# Lab 12: Plant Anatomy & Transpiration

# **GOALS:**

# You should be able to.....

- ★ Describe the role of water in the survival of plants and how water is transported through them.
- ★ Define transpiration and explain the process of transpirational pull.
- Explain how certain conditions can affect the rate of transpiration. ★
- ★ Identify and state the functions of major tissues in an herbaceous monocot stem, woody dicot stem, and leaf cross-section.

## I. Transpiration Experiment (in groups of 4)

- Watch demonstration on how to set up your experimental control. Follow procedure on handout and record results in data table on p. C71.
- Repeat the experiment to test the effects of a certain variable.
- Fill in your data on p. C71 and on the board.
- Graph your results on p. C72.
- Use class data to help you answer questions on p. C73.

While you are conducting the experiment, you can complete the following.....

# **II. Stomata**

- p. 106: Follow procedures #1-4 to create and view your own wet mount slide.
- Be able to identify and state the functions of:
  - ✓ stoma
  - √ guard cells

## **III. Leaf Cross-Section**

- pp. 107 & handout: View leaf cross-section slide. Use reading and diagram to help you identify the structures.
- Be able to label (p.107) and state the functions of:
  - $\checkmark$ cuticle
  - ✓ leaf vein
  - ✓ palisade mesophyll
  - ✓ spongy mesophyll
  - upper/lower epidermis

## **IV. Herbaceous Monocot Stem**

cork

- p. 109, Fig. 9.6: View slide of monocot stem and use diagram to help you identify structures.
- Be able to label and state functions of:

$\checkmark$	epidermis	$\checkmark$	xylem
$\checkmark$	cortex	$\checkmark$	phloem
$\checkmark$	vascular bundle	$\checkmark$	pith

View demo of celery and carnation. How has the colored water entered these plants?

## V. Woody Dicot Stem

✓

- p. 110-111: Follow procedures #1-7 to view slide and identify structures.
- View wood block, which is also a woody dicot stem.
- On slides and wood block, be able to label and state functions of:
  - annual ring √
  - ✓ ⁄ xylem cortex
  - ✓ vascular cambium phloem

- stoma guard cells
- ✓