, Vascular, and Meristem tissues. Label Xylem and Phloem.
3. You may find diagrams of other texts in the classroom to be of help (Biology, by Curtis, is especially helpful, as is Biology, by Campbell)
4. Your goal is to be able to use your sketches to identify an unknown slide as a root or stem of a dicot, and to identify the tissues within the specimen.

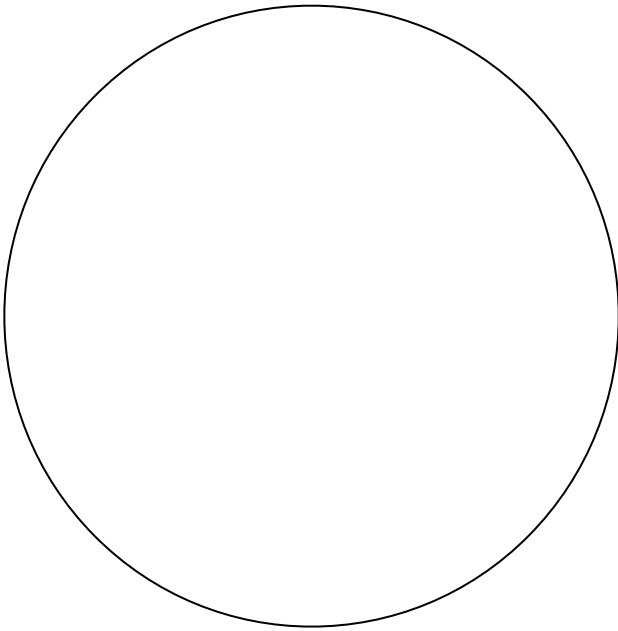
Part B

5. Obtain a prepared slide of Monocot and Dicot roots. While the slide will include both monocot and dicot, you only need to record your observations of the dicot.
6. Start your observations at scanning power (40x) and then zoom in on the root center to low. Note the prominently stained rind of endodermis. This is the innermost layer of cortex cells. The vascular tissue will be arranged inside this important layer of cells. Zoom in to high (400x) and sketch a field of view that contains endodermis, xylem, and phloem. Label: xylem, phloem, endodermis, Casparian strip.
7. You may find diagrams of other texts in the classroom to be of help (Biology, by Curtis, is especially helpful, as is Biology, by Campbell)

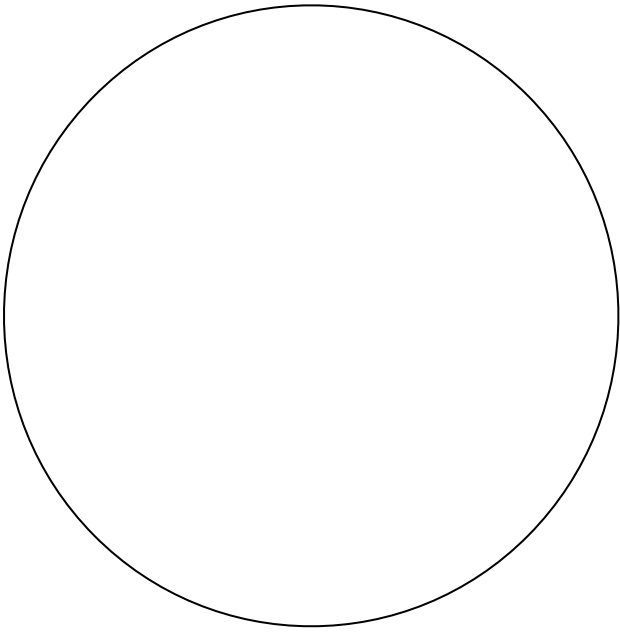
Name: _____ Per. _____ Lab Partner: _____ Scope # _____

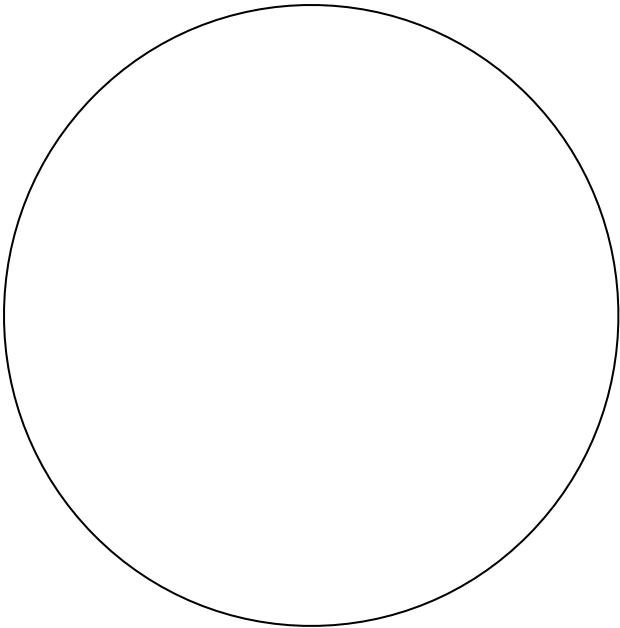
8. Your goal is to be able to use your sketches to identify an unknown slide as a root or stem of a dicot, and to identify the tissues within the specimen.





Name: _____ Per. _____ Lab Partner: _____ Scope # _____





Analysis

1. In the stem, the meristem tissue between xylem and phloem makes new vascular tissue. Cells that end up on the inside develop into xylem and cells on the outside of the meristem develop into phloem. Describe three differences between xylem and phloem when the cells are fully mature and functional.

2. In the root, the endodermis surrounds the vascular cylinder, which conducts water and minerals up to the rest of the plant. Water travels up inside xylem cells. During water uptake, water absorbed by the root moves through the cell walls and cytoplasm of the epidermis and cortex of the root before moving into the xylem. Describe the crucial role of the endodermis during water uptake.

Sheldon Science Sketch Criteria®

1. Use **pencil** for any sketched data (ink may be used for labeling)
2. Draw within a **large** field of view (FOV) (approx. 5-8cm is a good diameter for the FOV)
3. Do high **quality** work; sketch your area of interest perfectly. Make it look exactly as it appears under the microscope. The remainder of the FOV must be sketched to provide context, but the quality of the sketch may be quite rough.
4. **Label** your observations with as much of the following information as possible:
 - a. Title of the object of interest
 - b. Use a ruler to draw label lines
 - c. Include total magnification of the FOV
 - d. Include estimated size (in μm^*) of your object of interest (see table below).
 - e. Label on the right-hand side of the drawing, if possible

*see table below for compound scope scales (note: 1mm = 1000 μm)

Objective	FOV total mag	FOV size (mm)	FOV size (μm)
Scan	40x	5.0	5000
Low	100x	2.0	2000
High	400x	0.5	500

Name: _____ Per. _____ Lab Partner: _____ Scope # _____