

# ADAPTATIONS INTRODUCTION

*Students play a game that will serve as an introductory lesson to adaptations.*

## **OBJECTIVES**

Students will:

- A Define adaptation
- B. Give examples of behavioral adaptations and physical adaptations of both plants and animals.

## **Supplies needed:**

A laminated set of the copy cards.

## **Arizona Standards:**

SC-S1C1-PO2

SC-S4C1-PO1

SC-S4C3-PO1

SC-S4C3-PO5

SC-S4C40PO1, 02, 03, 05, 06

## INTRODUCTION

Ask your students if they can define the word **adaptation**. Explain to them that animals live everywhere on Earth. Some places on Earth are very hot and some are very cold. Some places on Earth have a lot of water and plants, and other places have very little water and few plants. Antarctica is covered with snow and ice and has few plants. It is very cold there, too. Guess what? Animals even live in Antarctica!

The land an animal lives in is called its **environment**. Soil, water, plants, other animals and the temperature of the area are all part of an animal's environment. The desert is an environment that is very dry. Deserts can be very hot and do not get much rain, yet many animals and plants live in deserts. How is that possible?

Animals can live in many different places in the world because they have special **adaptations** to the area they live in. An **adaptation** is a way an animal's body helps it survive, or live, in its environment.

Explain that plants also have adaptations that help them survive in the extreme desert climate as well.

Divide the students into groups and have them brainstorm as many desert plant and animal adaptations as they can think of and write those on the board. Next to each idea write how the adaptation helps the animal or plant survive.

Do humans have any physical adaptations? (sweat, have hair on our bodies, stand upright, opposable thumbs, large brain)

## PHYSICAL OR BEHAVIORAL?

Explain to the students that some adaptations are physical adaptations or something a plant or animal has on or in its body (big ears, waxy coating on leaves, light colored fur.)

Other adaptations can be behavioral or something they do to adapt to their environment (hibernate, migrate, burrow.)

Can they list others?

## ADAPTATIONS GAME

Make a classroom set of the adaptations cards. Laminate them if possible as they will last longer.

Hand out one card to each student so that half of the class has a photograph of a plant or animal and the other half of the class has a description of an adaptation.

Tell the students that they will need to move around the classroom and find the partner that matches the correct adaptation and photograph.

When they think they have made the correct match they should hold up their hand so you can check. If they are right they can go to the front of the room. If they did not make the correct match they need to continue to look for their partner. When all students have matched their adaptation to the correct picture they can share their information with the rest of the class.

Were any of the adaptations in the game the same as ones the students had brainstormed? Are there others?

## PLANT OR ANIMAL

## ADAPTATION

### Sonoran Desert Tortoise



**I store water in my bladder where it can be reabsorbed for use by my body during dry times.**

### Sonoran Desert Toad



**I can survive in the desert because of my ability to excavate a burrow as much as three feet deep where I spend nine or ten months at a time. The spring rains "wake" me and I emerge from my burrow.**

### American Kestrel



**Scientists think that the dark colored patches under my eyes serve the same purpose as the black smudges athletes put on their face before playing outdoors. The black color absorbs bright sunlight so it does not reflect back up into the athlete's or my eyes. This allows me to be an active daytime hunter.**

## Kangaroo Rat



**I do not ever need to drink water, even though my diet is almost entirely composed of dry seeds.**

## Jackrabbit



**I have very large ears that are supplied with many blood vessels. This adaptation helps me to lose excess heat from my body.**

## Black Vulture



**I will urinate (pee) on my legs if the daytime temperatures are over 70 degrees F. The urine will evaporate, cooling my legs and drawing more heat away from my body.**



## Bighorn Sheep



**I have enlarged stomach compartments which can store enough water to last for several days, allowing me to go 2 or 3 days without a drink.**

## Gambel's quail



**My "normal" body temperature is 107 degrees. This means that I can continue to be active during the heat of the day while losing body heat to the air until the outside temperature reaches 107 degrees.**

## Harris' Antelope Ground Squirrel



**I hold my tail arched over my back; this shades me, keeping me cooler. During hot weather I seek a cooler, shaded spot and will lie down, spreading all my legs out to dump heat from my body.**

## Gila Monster



**My tail is a good indicator of my physical condition. A plump, well-rounded tail is the sign that I am a well-fed, healthy animal. A skinny, triangular-shaped tail indicates that I may be starving and dehydrated. Serving as a fat storage-locker, my tail is not detachable as is the tail of many other species of lizards. I can survive several years on the stored fat in their tails.**

## Costa's Hummingbird



**I begin breeding and nest building in late winter then migrate in late spring when temperatures become too hot.**

## Round-tailed Ground Squirrels



**Because we are very dependent on succulent vegetation for moisture, we estivate in our burrows for a few weeks during the summer drought, until the summer rainy season again brings new growth.**



## Ocotillo



**I am drought–deciduous which means I can produce full grown leaves within 3 days of summer rain, but they turn yellow and fall off after a couple of weeks of dry weather.**

## Saguaro



**Aside from my taproot that extends 2 feet or more into the ground, the rest of my roots are rarely more than 4 inches deep. They radiate horizontally about as far as I am tall.**

## Brittlebush



**I have fuzzy, light colored leaves that reflect sunlight. This helps reduce my leaf temperature and helps me conserve water.**

## Agave



**I have a rosette (rounded) shape. This shape helps capture rainwater and channel it to my base.**

## Creosote



**I can live for at least 2 years with no rain, losing my leaves and even shedding branches to reserve the last bits of water and nutrients for the crown. Sometimes people say I smell like rain.**

## Jojoba



**The vertical orientation of my leaves is an adaptation to the extreme desert heat. This means the largest surface of my leaf is facing the sun most directly in morning and late afternoon and the smallest surface is facing the sun in the hottest parts of the day.**



## Palo Verde Tree



**My leaves are very small (and fall off quickly in dry times). Leaves lose water far more easily than bark, so this helps me survive in arid environments. My bark is green.**

## Prickly Pear



**I have no leaves, my roots are shallow, my stems are shaped like pads and store water, and I have spines for shade and waxy skin to seal in moisture.**

## Mesquite Tree



**I have adapted to desert conditions by developing an extremely long root system to draw water from deep underground near the water table. My roots are considered the longest of any desert plant and have been recorded as long as 160 feet.**