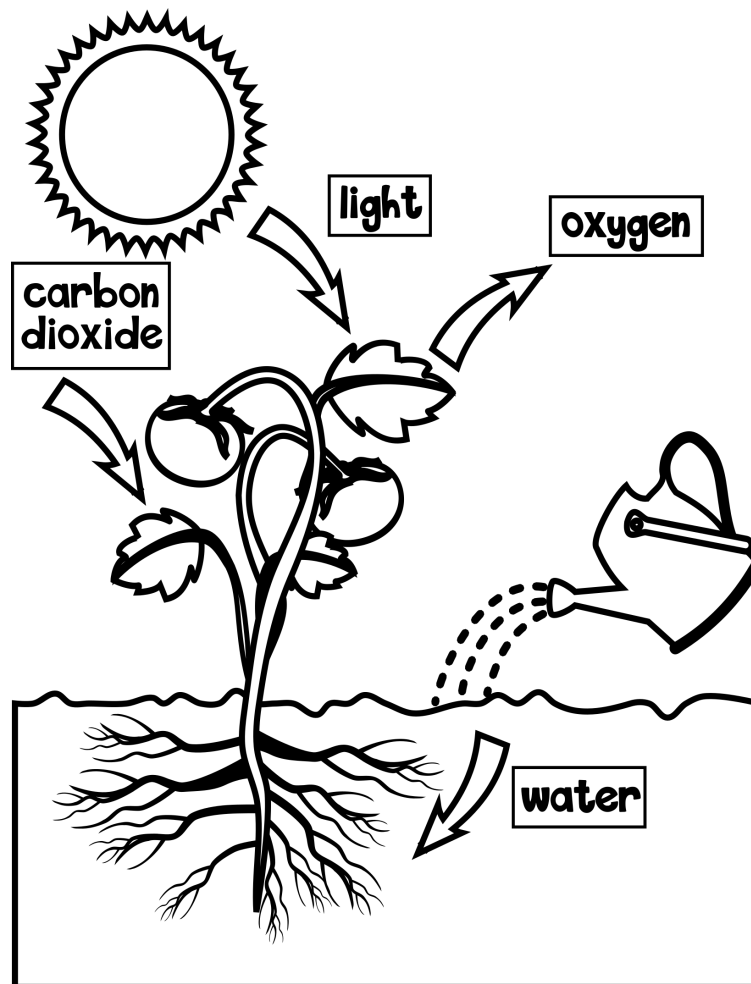


What's Going On Inside Plants?

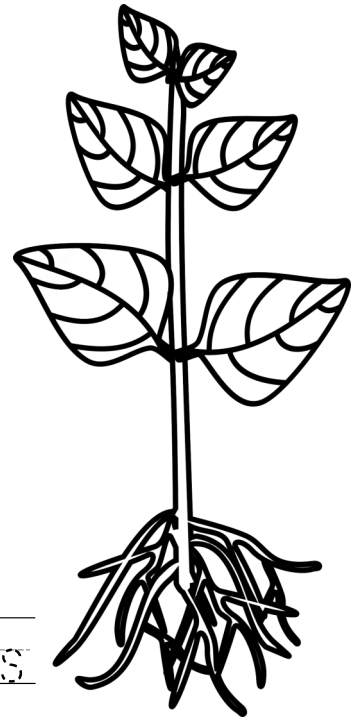
Where do we get our food? I don't mean which grocery store or anything like that, but what do people do to get the energy we need to live? We eat certain types of plants and animals that are safe and good for us to eat, and we make thousands of different foods from combining them with each other, everything from a cheese sandwich to all the choices you find at an all-you-can-eat buffet! We know that animals get their food by eating plants or other animals. But where do plants get their food? They can't get up and hunt it down. They can't go to the store. As a matter of fact, they don't even have mouths to use to eat their food if they could do one of those things.

Plants make the food they need for energy, and they do it using a process called **photosynthesis**, which means "putting together with light." Just like we put ingredients together to make something to eat, plants put the energy from sunlight together with water and a gas called carbon dioxide to make their food. Let's take a closer look at what happens.

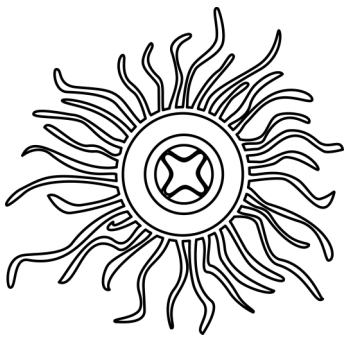


Photosynthesis

You're probably wondering what makes up the highway of tissues vascular plants use to transport all the water and nutrients the plant needs to stay healthy. These tissues are called **vascular tissues**. Let's see what we can discover about how they work together.



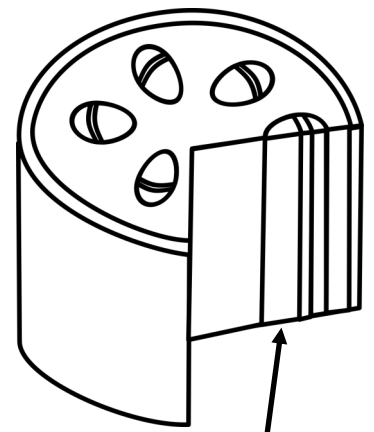
Vascular tissues



If you take a closer look at the roots of a vascular plant, you'll see they are actually covered with tiny **root hairs**. These root hairs start the process by absorbing water and minerals from the soil. As they do this, it creates pressure inside the plant.

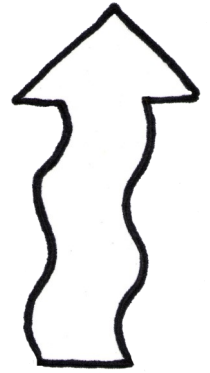
Root hairs

The water and minerals combined are called sap. The sap passes into tissues inside the stem called the **xylem**. The pressure inside the plant pushes the sap up through the xylem, but there's a problem. There isn't enough pressure to get the water all the way up to the leaves, and plants don't have a heart to pump what they need through their systems like people do. They need something to pull on the sap from the top of the plant to help it get the whole way up. That pull comes from another process called transpiration.



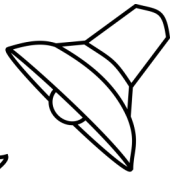
Xylem

Have you ever noticed that some plants grow straight up, nice and tall, while other plants twist and vine around things like your porch or maybe a piece of wood you put in the garden next to the plant? Sometimes, plants even seem to be able to move because they lean one way at one time of the day and the other way later in the day. We know plants can't move because their roots hold them to the ground. So what causes this "movement," and why don't all plants "move" the same way? To find the answer, we're going to need to understand something called **tropism**.



Tropism

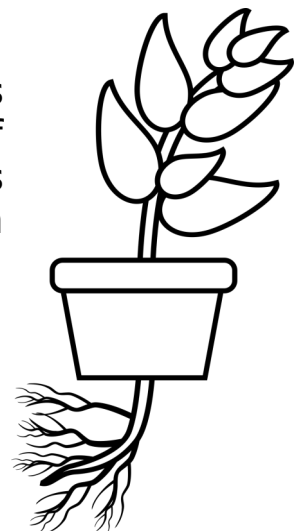
Tropism is an involuntary way a living thing moves as a reaction to something that happens outside the plant. Because it's involuntary, it means it happens without the plant being able to control it. The plant doesn't have to "think" about moving, it just moves as a response to whatever happened. There are different types of things that happen outside of plants that cause them to move in different ways. Let's find out the names of some of the ways plants "move."



Some plants move toward the light. If you put one in a window, it will lean toward the light. Why would it do that? The plant needs the energy from the sunlight to make photosynthesis happen. This moving toward the light is called **phototropism**.

Phototropism

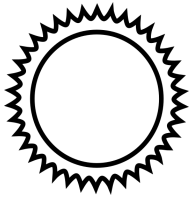
Did you know if you plant a seed or bulb upside down, its roots will still grow down? Plant roots have to go deep into the soil if they are going to absorb the water and minerals the plant needs to grow, so roots always grow toward gravity. This kind of growth is called **geotropism**.



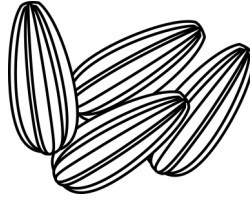
Geotropism

Review

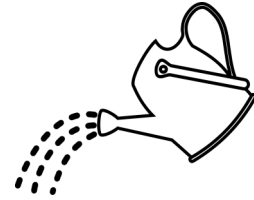
Which of the following is not an ingredient in photosynthesis? Draw an X through it.



Sunlight

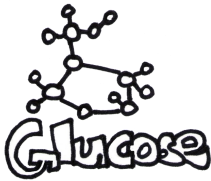


Seeds



Water

What is the name of the simple sugar created by photosynthesis? Draw a circle around it.



Glucose



Oxygen



Carbon dioxide

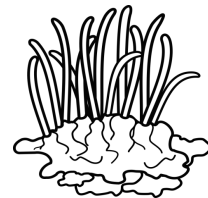
Which of the following is not a vascular plant? Draw an X through it.



Dandelion

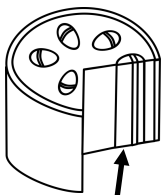


Grass

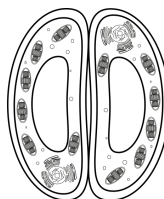


Hornwort

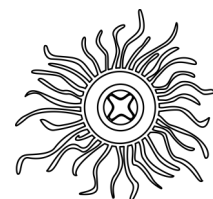
Which part of a plant soaks up water and minerals from the soil? Draw a circle around it.



Xylem



Stomata



Root hairs