18-1 Finding Order in Diversity

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

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 domesticus

Canis lupis

Linnaeus's System of Classification
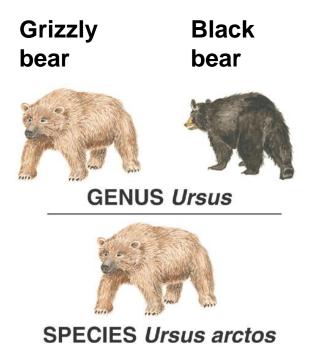
What is Linneaus's system of classification?

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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

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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

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*

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Section QUIZ

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1 Which statement about classification is true?

a. Biologists use regional names for organisms.

A 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 a. binomial nomenclature.

b. taxonomy.

c. trinomial nomenclature.

d. classification.

3 Several different classes make up a(an)

   a. family.

   b. species.

   c. kingdom.

A d. phylum.

4 A group of closely related species is a(an)

   a. class.

A   b. genus.

   c. family.

   d. order.

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

A c. phylum, class, order, family

d. genus, family, order, phylum

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END OF SECTION