PLANT RESPONSES AND ADAPTATIONS

How Plants Survive

A plant can respond to the conditions of its environment. A plant can change its position and grow in a certain direction or manner to meet its survival needs and adapt to a varying environment.

Plants adjust their growth to take in sunlight, water, and nutrients. **Tropism** is the turning or bending of an organism or a part toward or away from an external stimulus, such as light, heat, or gravity.

- **Phototropism** is the reaction of a plant towards light. A plant needs sunlight in order to take in the sun's energy and make food from that energy. A plant will move and bend towards sunlight so that the plant can take in as much sunlight as possible.

- **G**o gravity. G ive by ca roots g om the s

- **Thigmotropism** is a plant's movement and growth in response to touch or contact with an object. A plant may grow around an object, such as when a stem winds around a post or tree for support and stability. Or a plant's roots will grow away from a rock or hard soil. Below is an example of thigmotropism:

Growth hormones are plant chemicals that affect the growth of a plant. Growth hormones cause more plant cells to grow or cause plant cells to grow larger. The plant makes its own growth hormones.

That plant is TALL…
The plant could be tall because its growth hormones made it tall or because it was trying to reach the sunlight.

Adapting to the Environment

Plants have many **adaptations**, which are features that help an organism survive in a particular environment. A plant's features come from its DNA.

Earth is covered with thousands of types of plants that live in many different environments. Plants live in warm, hot, cool, cold, wet, dry, light and dark environments. All plants have adaptations that help them to survive where they live!

Here are some examples of challenging environments and how certain plants adapted:

- **Hot and Dry**
  Some plants that live in the desert (like a cactus) store water in their stems and/or leaves. These types of plants are called succulents.

  Many pl ots in order to

  Desert n order to help rec on their leaves, ss of water fr

- **Shady Areas**
  Some plants that live in forest (therefore shady) regions climb and grow on other plants in order to reach the sunlight.

  Epiphytes such as mosses and ferns grow on top of other plants to reach sunlight.

- **Colder Regions**
  Evergreen trees often grow in cooler regions. Evergreens do not lose their leaves which is beneficial in those cooler areas.

  Many plants in cooler regions have hair on their stems and leaves in order to trap on heat.

- **Areas l**
  In Gras… the top part of … all grasses survive …

- **In Water**
  Even water plants have adaptations! Plants that live in the water have underwater leaves and stems that are flexible and move with the water currents instead of breaking when the currents get strong. If you looked under a water lily on a pond, you would see the long strands of roots in the water.

- **Areas that are Mostly Light or Mostly Dark**
  Long-day plants are plants that require a long period of time exposed to sunlight in order to produce flowers.

  Short-day plants are plants that flower only if they are exposed to daylight 12 hours or less.

Competition among Plants

Plants compete for certain resources when those resources are limited.

Plants compete for sunlight for photosynthesis to make food – which means they need to compete for space to grow above ground to reach the sunlight.
Plants also compete for water and minerals from the soil that they need to survive – which means they compete for space for their roots to grow to reach the water and minerals in the soil.

A plant's location in relation to other plants is extremely important. If they are too close to other plants, then many plants will be competing for the same resources!