

Dissecting Scope Lab

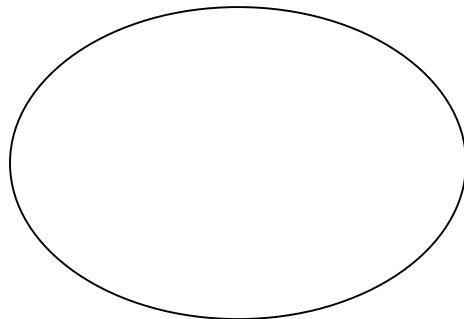
Materials needed:

- Dissecting microscopes
- Various leaves of any species, attached to the stem
- Elodea (an aquatic plant, often sold in pet stores for people to put in aquariums)
- Salt water
- Bromeliad leaves – Spanish moss, ball moss or other bromeliad.

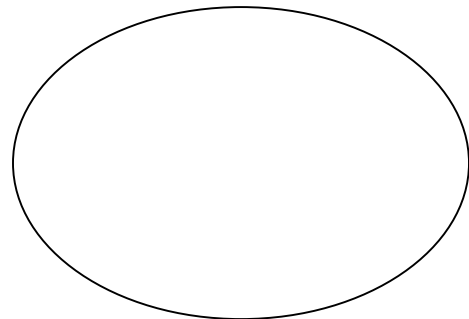
I. Nodes and Buds

Background: A **node** is the area where a leaf grows from the stem. A **bud** is a small protuberance on a stem or branch, usually covered tightly in protective scales and containing an undeveloped shoot, leaf, or flower. Buds are found at the base of leaves.

Procedure: Look under the dissecting microscope at the base of the leaf where it meets the stem. You should see a small bump. This is the bud and indicates the point where a leaf begins. The leaflets of a **compound leaf** will *not* have buds. Thus, to determine if you are looking at a compound or **simple leaf**, it often helps to look for the bud. Examine at least two different leaf types. Draw the buds that you see below.



Bud of leaf #1

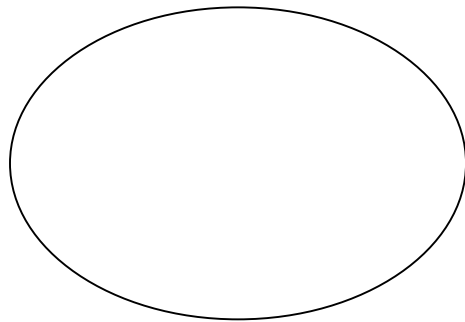


Bud of leaf #2

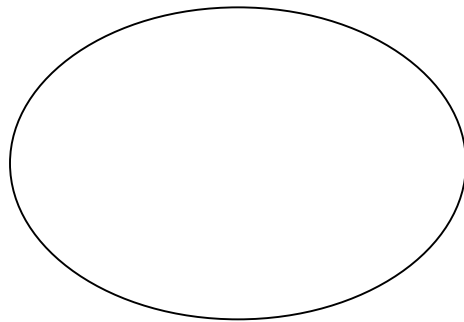
II. Elodea – osmosis demonstration

Background: Osmosis is the movement of a solvent (water) through a semi-permeable membrane (like a cell membrane) by diffusion. Diffusion takes place when the molecules of a substance move from areas of higher concentration to areas of lower concentration. In plants, if cells have too little water they will wilt. Lack of water in the cells of plants means there is little pressure inside the cells and the plant can no longer support itself against gravity. After watering the plant, the cells become re-inflated and turgid due to osmosis and the plant can stand upright.

Procedure: Elodea (*Elodea* spp.) is a common submerged aquatic plant. Place a single leaf from an elodea plant on the dissecting microscope. Examine it closely and draw what you see below. Then use a dropper to put a drop of salt water on the leaf. Examine what happens. You should notice that the cell contents have shrunk. This is called plasmolysis, which is shrinkage of the cell contents due to water loss by osmosis. Draw what you see below.



Before salt solution



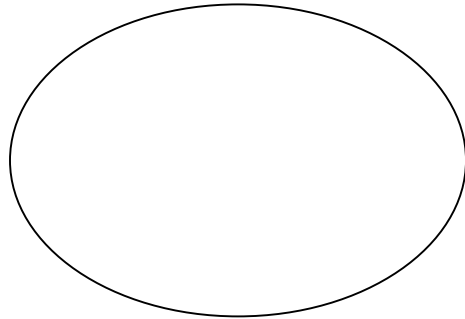
After salt solution - plasmolysis

Describe what happened and explain why it happened:

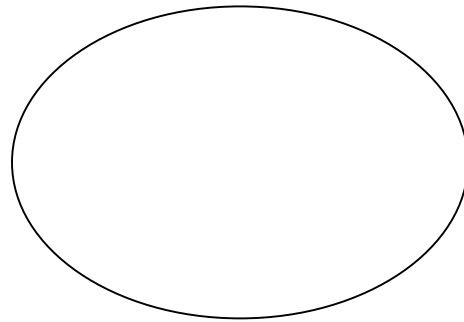
III. Bromeliad leaf (Spanish moss) dry and wet

Background: Spanish moss (*Tillandsia usneoides*) is a common bromeliad that grows on trees in South Florida. Bromeliads are **epiphytes** or air plants, meaning that they grow on other plants rather than in the ground. It can be difficult to get water when growing on a tree branch rather than in the soil, since the plant's roots do not have access to the soil. Bromeliads have specialized hairs that absorb water when it rains to help them survive in the treetops.

Procedure: Place a piece of Spanish moss on the dissecting microscope. Look at it and draw what you see. Next, put a drop of water on the leaf and watch what happens under the microscope. You should see the leaf hairs spring into action. Draw what you see now.



Bromeliad leaf before water



Bromeliad leaf after adding water.

Describe what happened and explain why it happened:
