

Photosynthesis: The Whereabouts

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When teaching photosynthesis labs I have had good results connecting leaf physiology with anatomy. I propose that the teaching of gas exchange and light capture be paired with basic leaf anatomy, using live leaves. I start the lab with one potted plant and the question “How does this plant obtain food?” We then move on to the basic equation of photosynthesis, and how to measure the output. We follow up by a measure of gas exchange (when possible) and extraction of pigments from a leaf to measure light absorption. The students are asked how the gases get in and out of the leaves; why terrestrial plants need an epidermis; and where exactly inside the leaf photosynthesis takes place. To answer these questions, we make fresh epidermal peel slides for the microscope to see stomata among the epidermal cells, and also take transverse sections of the leaf cut with a razor blade to observe cells with chloroplasts in the parenchyma and view the phloem where the sugars are loaded for transport to other parts of the plant.

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