

Activity 1

Animal Classification

Objective & Overview:

Using the giant panda as a guiding example, students will figure out how to classify three wild animals from domain down to genus and species (if possible).

Teacher Background Information:

What is the giant panda's scientific classification? Is it a bear?

The scientific classification of giant pandas has, over the years, proven to be controversial among biologists. About ten years ago, National Zoo scientists and their colleagues determined that giant pandas' closest relatives are bears, but that they share many physical traits with raccoons. They are currently placed in the bear family Ursidae.

Taxonomy is the scientific classification of organisms, based on characteristics that similar organisms hold in common. Taxonomically speaking, bears are considered carnivores—members of the order Carnivora, which includes the bear, dog, raccoon, seal, weasel, hyena, raccoon, and cat families. The order Carnivora is but one level of classification sandwiched between others that divide organisms into more and more closely defined groups. The giant panda's scientific classification goes like this:

Common Name: Giant Panda

Scientific Name (genus and species): *Ailuropoda melanoleuca*

Domain: Eucarya (includes animals, fungi, protists, and plants)

Kingdom: Animalia (animals)

Phylum: Chordata (vertebrates—animals with backbones)

Class: Mammalia (mammals)

Order: Carnivora (bears, dogs, cats, etc.)

Family: Ursidae (bears)

Genus: *Ailuropoda*

Species: *melanoleuca*

The classification illustrated above goes from the broadest category (domain) down to the most specific (species). The unique giant panda is in its own genus as well as being an individual species, illustrating that although it is classified as a bear, it does not seem to be very closely related to any other bear species. In contrast, the American black bear (***Ursus americanus***), Asiatic black bear (***Ursus thibetanus***), polar bear (***Ursus maritimus***), and brown bear (***Ursus arctos***) share the same genus. Please note that the bold was put in for emphasis. Normally, scientific names (genus and species) are printed in *italics*, with the genus name capitalized and the species name in lower case.

Unlike the order Carnivora mentioned above, there is a similar *non-taxonomic* term that we use when speaking of what various creatures eat—carnivore. The term *carnivore* describes an organism that eats animals. The polar bear is the most carnivorous bear,

primarily hunting seals. Most other bear species are omnivores, eating both animal and plant matter. Giant pandas, however, are primarily herbivores, eating almost exclusively the grasses called bamboo. Considering their diet and taxonomy, you could call giant pandas herbivorous carnivores.

Species

The word "species" refers to a population or populations of organisms that can produce fertile offspring. Understanding the species concept is key when learning many principles of biology, ecology, and genetics. Species designations sometimes change when scientists discover, for example, that one species frequently hybridizes, or interbreeds, with another. In this case, scientists sometimes "lump" the two species into one. Sometimes, scientists "split" one species into multiple species after determining that different populations rarely hybridize or that they have significantly different genetic make-ups. It's all just humanity's way of making sense of, and classifying, life on earth.

Materials:

- one copy per student of Animal Classification Worksheet (provided)
- animal references (field guides, library, Internet)

Directions:

This activity is fact-oriented and probably best for students grades 7 and 8. Students should use a variety of reference materials, such as field guides and biology textbooks, to classify three familiar wild animals other than the giant panda, which serves as the example on the Animal Classification Worksheet. For many animals, this information is easy to find if you look in the right book. But in some cases, such as if the student chooses to classify an insect, it might not be easy to classify down to genus and species. Students should not be discouraged if they cannot find all the information on insects or other diverse invertebrate groups: sometimes identifying some of these creatures down to genus and species requires years of field experience! In most cases, however, your students will be able to find all of the information they need. During the activity, students should refer to the giant panda example at the top of their Worksheet. They should enter their findings on the Worksheet.

Animal Classification Worksheet

Use field guides, textbooks, and other resources to classify three familiar wild animals other than the giant panda (which is the example shown below). Enter your findings on this worksheet. Example:

Common Name:	Giant Panda
Domain:	Eucarya (includes animals, fungi, protists, and plants)
Kingdom:	Animalia (animals)
Phylum:	Chordata (vertebrates)
Class:	Mammalia (mammals)
Order:	Carnivora (bears, dogs, cats, weasels, etc.)
Family:	Ursidae (bears)
Genus:	<i>Ailuropoda</i>
Species:	<i>melanoleuca</i>

Common Name	I.	II.	III.
Domain			
Kingdom			
Phylum			
Class			
Order			
Family			
Genus			
Species			