

Leaf Experiment

Experiment Objective: Watch a plant breathe

Before your start: Think about how humans breathe. Do we have to force our bodies to breathe, or do we breathe naturally? Is the air we breathe in different from the air we breathe out? What would happen if you went underwater and blew out all of your air? Now imagine that you are a plant. Do you think that plants breathe differently than humans? Is the air they take in different from the air they put out? What might happen if we put a plant underwater?

Supplies:

- A bowl of water (a clear bowl is better, but any bowl will do)
- A large, green, freshly picked leaf
- A small rock



Hoyt
Arboretum
Friends

Leaf Experiment

Method:

- Step 1: Fill a large bowl with lukewarm water
- Step 2: Venture outside and pick a large green leaf off of a tree. It is important that the leaf isn't brown or picked off of the ground
- Step 3: Place the leaf inside the bowl and put the small rock on top of it. Make sure that the entire leaf is underwater!
- Step 4: Put the bowl in a sunny spot
- Step 5: Observe the leaf. It is important to take a look at the leaf right at the start of the experiment so you'll know how it changes over time. What do you think will happen to the leaf ?
- Step 6: Let the leaf sit for at least a few hours. This is the hardest step! You can observe it, but be careful not to move it around.
- Step 7: After waiting a few hours, check on the leaf and see if there are any changes you can see. Write down your observations. Do you notice any differences from when the experiment started?



Hoyt
Arboretum
Friends

Leaf Experiment

Conclusion: Revisit your answer to the question in Step 5. Was your hypothesis correct? What changes did you observe? Do you see any bubbles clinging to the leaf? Was the leaf breathing while underwater?

Continue the experiment: What do you think would happen if you left the leaf underwater for a few days instead of a few hours? Would the leaf change color? Would you still see bubbles in the bowl? How would this experiment change if you left the leaf in a dark place instead of a sunny spot?



Hoyt
Arboretum
Friends

Leaf Experiment

The science behind this experiment: Humans breathe in oxygen and breathe out carbon dioxide, but plants do the opposite: they breathe in carbon dioxide and breathe out oxygen. The process of photosynthesis, whereby a plant converts sunlight, carbon dioxide, and water into sugars and oxygen, can be observed during this experiment. Because the leaf was recently picked and then placed in a sunny spot, it will photosynthesize until it dies. What we see in this experiment is the release of oxygen from the leaf, which forms bubbles that can be observed more easily when the leaf is underwater.



Hoyt
Arboretum
Friends