

# Lab 12: Plant Vascular System & Transpiration

**Read pages 103-104 as an introduction and/or refresher of plant anatomy**

## **Herbaceous Monocot Stem** page 109

- Observe prepared slide of *Zea mays* and be able to locate the following items: *epidermis*, *vascular bundle*, *xylem* and *phloem*
- The function of the above listed items can be found on the handout. Be sure to know why each is important to plant transpiration
- Identify what tissue is stained with the red dye in the celery demo; why?

## **Eudicot Woody Stem** pages 110-111

- Observe prepared slide of *Tilia* and be able to identify the following items: *cork*, *phloem*, *vascular cambium* and *xylem*
- Which tissues make up the “bark” and which make up the “wood”?
- Look at wood block and identify cork, phloem, and xylem

## **Stomata on Lower Epidermis** page 106

- Obtain a piece of leaf from *Setcreasea* plant and follow directions for viewing stomata on underside of leaf (lower epidermis) using a wet mount
- Why are stomata important?
- Begin to think about how these structures influence a plant’s activity

## **Leaf Cross-section** page 107

- Observe prepared slide of leaf cross-section and identify the following items: *epidermis*, *leaf vein*, *palisade* and *spongy mesophyll*, *stoma* and *guard cells*
- The function of the above items can be found on the handout. Be sure to know how each plays a role in plant respiration
- See diagram at front desk if there are any questions on leaf cross-section
- What cells is photosynthesis occurring?
- What tissues are inside a vein?

## **Transpiration Experiment** use handout and C71-73

- Work in teams of 3-4
- Follow the directions carefully!
- I will demo a set-up with the equipment  
(note: If your meniscus is not at 0.9ml, be sure to change the value in the table to *your* starting value for the meniscus)
- Choose a variation from those listed on page C74 (of handout)
- Fill in VARIATION #1 block with your data
- the first 16 minutes in the “control” and the last 16 minutes in the “experiment”
- We will fill in the rest of the blocks with the data from the other groups
- Take the data and complete the graphs (C72) to see how each of the variables influence transpiration
- Answer questions on page C73

## **Review:**

Trace the pattern of water through a plant from where it enters to water vapor leaving  
Be able to describe the process of transpiration  
Know the difference between monocot and eudicot stems