Module 10: Classification - Diversity in the Six Kingdoms
Topic 2 Content: Plant Homeostasis and Response Notes

Introduction

Plant Homeostasis and Response

Click ***NEXT*** to begin.

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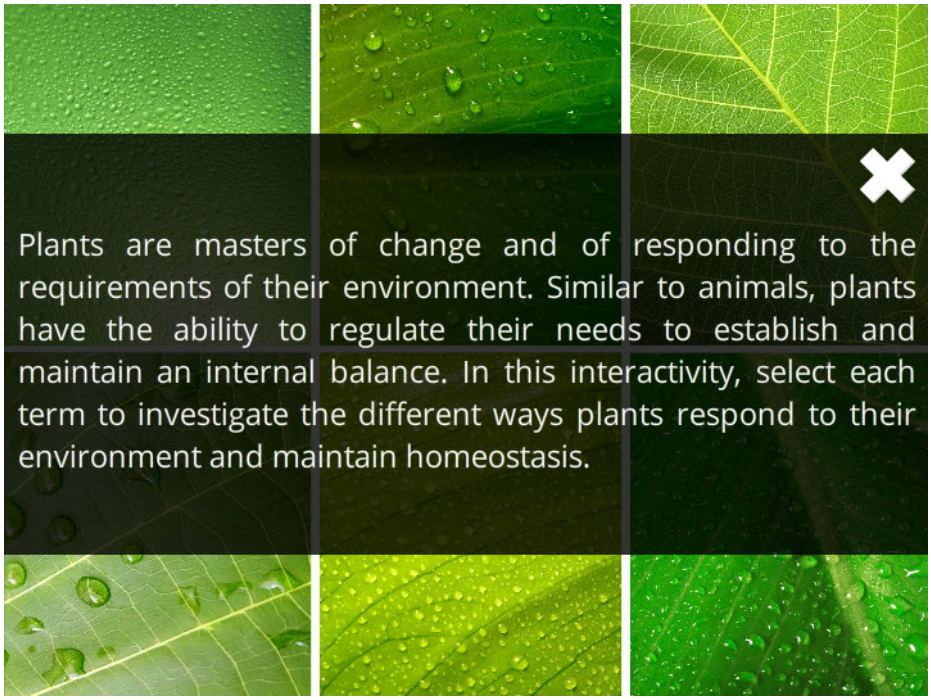
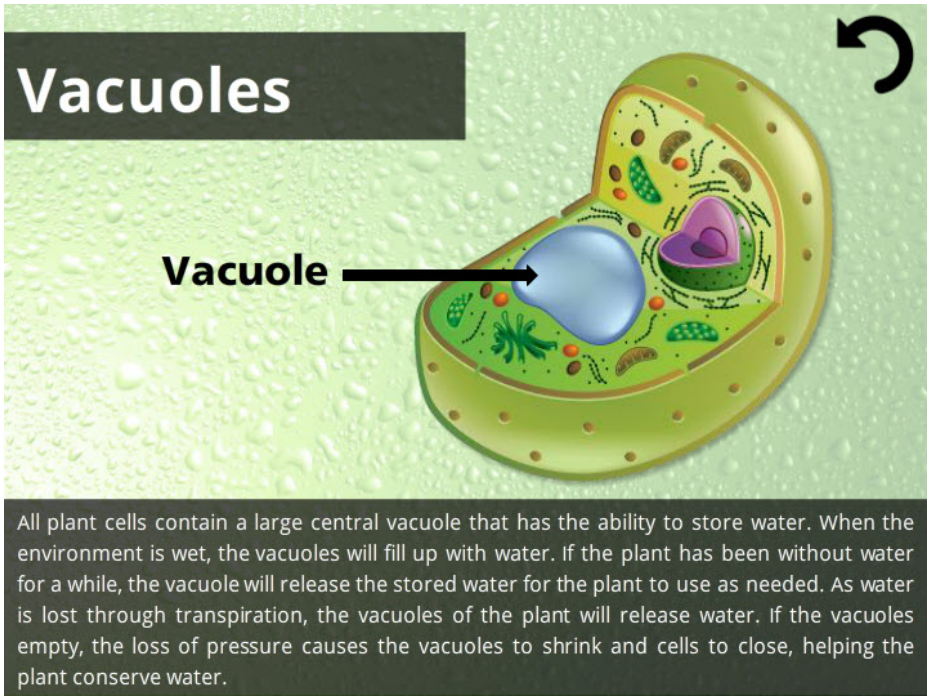
Instructions



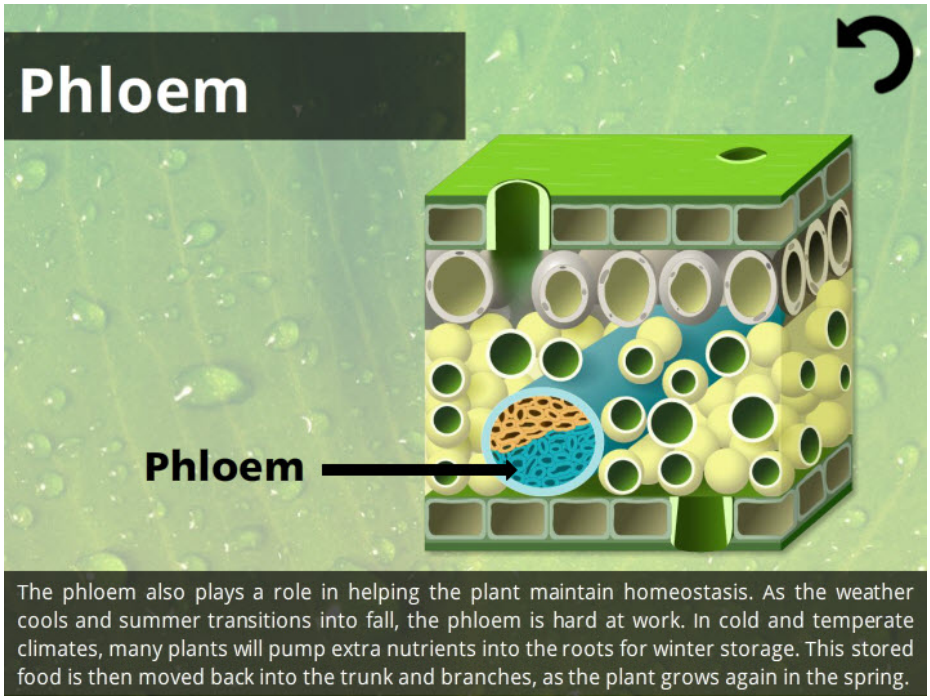
Plants are masters of change and of responding to the requirements of their environment. Similar to animals, plants have the ability to regulate their needs to establish and maintain an internal balance. In this interactivity, select each term to investigate the different ways plants respond to their environment and maintain homeostasis.

Vacuoles



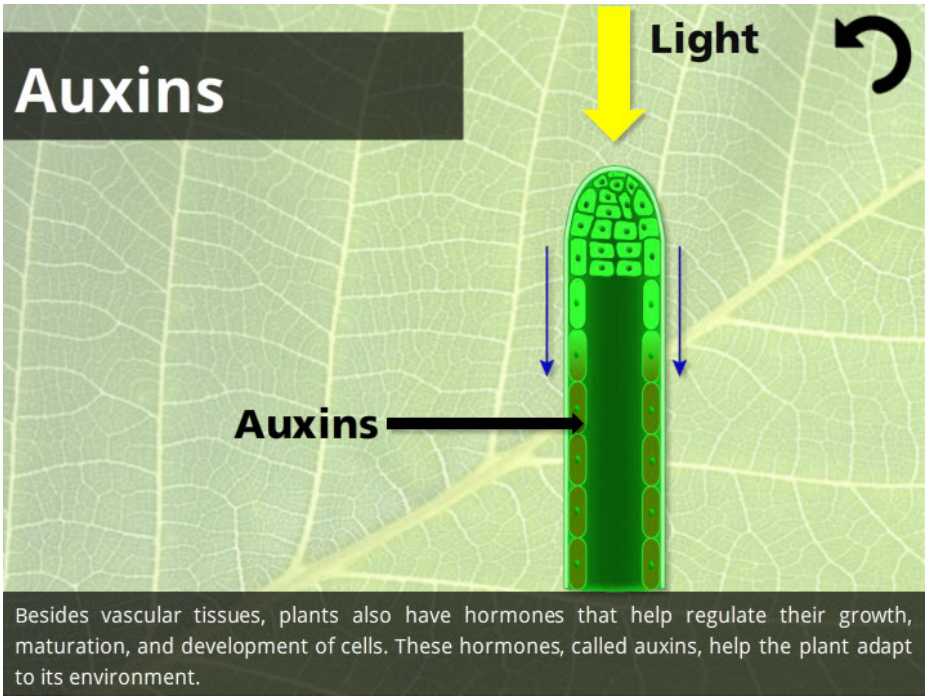
All plant cells contain a large central vacuole that has the ability to store water. When the environment is wet, the vacuoles will fill up with water. If the plant has been without water for a while, the vacuole will release the stored water for the plant to use as needed. As water is lost through transpiration, the vacuoles of the plant will release water. If the vacuoles empty, the loss of pressure causes the vacuoles to shrink and cells to close, helping the plant conserve water.

Phloem



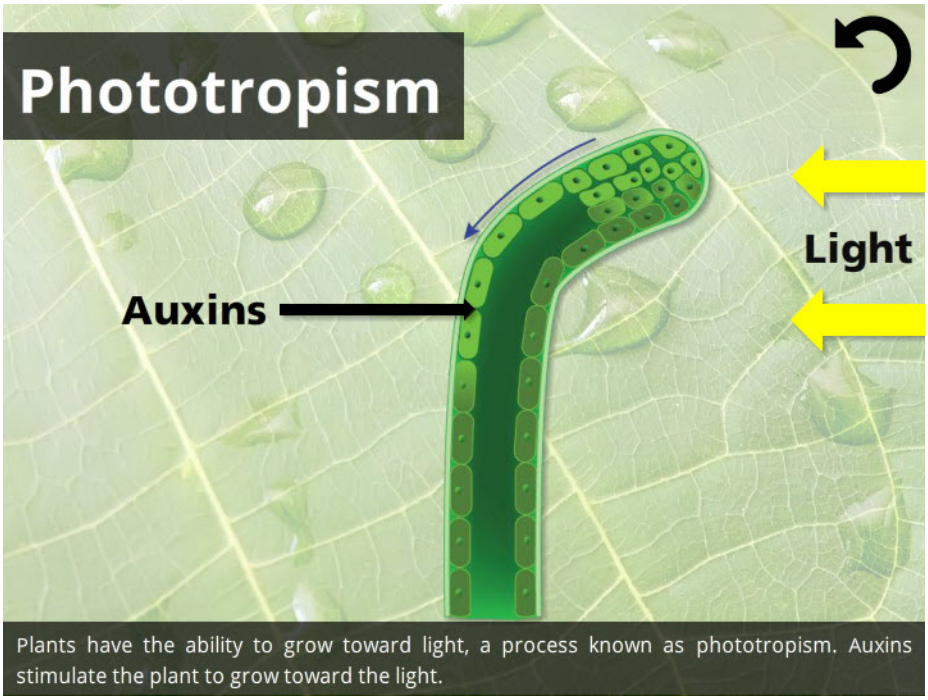
The phloem also plays a role in helping the plant maintain homeostasis. As the weather cools and summer transitions into fall, the phloem is hard at work. In cold and temperate climates, many plants will pump extra nutrients into the roots for winter storage. This stored food is then moved back into the trunk and branches, as the plant grows again in the spring.

Auxins



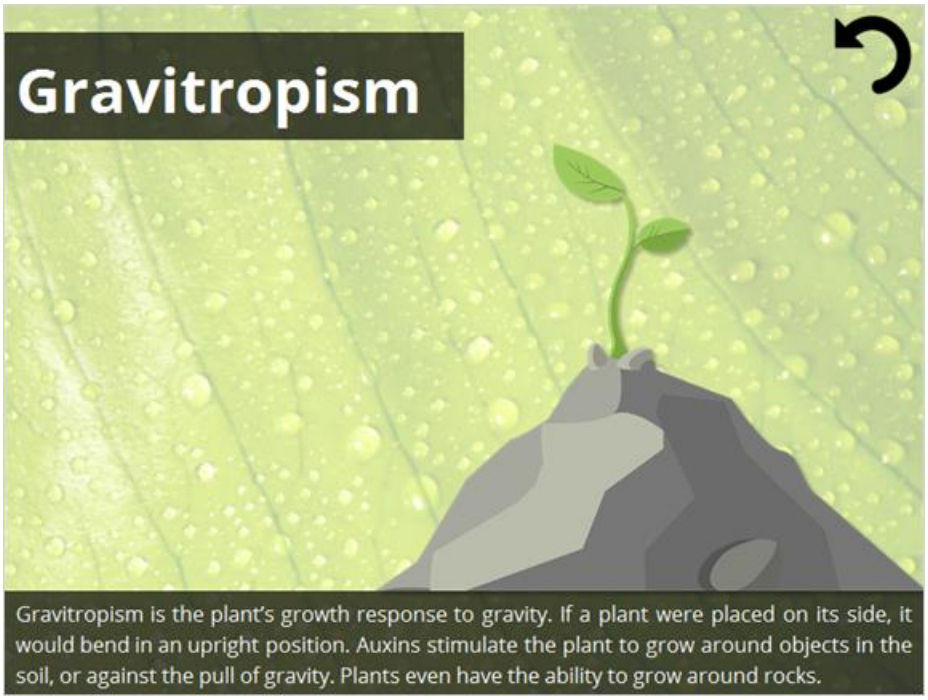
Besides vascular tissues, plants also have hormones that help regulate their growth, maturation, and development of cells. These hormones, called auxins, help the plant adapt to its environment.

Phototropism



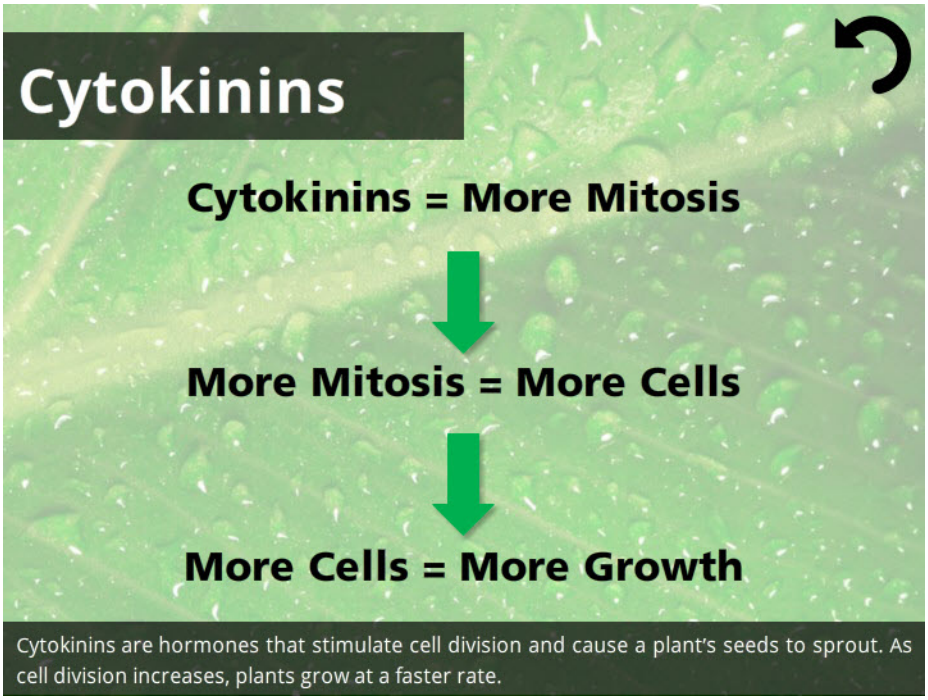
Plants have the ability to grow toward light, a process known as phototropism. Auxins stimulate the plant to grow toward the light.

Gravitropism



Gravitropism is the plant's growth response to gravity. If a plant were placed on its side, it would bend in an upright position. Auxins stimulate the plant to grow around objects in the soil, or against the pull of gravity. Plants even have the ability to grow around rocks.

Cytokinins



Cytokinins are hormones that stimulate cell division and cause a plant's seeds to sprout. As cell division increases, plants grow at a faster rate.