



*Miller*  
*Levine*

Prentice Hall

# Biology

# 18-1 Finding Order in Diversity





## 18-1 Finding Order in Diversity

Natural selection and other processes have led to a staggering diversity of organisms.

Biologists have identified and named about **1.5 million species** so far.

They estimate that 2–100 million additional species have yet to be discovered.



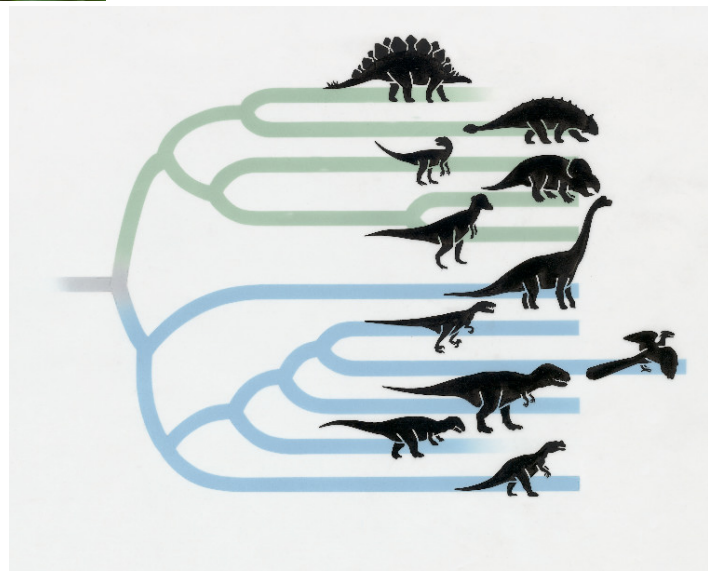


## Why Classify?



**To study the diversity of life, biologists use a classification system to name organisms and group them in a logical manner.**

In the discipline of **taxonomy**, scientists classify organisms and assign each organism a universally accepted name.



# Assigning Scientific Names

Common names of organisms vary, so scientists assign one name for each species.

Always in Latin.

*Genus species*

*Homo sapiens*





Carolus Linneaus developed a naming system called **binomial nomenclature**.



In binomial nomenclature, each species is assigned a two-part scientific name.

The scientific name is italicized.



***Felis catus***

***Canis familiaris***



# Linnaeus's System of Classification

Linnaeus not only named species, he also grouped them into categories.



**What is Linnaeus's system of classification?**





## Linnaeus's seven levels of classification are—from smallest to largest—

- species
- genus
- family
- order
- class
- phylum
- kingdom

Each level is called a **taxon**, or taxonomic category.  
Species and genus are the two smallest categories.

**Grizzly bear**



**Black bear**



**GENUS *Ursus***

---



**SPECIES *Ursus arctos***

Genera that share many characteristics are grouped in a larger category, the **family**.

**Grizzly  
bear**



**Black  
bear**



**Giant  
panda**



**FAMILY Ursidae**



An **order** is a broad category composed of similar families.

**Grizzly bear**



**Black bear**



**Giant panda**



**Red fox**



**ORDER Carnivora**

The next larger category, the **class**, is composed of similar orders.

**Grizzly bear**



**Black bear**



**Giant panda**



**Red fox**



**Abert squirrel**



**Class Mammalia**

Several different classes make up a **phylum**.

**Grizzly bear**



**Black bear**



**Giant panda**



**Red fox**



**Abert squirrel**



**Coral snake**



**PHYLUM Chordata**



The **kingdom** is the largest and most inclusive of Linnaeus's taxonomic categories.

**Grizzly bear**



**Black bear**



**Giant panda**



**Red fox**



**Abert squirrel**



**Coral snake**



**Sea star**



**KINGDOM Animalia**

# 18-1 Finding Order in Diversity → Linnaeus's System of Classification

Grizzly bear    Black bear    Giant panda    Red fox    Abert squirrel    Coral snake    Sea star



KINGDOM Animalia



PHYLUM Chordata



CLASS Mammalia



ORDER Carnivora



FAMILY Ursidae



GENUS *Ursus*



SPECIES *Ursus arctos*

# 18-1 Section QUIZ

Continue to:

**Section QUIZ**

- or -

Click to Launch:





- 1 Which statement about classification is true?
- a. Biologists use regional names for organisms.
  - b. Biologists use a common classification system based on similarities that have scientific significance.
  - c. Biologists have identified and named most species found on Earth.
  - d. Taxonomy uses a combination of common and scientific names to make the system more useful.

- 2 Linnaeus's two-word naming system is called
- a. binomial nomenclature.
  - b. taxonomy.
  - c. trinomial nomenclature.
  - d. classification.

- 3** Several different classes make up a(an)
- a. family.
  - b. species.
  - c. kingdom.
  - d. phylum.

## 18-1 Section QUIZ

- 4** A group of closely related species is a(an)
- a. class.
  - b. genus.
  - c. family.
  - d. order.

## 18-1 Section QUIZ

5 Which of the following lists the terms in order from the group with the most species to the group with the least?

- a. order, phylum, family, genus
- b. family, genus, order, phylum
- c. phylum, class, order, family
- d. genus, family, order, phylum



**END OF SECTION**