

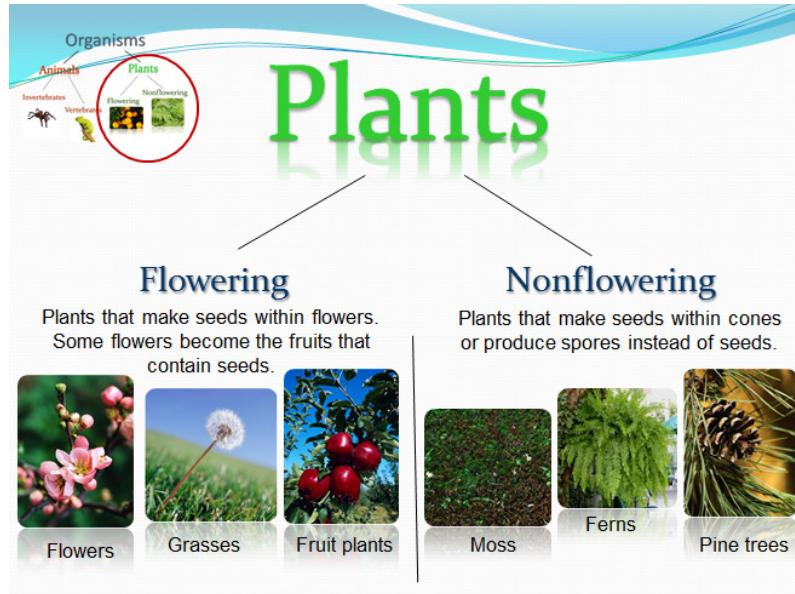
## LIFE SCIENCE: BIOLOGY & ADAPTATIONS FLIP CARD

**Big Idea:** Scientists sort all living things into groups to better understand how they live.

**Most** organisms students study can be classified into two major groups—plants or animals—based on their physical characteristics. Later, in middle school, we will learn more about **bacteria**, **single celled protists (amoeba and paramecium)**, and **fungi (mushrooms)**. But for now we'll concentrate on plants and animals.

**Plants** are organisms that are made of many parts and are **capable of making their own food**.

**Flowering plants make seeds.** Many seed plants form seeds inside flowers. Some flowers become the fruit that contains seeds. Examples are grasses, roses, oak trees, fruit trees, tomatoes, or bean plants. They are some of the most important organisms. Our food comes from flowering plants, or animals that eat flowering plants.

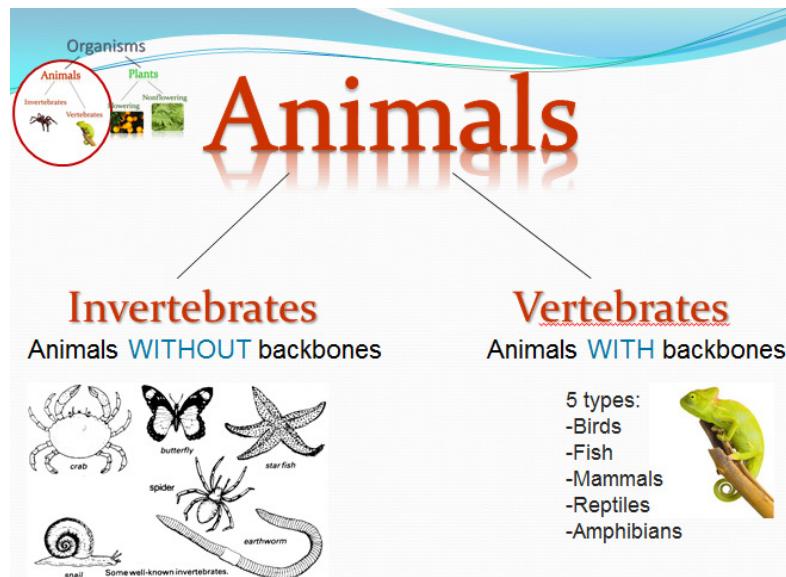


**Nonflowering plants** are those plants that produce cones to make seeds or produce spores instead of seeds.

Some examples of nonflowering plants are pines, spruce, or cedar trees that produce cones, and ferns, mosses, and lichens that produce spores.

**Animals** are organisms that can be made of many parts but cannot make their own food. They must get energy from eating plants or other animals. **Animals are first classified according to whether or not they have a backbone.**

**Invertebrates**: Animals without backbones. Some invertebrates have fluid-filled bodies like the jellyfish or worms. Others have a hard outer shell like insects and crabs. Examples of invertebrates are insects, spiders, shrimp, crayfish, sponges, jellyfish, or snails. **There are many fascinating invertebrates divided into many groupings. This year, we will concentrate on understanding differences among vertebrates.**



**Vertebrates**: Animals with backbones. Vertebrates share other physical characteristics, for example, a protective skin covering, an inside skeleton, muscles, blood that circulates through blood vessels, lungs or gills for breathing. Vertebrates are divided into five groups based on physical characteristics:

- *Fish (bass, eel, shark)*
  - breathe with gills
  - (most) have scales and fins
- *Amphibians (frogs, salamanders)*
  - first part of their life they breathe with gills, and the adults breathe with lungs
  - have smooth, moist skin
- *Reptiles (lizards, snakes, crocodiles)*
  - breathe with lungs
  - have scales or plates
- *Birds (mockingbird, blue jay, eagle, penguin)*
  - breathe with lungs
  - have feathers, a beak, two wings, and two feet
- *Mammals (giraffe, lion, horse, human)*
  - breathe with lungs
  - have fur or hair

**Big Idea: Organisms have physical and behavioral adaptations to help them survive in environments. Some adaptations are inherited from ancestors and others are learned from experience to increase their chances of survival.**

**Physical Senses** tell animals what they need to know about their environment. They help to keep them out of danger and enable them to find food and shelter. All environmental signals involve a sense organ.

Senses	Sense Organs	Signals Detected	Behaviors
<b>Sight</b>	Eyes: Differ in type, number, and in location on the body	Detects colors, shapes, sizes, space/distance	Locate food; recognize enemies
<b>Hearing</b>	Ears: Differ in type and in location on the body	Receives vibrations, sound; detects movement	Find food; escape enemies – hear warnings
<b>Taste</b>	Taste buds or cells: differ in type and in location on the body	Detect salty, sweet, bitter, and/or sour	Judge which foods are okay to eat
<b>Smell</b>	Nose; arms – octopus; antennae – insects; tongue – snakes	Detect distinct odors	Avoid enemies; find food
<b>Touch</b>	Skin; whiskers; hairs	Detect shapes, temperature, texture, vibrations	Identify food; avoid enemies

Some animals do not have all the sense abilities that humans have. In other cases, they have additional special senses humans do not have: echolocation in bats, night vision of some nocturnal (active at night) mammals, precise hearing of nocturnal hunting birds (owls), electric senses of rays and sharks, magnetic senses of migratory birds and butterflies and whales.

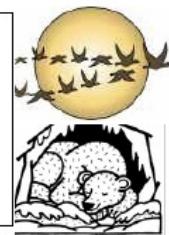
#### Inherited or Instinct:

- Organisms are often born with certain physical characteristics similar to their parents. These are **inherited traits**. Fur, skin, or scale colors, length of limbs, and body shapes are inherited.
- An **instinct** is an automatic behavior or reaction to the environment. All animals have basic instincts developed over centuries of survival. An instinct is simply an inherited behavior pattern.



**Structural Adaptations** – Physical attributes that help animals meet a life need. Examples: Camouflage & Turtle Shell

**Behavioral Adaptations** – Certain types of activities animals perform, which help them meet a life need. Examples: Migration & Hibernation



**Learned or Acquired:** Organisms, mainly animals, can also acquire behavioral characteristics as they grow and develop. These characteristics are usually in response to environmental conditions and a result of learning.

- **Learning** is a change of behavior resulting from specific experiences.
- Unlike instinctive behaviors, **learned behaviors** are **shaped by experience**.
- Learned behaviors are easy to spot in domesticated animals, or pets: a dog learns to “roll over” on command; parrots sample different fruit and nuts and accept some and reject others; bears watch other bears to learn to fish.