# Cacti and Desert Plants

Plants have structures that help them function and survive in their habitats. These structures are different depending on the habitat that they exist within. Use this activity to further explore the structures and functions of desert plants.

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| **Grade Level** | 3rd-5th Grade |
| **Activity Length** | Multiple Class Periods. About 2 hours. |
| **Materials** | Computer to watch Virtual Field Trip Video<br>Materials to build Plant Model<br>Phone or Camera to take a photo |

**Disciplinary Core Ideas**

(LS2) Ecosystems (LS4) Biological Evolution

**SEEd Standards:**

**Standard 3.2.3 Construct an explanation** that the environment can affect the traits of an organism. Examples could include that the growth of normally tall plants is stunted with insufficient water or that pets given too much food and little exercise may become overweight.

**Standard 3.2.4 Construct an explanation** showing how variations in traits and behaviors can affect the ability of an individual to survive and reproduce. Examples of traits could include large thorns protecting a plant from being eaten or strong smelling flowers to attracting certain pollinators. Examples of behaviors could include animals living in groups for protection or migrating to find more food.

**Standard 3.2.5 Engage in argument from evidence** that in a particular habitat (system) some organisms can survive well, some survive less well, and some cannot survive at all. Emphasize that organisms and habitats form systems in which the parts depend upon each other. Examples of evidence could include needs and characteristics of the organisms and habitats involved such as cacti growing in dry, sandy soil but not surviving in wet, saturatedsoil.

**Standard 4.1.1 Construct an explanation** from evidence that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction. Emphasize how structures support an organism's survival in its environment and how internal and external structures of plants and animals vary within the same and across multiple Utah environments. Examples of structures could include thorns on a stem to prevent predation or gills on a fish to allow it to breathe underwater.

# Cacti and Desert Plants

STAY CURIOUS UTAH!

**Student Name:** _____

Plants have structures that help them function and survive in their habitats. These structures are different depending on the habitat that they exist within. There are different internal structures (cells, organs) and external structures (shape, color) that help plants survive in different habitats. Plants that live in environments with a lot of water, such as wetlands and swamps, have specific structures that help them get oxygen from the water or that help them grow tall enough to grow out of the water. Plants that live in drier habitats like mountains and deserts have structures that have helped them adapt to store more food, moisture, and energy.

**Watch the Virtual Field Trip Video, starting around 9 minutes in. This section of our virtual Field Trip Video focuses on the hot and cold deserts that make up most of Utah's environment.**

What are some problems plants and animals have when trying to survive in these desert habitats?

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What are some structures that desert plants have developed that allow them to survive in desert habitats?

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Independent research! Using your computer or library, can you see if there are any differences between how plants survive in cold deserts compared to how plants survive in hot deserts?

**Can you work to design a plant that would be able to survive in a desert environment?**

Choose whether your plant will survive in a hot desert or a cold desert. Once you choose which habitat your plant will live in, think about how this plant will survive in this habitat. What internal structures does your plant have? What external structures does your plant have? While you draw your plant, make sure to label these structures and be prepared to explain how they help your animal survive.

# Building A Model

Building a model of your plant can help you get a better understanding of how it would work in a real-world desert environment. Try to build a model of the plant you designed.

When you have finished building your models, answer the questions (step 4) on your own or discuss the questions with a small group.

**Materials**

- Clay to build the body of the plant. This can be clay, play-dough, salt dough

- Items to create protective structures such as thorns (toothpicks, rocks, etc.) and structures for absorbing water/sunlight such as roots (strings) or leaves (paper).

- A camera to take a picture of your plant or a small box to store and display your plant

**Directions:**

1. Gather your materials. Get creative with the items you will be using with your plant! Are there toothpicks in your house? Rocks outside? Make sure whatever you use that you get permission from an adult.
2. Build your model. Keep in mind these questions while you build:
    - Is your plant able to stand up?
    - Can it support the structures that it needs to survive?
    - Is everything on your desert plant functional?

**Plant model not working?** That's okay! Building a model involves changing things as you build. You do not have to get it right the first time.

3. When you are finished, display your plant and talk about it with your classmates! Either display it in a box or take a picture of it and send it to your teacher.
4. On a separate piece of paper or in a small group, answer the following questions:
    a. What are some differences between your classmates' plants and your own? What structures are different?
    b. What is the same or similar between your classmates' plants and your own? What structures are similar?
    c. Find a plant that is not your own. Could this plant live in a hot desert or a cold desert?
    d. Find two or three plants that could live in the same habitat. Write down why you believe that these plants could live together in the same environment.