

LEAF ABSCISSION

Prepare an amplified abstract for submission.

Observations: You have doubtless observed autumn leaves abscising, or perhaps you have had to rake the many piles after the process was over. In lecture you have observed that fruit ripening, leaf senescence, and development of the abscission layer are interrelated and parallel in design.

Question: Do plant growth regulators play any role in the maintenance or hydrolysis of the abscission layer in leaves?

Hypothesis: Hormones may stimulate the maintenance (or lack thereof) of the abscission layer in leaves. In addition to information from the text and lectures, part of your "educated" guess is to recall the results the class obtained in our wheat leaf senescence project.

Prediction: If the hypothesis is true, then petioles should fall off the plant when their maintenance hormone is no longer delivered to the abscission zone.

Experiment: *Phaseolus vulgaris* (red kidney bean) plants were sprouted to the point of having two fully-expanded primary leaves (heart-shaped simple leaves) in the greenhouse, ten plants to the pot. Available to you are plain lanolin, various lanolin pastes containing growth regulators, wooden picks, and razor blades.

Design a project of your own choosing. You might consider cutting off the blade (potential source of hormones) and replacing it with some plant growth substance. You might screen a battery of PGRs. You might consider a chemical "decapitation" rather than a surgical treatment. You might consider different points of application to the petiole (basal, apical).

Do not forget about replicates and suitable controls (hint: the primary leaves are opposite!). Mark each pot label with the treatment applied.

After a suitable incubation period (several days), observe any petioles that have already abscised. Tap lightly any remaining petiole and control to determine the relative strength of the attachment.

Analysis: Score each replicate 2 if the petiole has fallen off on its own. Score each replicate 1 if the petiole is attached but fell off with a light touch. Add no score (0) if the replicate has its petiole still firmly attached. Get a total score for each treatment and control.

Decision: on the hypothesis:

Hormones may stimulate the maintenance of the abscission layer in leaves.

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Reject	Cannot Reject
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 the hypothesis because: