Faculty of Science

Department of Medical Technology

((General plant sciences))

1st stage

Lab (8)

Respiration in Plants

By

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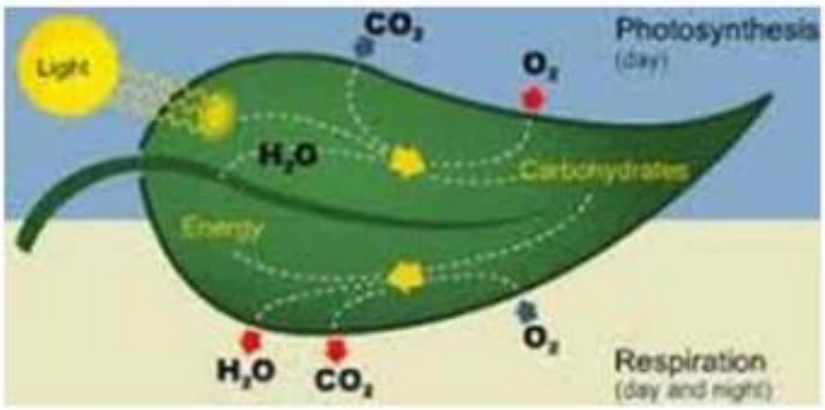
Lab 8: Respiration in Plants

Plants like other animals also respire. Plants also need energy. The plants get energy through the process of respiration in which glucose food breaks down in the presence of oxygen to form carbon dioxide and water with the release of energy.

Respiration In Leaves

The leaves of plants have tiny pores on their surface which are called **stomata**. The exchange of gases in the leaves during respiration takes place through **stomata**.

This happens as follows: Oxygen from the air enters into a leaf through **stomata** and reaches all the cells by the process of diffusion. This oxygen is used in respiration in cells of the leaf. The carbon dioxide produced during diffuses out from the leaf into the air through same stomata.



Here is a popular science experiment to visually see how plants "breathe".

prep time: 5 minutes
active time: 10 minutes
additional time: 1 hour
total time: 1 hour 15 minutes

In this experiment, we can see how gases produced during photosynthesis and respiration is released into the environment.

Materials

- water
- plant (e.g. a flower or a leaf. Pick it from a living plant, not one that has fallen onto the ground)
- sunlight (optional)

Tools

- shallow bowl

Instructions

STEPS

1. Submerge the plant into a bowl of water. The flower or leaf may float to the top, but try to make at least part of the plant stay underwater.
2. Put the bowl under the sunlight and wait. (You can also leave it in the dark but it may take longer to see results.)
3. After an hour, observe the plant's surface. There should be some air bubbles formed on the pedals or the leaf.

EXPLORE

1. Observe different parts of the plant. Do air bubbles form everywhere?
2. Do air bubbles form if you leave the plant in the dark?
3. Oxygen and carbon dioxide pass in and out of the stomata in the plants through diffusion.
4. When the plant is submerged in the water, bubbles of oxygen or carbon dioxide released are trapped and they stick on the leaves or petals temporarily.

5. Since these gases are lighter than water, if you shake the plant, the bubbles will quickly rise to the surface and burst. It is similar to you releasing a breath underwater.