



## Amazing Adaptations:

Both animals and plants are well suited to survive and reproduce because they can **adapt** or change in beneficial ways to new conditions and surroundings. In fact, all living organisms have been adapting and changing for millions of years. Organisms can adjust, or adapt, to their environment in a variety of ways.

Some of these adjustments are made in response to daily or cyclic changes that the organism may experience. For example, the color of a chameleon can change quickly to blend in with its changing surroundings.



Other changes occur more gradually such as a horse that sheds its thick coat as it adapts to the warmer temperatures at the start of Spring. Some animals even change colors from season to season such as the snowshoe hare that is greyish brown in the summer and snow white in the winter so as to best blend in with its changing surroundings.

In nature, when a genetic change occurs that helps a plant or animal to survive and reproduce, this change is called an **adaptation**. The plants and animals with favorable traits (adaptations) are more likely to survive and have babies than animals who lack these traits. Adaptations may involve an external feature of an animal such as **camouflage**, big ears, or thick fur, or they may involve a **behavior** such as hibernation for arctic animals, or the submissive behavior of a weaker wolf in the pack. Many adaptations involve protective or predatory improvements such as a harder shell for a turtle or more toxic venom for a snake.

As would be expected, desert plants and animals have adapted to extremes of heat and dryness by using both physical and behavioral mechanisms. In particular, their ability to store and conserve water is quite impressive. Water can be stored by animals in fatty deposits in their tails and other tissues. In plants, water can be stored in the roots, stems, and/or leaves of plants. These organisms are also adapted to minimize water loss and from out of the skin, from urine and feces, and even from breathing.

It is likely that scientists have recently discovered and isolated a desert microbe that has an incredible ability to absorb water. As a starting point, scientists want to know how much water the microbe can absorb relative to its body mass. In this **STEM Challenge Simulation**, your task is to measure just how much water the microbe can ingest, and then express this calculation in a manner that your non-scientific friends can understand. Please keep a very careful record of your measurements and calculations as they will all be essential to building an understanding of this new organism.

### Contributed by:

Dr. Tom Brown,  
GYSTC Director of Statewide Programs  
tbrown@kennesaw.edu