

# Introduction to Botany: BIOL 154

## Lab 7. *Mimosa* leaves

October 28 and 31, 2013

### 1 Assignment

Before the lab, you will need to design the set of experiment in order to answer the following questions:

#### 1.1 Questions

1. What is the response when the plant is stimulated?
2. Which part of the plant is most sensitive to stimulus (touch, movement, light)? (i.e. where must you touch the plant to get the response)
3. How fast is the response?
4. What is the recovery time?
5. Is the response all-or-none or can you get a partial response? (Do all leaves respond, or only those

stimulated?)

6. What level of stimulus is required to get a response?

7. (Invent your own question)

## 1.2 Experiments

Please describe your experimental plan under each question.

## 1.3 Report

Please write your results for each experiment under the experimental plan.

## 1.4 Description

Write the full description of Mimosa leaf below:

# 2 Background

## 2.1 *Mimosa pudica*

The movement of plant organs in response to environmental stimulus is an interesting phenomenon. The response of *Mimosa pudica* to seismic stimulus is immediate and captures the attention of anyone observing it. Even Charles Darwin was intrigued enough to devote time to describing the leaf-closing response of this plant to external stimuli.

*Mimosa pudica* is a short-lived sub-shrub that is native to Brazil but has become pan-tropical. It has prickly stems that can grow to a height and spread of one meter. In some areas it is considered a noxious weed. Mimosa can grow in most well-drained soils with high or low nutrient availability but is not shade tolerant. As a member of family Leguminosae, the roots of Mimosa contain nitrogen-fixing nodules. In cultivation the plant will produce pink fluffy flowers from which viable seeds may be collected. All parts of the plant are potentially toxic and should not be ingested.

## 2.2 Plan of leaf description

1. General characters (leaf as a whole):
  - (a) symmetry (symmetrical / asymmetrical);
  - (b) stipules (present / absent, deciduous / not);
  - (c) base (sheath / no sheath, ligule / no ligule, auricles / no auricles)
2. First level of hierarchy: repetitive characters:
  - (a) shape—see table in lecture slides
  - (b) dissection—see table in lecture slides, do not forget also to mention number of parts
  - (c) petiole (length)
3. Second level of hierarchy (*if available*): repetitive characters—see above
4. Third level of hierarchy (*if available*): repetitive characters—see above
5. Terminal characters (leaflets):
  - (a) base [of leaf blade] (rounded, truncate, cuneate, cordate, sagittate)—see Figure 1;
  - (b) apex (rounded, mucronate, acute, obtuse, acuminate, retuse)—see Figure 1;
  - (c) margin (whole, dentate, serrate, crenate; degree of order)—see Figure 1;
  - (d) surface (color, hairs etc.);
  - (e) venation (apo-, hypho-, acro-, ptero-, actinodromous)

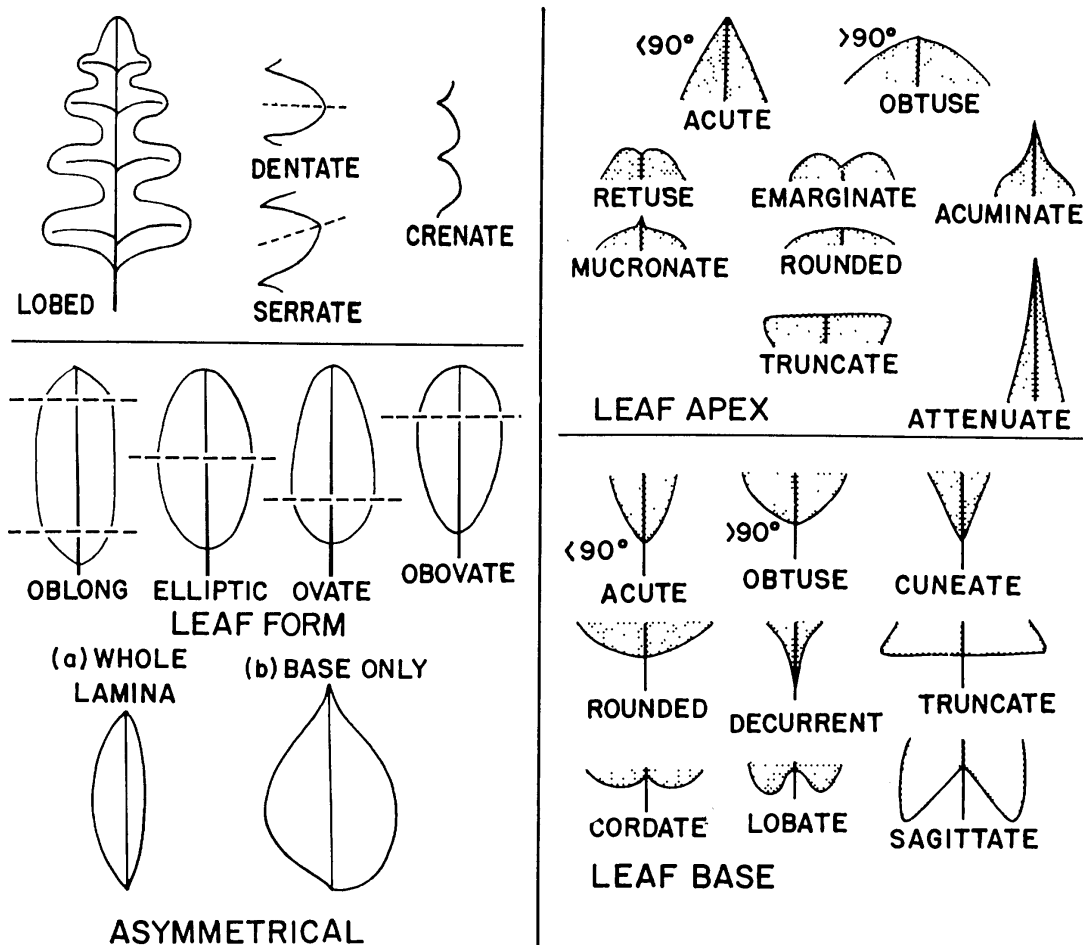


Figure 1. Base, apex, margin and shape