

A close-up photograph of a green leaf, showing a complex network of veins. The veins are light green and form a dense, branching pattern across the leaf's surface. The leaf's color transitions from a bright green at the top to a darker green at the bottom. The overall texture is intricate and organic.

Ecosystems Structures

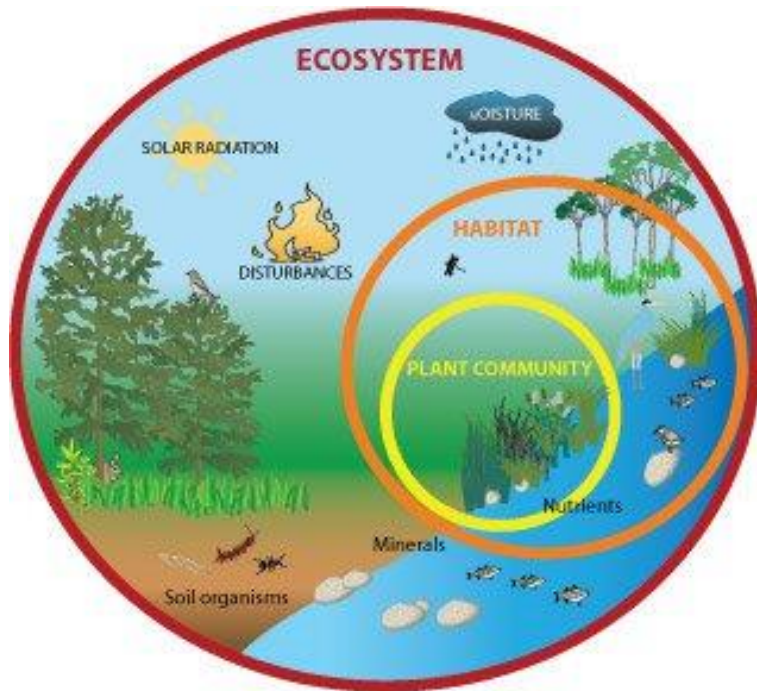
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Ecosystems Video

NICHES



Ecosystem



- All of the organisms living in an area together with their Physical Environment.
- Examples: Coral Reef, oak forest, Vacant lot

The place an organism lives.

Every habitat has specific biotic and abiotic factors; if any of these factors change then the habitat changes.



Levels of an Ecosystem



The Universe
↓
Galaxies
↓
Solar Systems
↓
Earth
↓
Biosphere
↓
Biomes
↓
Ecosystems
↓
Communities
↓
Populations
↓
Species
↓
Organisms
↓
Organs
↓
Tissues
↓
Cells
↓
Protoplasm
↓
Molecules
↓
Atoms

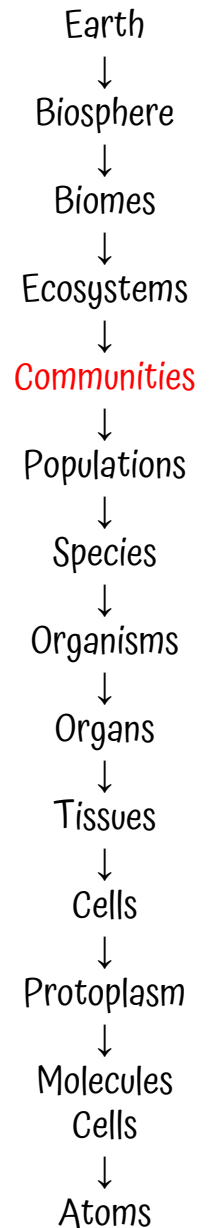


GREEN EARTH
BY BENRIK NEIDMAN 2009 NEIDMAN.DEVIANTART.COM



Community

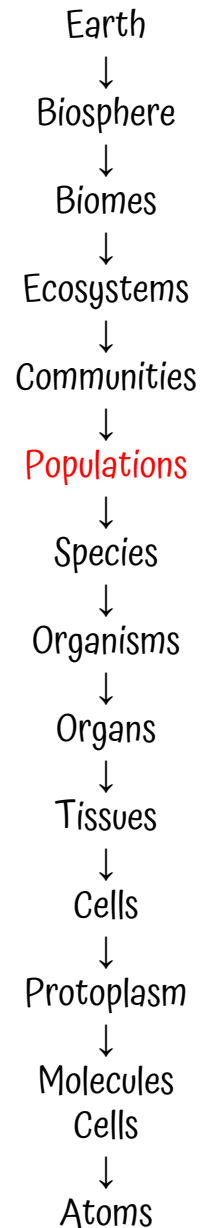
● A group of various species that lives in the same place and interact with each other.





Populations

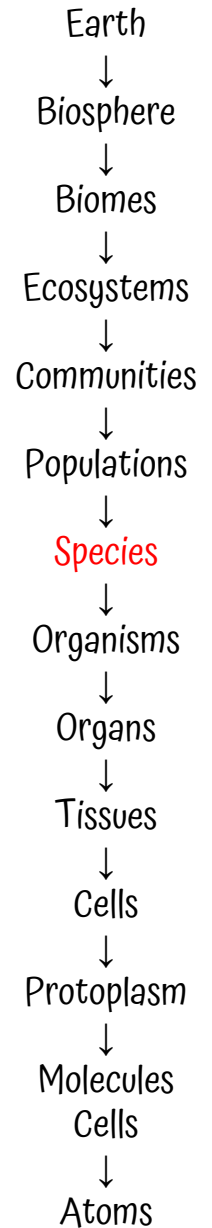
● All members of the same species that live in a particular location at the same time.





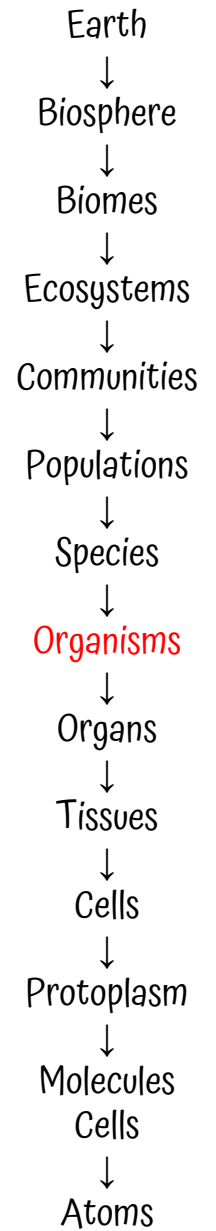
Species

● A group of organisms that can mate to produce fertile offspring.



Organisms

● Individual living things.



A close-up photograph of a green leaf, showing a dense network of veins. The veins are light green and form a complex, branching pattern across the darker green leaf surface. The lighting is bright, highlighting the texture and structure of the leaf.

Abiotic & Biotic

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Abiotic & Biotic

EXAMPLES OF ABIOTIC FACTORS



© Study.com

Biotic vs. Abiotic Factors



Environment

Biotic Factors

Animals, plants, people, birds,
anything that WAS living

Abiotic Factors

Water, sunlight, soil, rocks,
wind, temperature



Biotic vs. Abiotic Factors

Biotic = living (**BIO** = **life**)

Abiotic = nonliving

Biotic factors are all of the living things in an environment.

Abiotic factors are all of the nonliving things in an environment.



Biotic vs. Abiotic Factors

- What were some of the living things, or **biotic factors**, that you listed?
 - Trees and plants, birds, grass, bugs, people, dog
- What were some of the nonliving, or **abiotic factors**, that you listed?
 - School building, light poles, houses, cars, street

Biotic or Abiotic?



Biotic!

Biotic or Abiotic?



Abiotic!

Biotic or Abiotic?



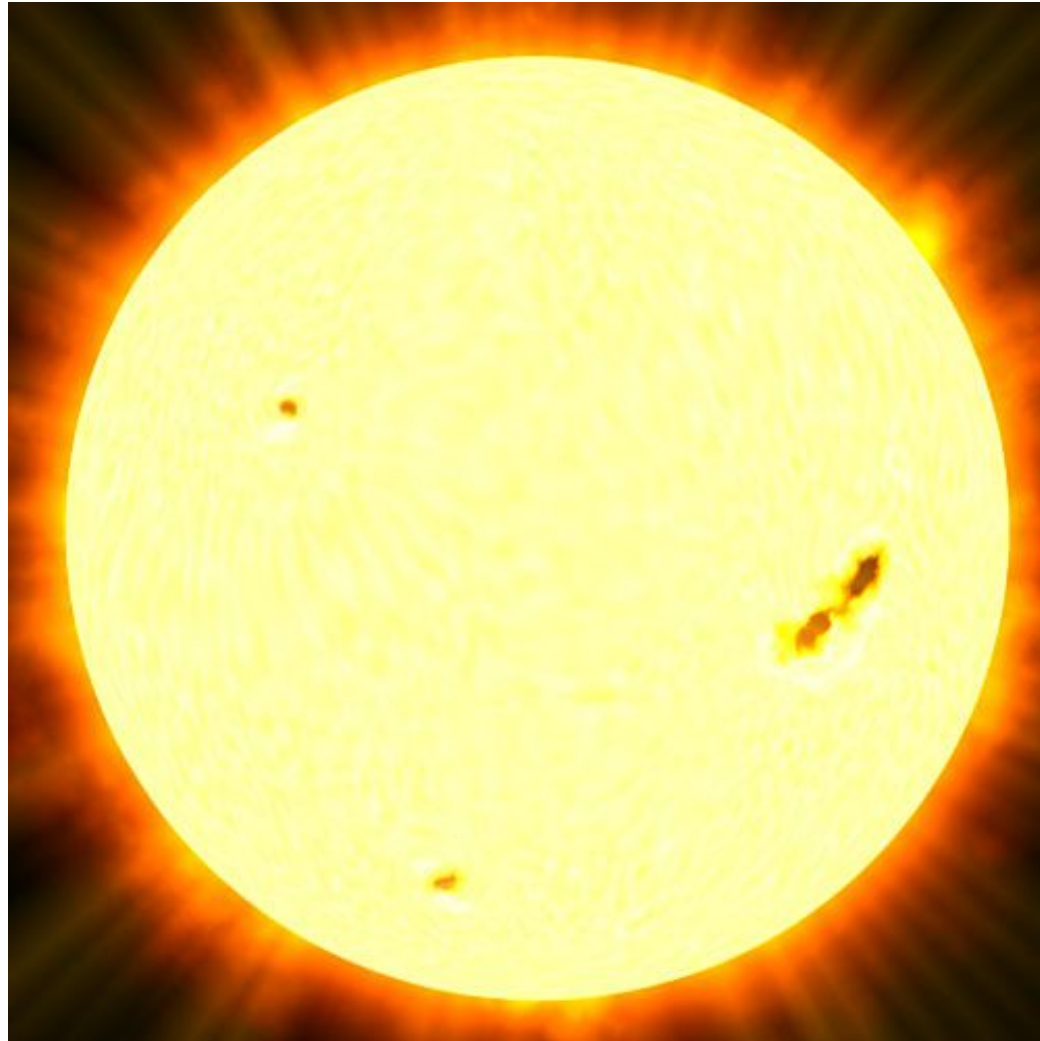
Biotic!

Biotic or Abiotic?



Abiotic!

Biotic or Abiotic?



Abiotic!



All organisms are
what...biotic or abiotic?

Biotic!



As a Team



Create a master list that combines all your answers. The team with the most gets a point.





Do biotic and abiotic factors affect each other?

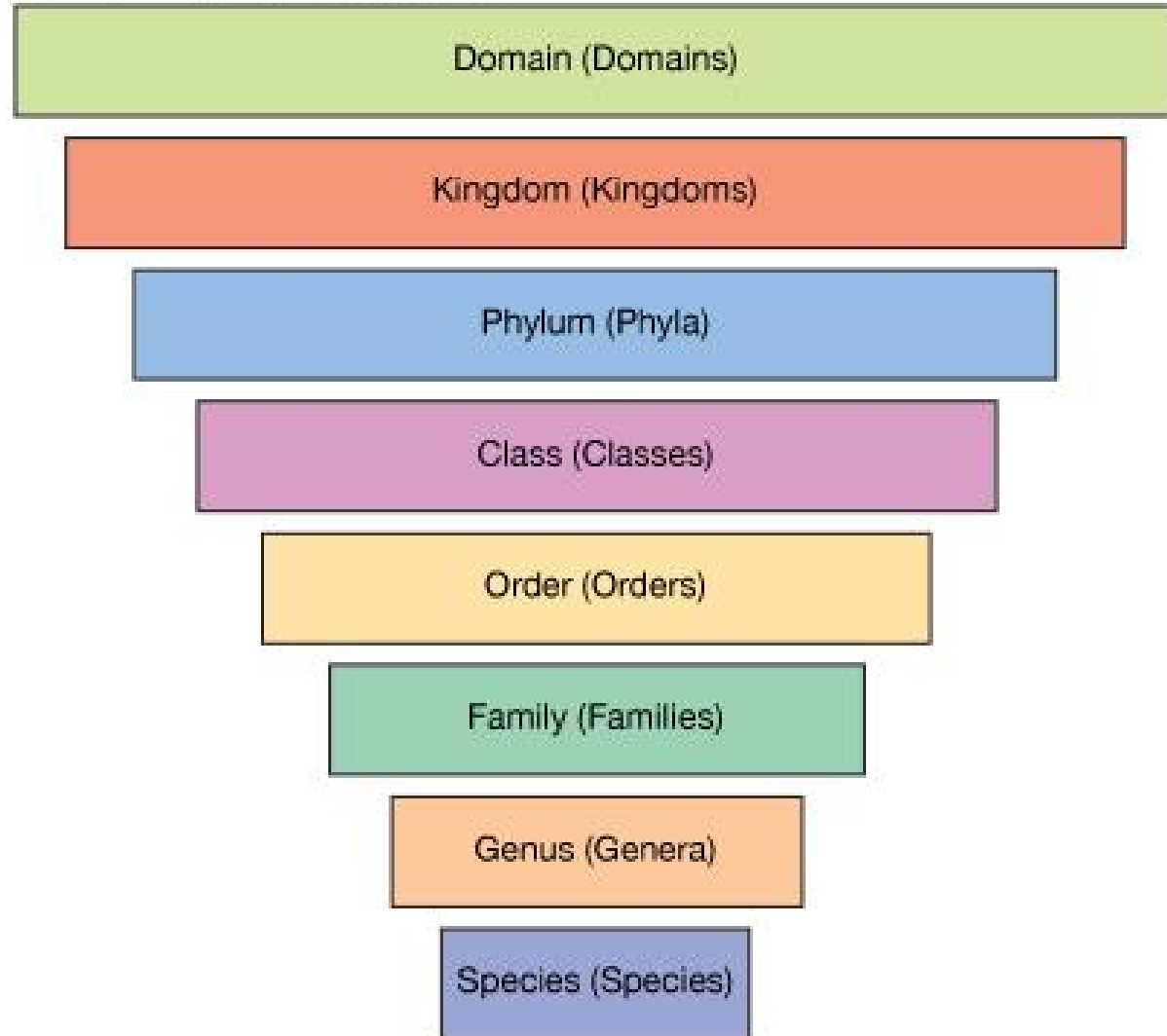
If there is no water...can anything grow or survive?

If it is extremely cold one winter, will that affect whether an animal makes it?

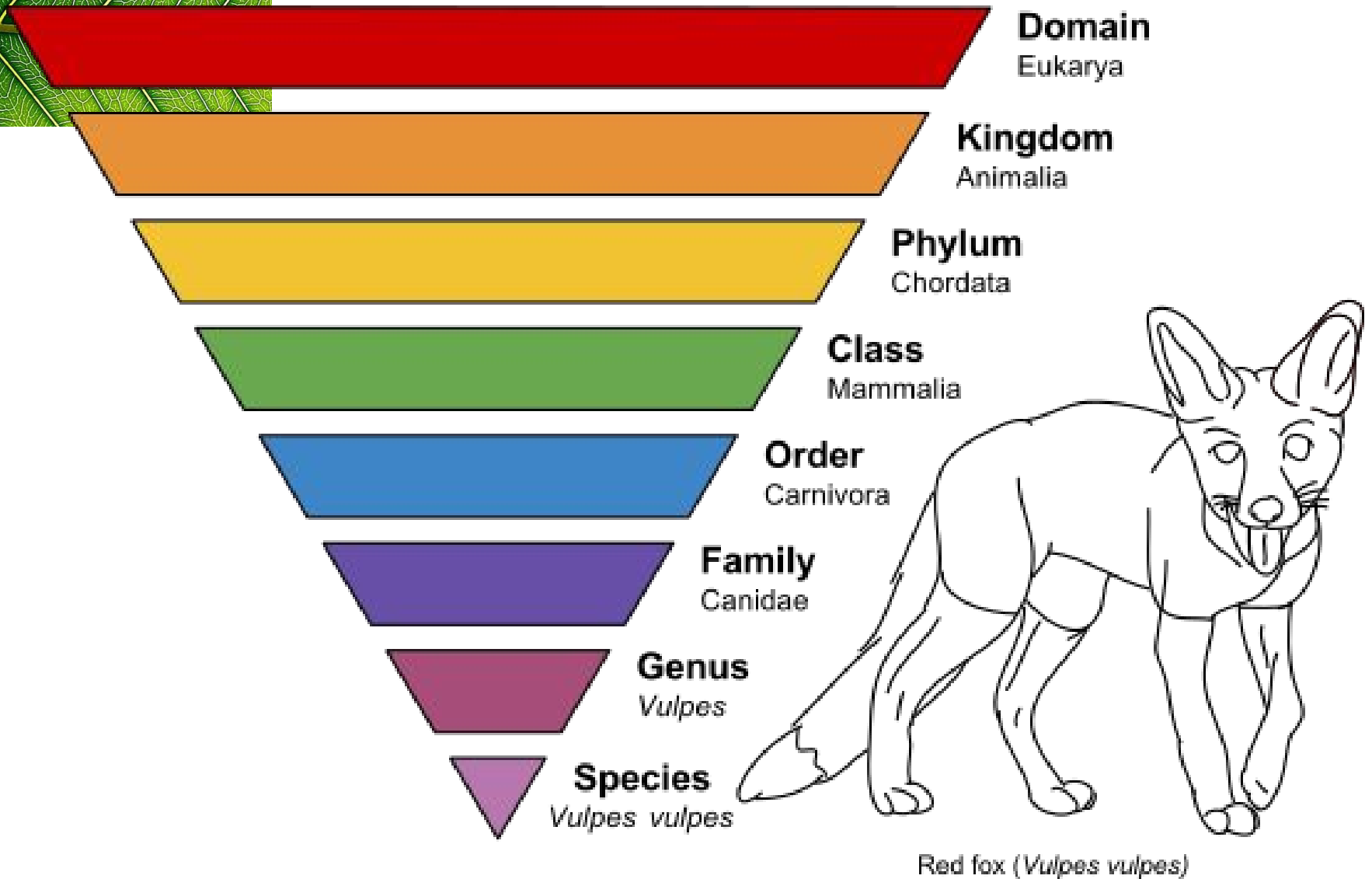
So, abiotic and biotic DO affect each other. Even though water and temperature aren't living things, they DO affect living things!

How Animals are Classified

How animals are classified



How Animals are Classified

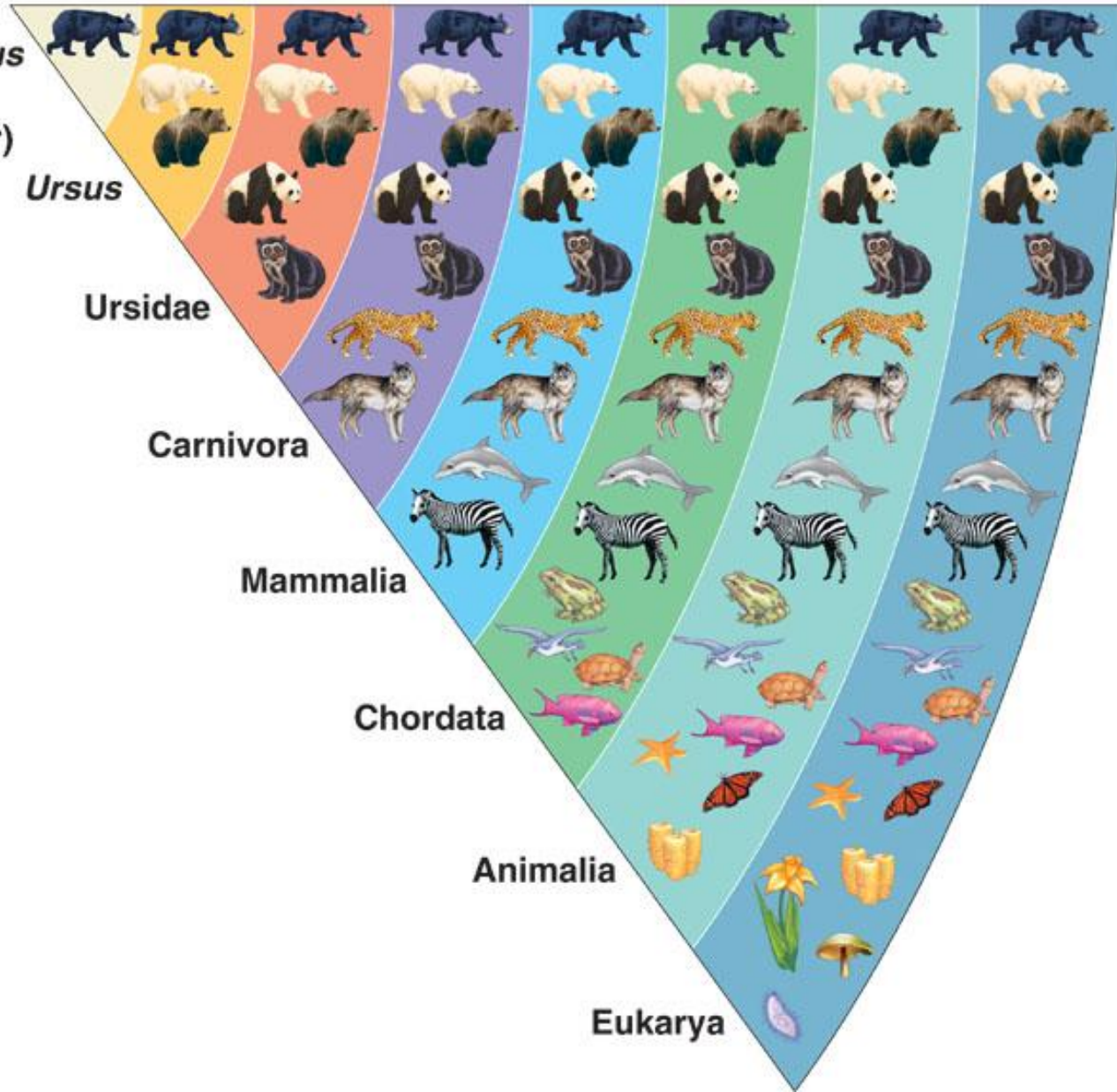


How Animals are Classified



Species Genus Family Order Class Phylum Kingdom Domain

Ursus americanus
(American black bear)



Ursus

Ursidae

Carnivora


Mammalia

Chordata

Animalia

Eukarya

Answer these

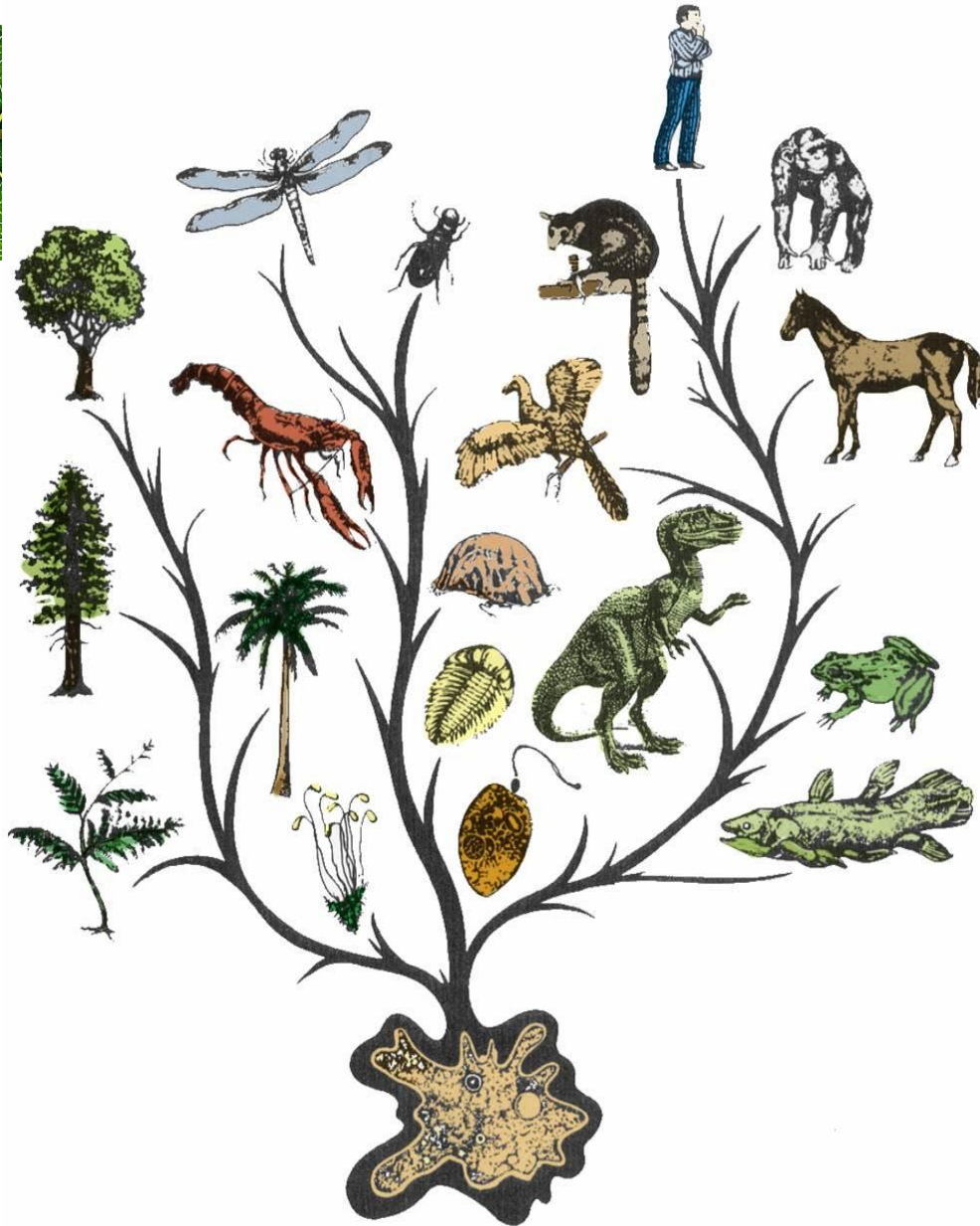
- 
1. What does biotic mean?
 2. What is an example of a biotic factor in an environment?
 3. What does abiotic mean?
 4. What is an example of an abiotic factor in an environment?
 5. Give an example of how an abiotic factor can affect a biotic factor.

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Evolution

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Evolution



● In 1850, English naturalist Charles Darwin observed that organisms in a population differ slightly from each other in form, function, & behavior.”

● Darwin’s theory of Natural Selection: Survival of the Fittest

● **Evolution:** A change in genetic characteristics of a population from one generation to the next.

Adaptation



① An Inherited variation that increases an organism's chance of survival and reproduction

Adaptations of Owls

*totally silent flight
from fringed flight
feathers that muffle
the sound of air passing
through their feathers*



*large eyes set forward on the
head gives great depth perception
for hunting plus retinas of their
eyes are packed with low light
sensitive rods to see at night.*

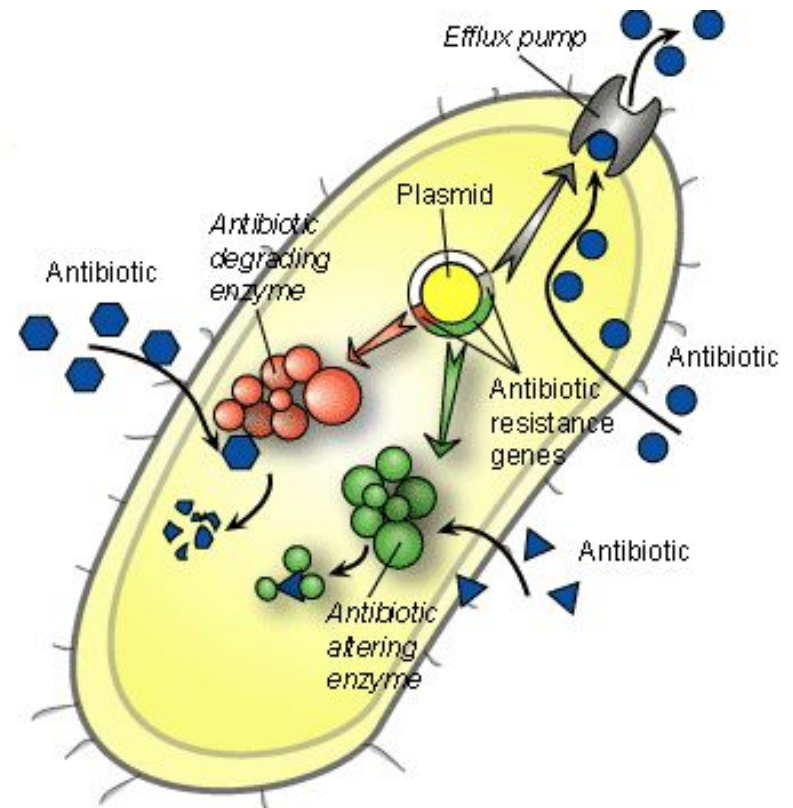
*their necks have a lot of
flexibility for following
prey as they move.*

*sharp talons for catching prey
on the fly*

©Sheri Amsel

Evolution can take place through two means:

① Artificial Selection Resistance



Evolution

Natural Selection

- The environment exerts a strong influence over which individuals survive to produce offspring.
- Some individuals, b/c of certain traits, are more likely to survive and reproduce than other individuals
- Natural Selection over many generations causes the characteristics of a population to change.
- Nature selects for certain traits – more likely to survive and reproduce. As the population of a given species change, so does the species

Artificial Selection

- The selective breeding of organisms by humans for specific characteristics.
- Ex: dog breeding, fruits, grains, vegetables.
- Selecting for traits such as size and sweetness, farmers create evolution of crops.

Terms to Know:

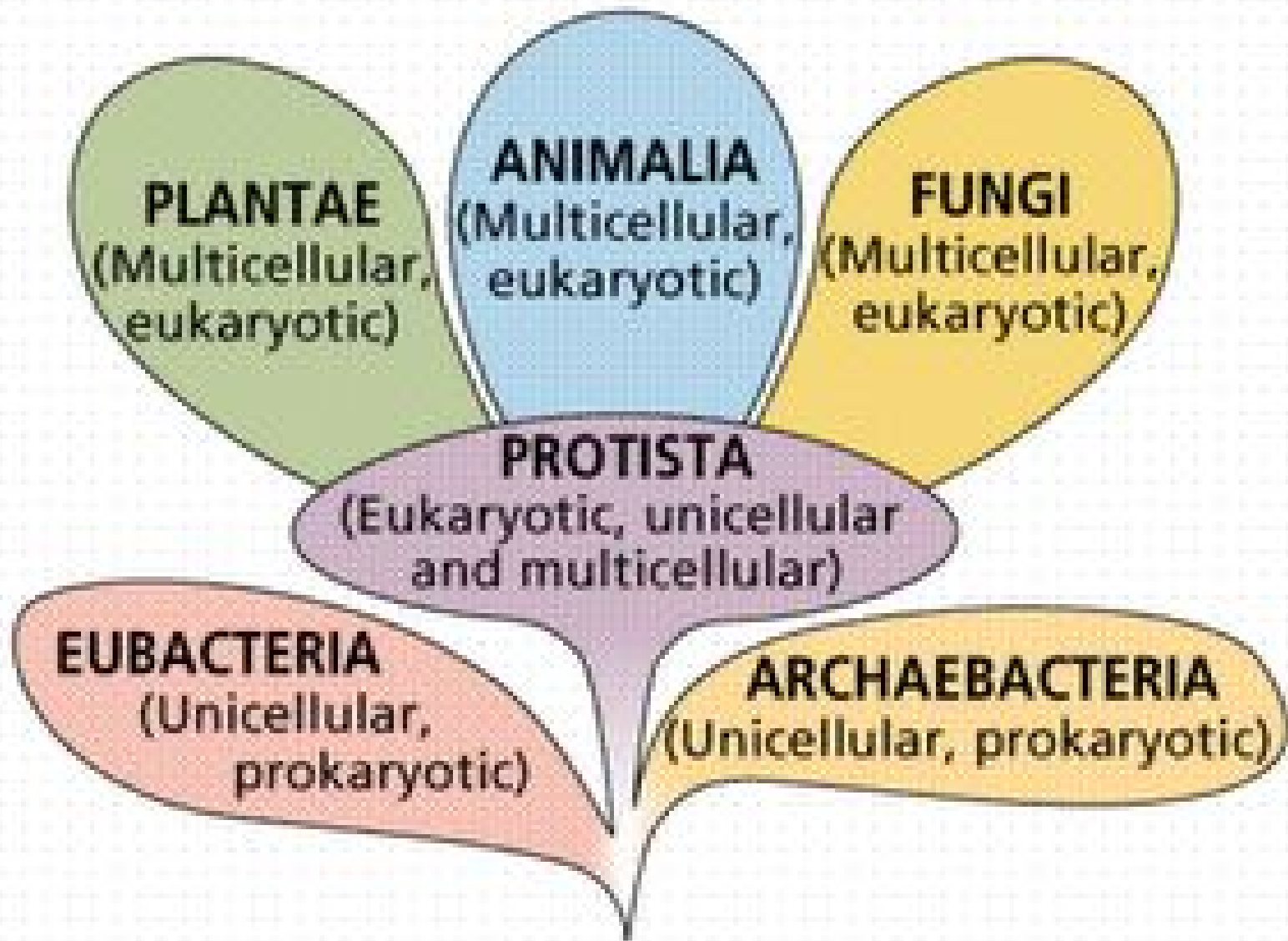
- **Adaptation**: An inherited trait that increases an organism's chance of survival and reproduction in a certain environment.
- **Coevolution**: The process of 2 species evolving in response to long term interactions with each other. Ex. Bird and flower
- **Resistance**: The ability of one or more organisms to tolerate a particular chemical designed to kill it. Ex. Pesticide with corn and antibiotics

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The Diversity of Living Things

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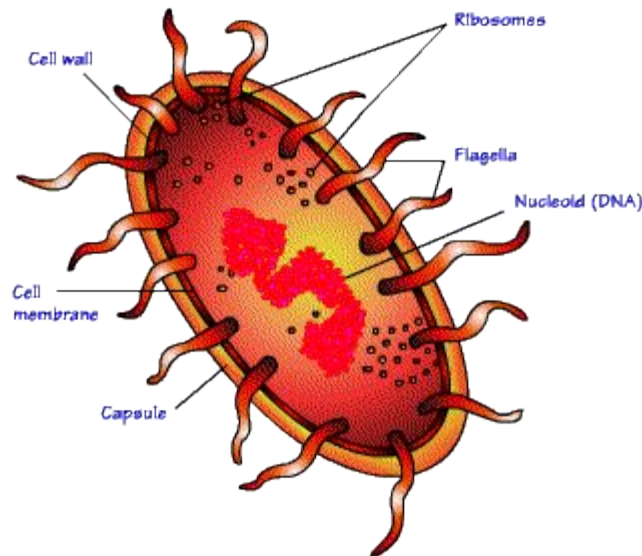
The Diversity of Living Things?



Archaeobacteria (Monera)



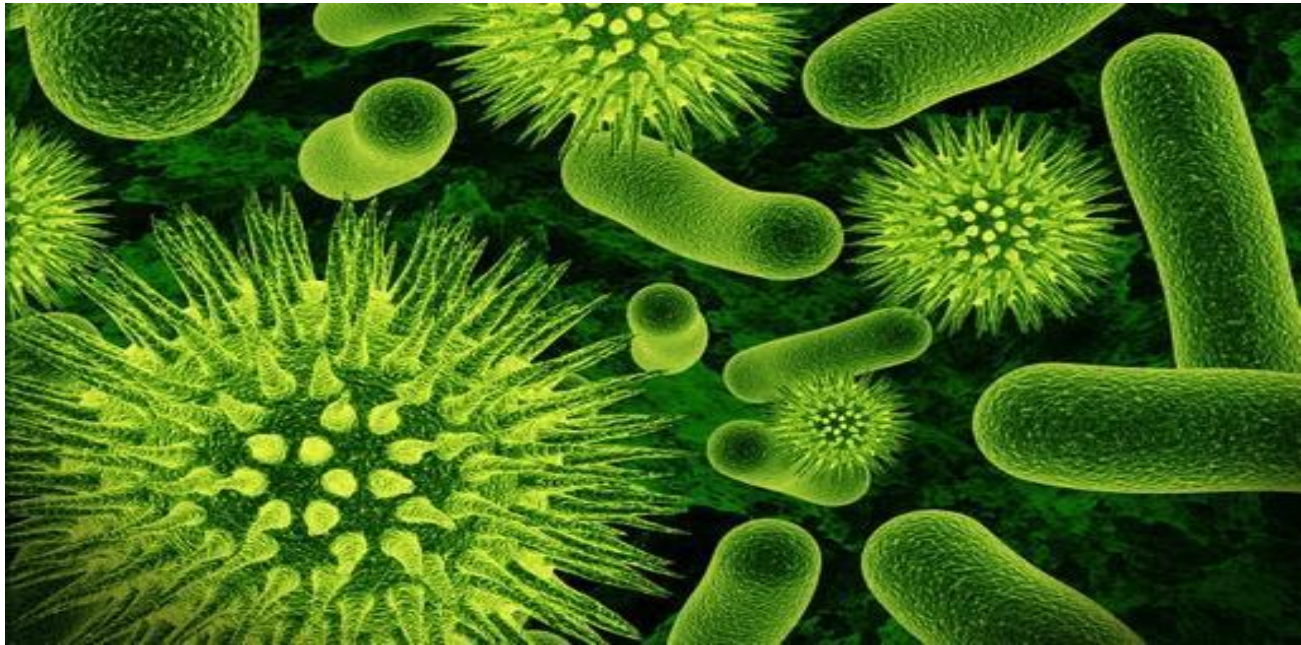
⊙ bacteria-like organisms that live in extremely harsh anaerobic environments such as hot springs, deep ocean volcanic vents, sewage treatment plants, and swamp sediments



Eubacteria



The true bacteria are complex and single celled. Most bacteria are in the **EUBACTERIA** kingdom. They are the kinds found everywhere and are the ones people are most familiar with.



Fungi



- ① Mushrooms, mold and mildew are all examples of organisms in the kingdom fungi
- ① Most fungi are **multicellular** and consists of many complex cells.



Protists



- Slime molds and algae are protists.
 - Called the odds and ends kingdom because its members are so different from one another.
- Protists** include all microscopic organisms that are ***not*** bacteria, ***not*** animals, ***not*** plants and ***not*** fungi.



Plants

- ① Plants are all **multicellular** and consist of complex cells.
- ① The plant kingdom is the second largest kingdom.
- ① ***Without plants, life on Earth would not exist! Plants feed almost all the heterotrophs (organisms that eat other organisms) on Earth.***



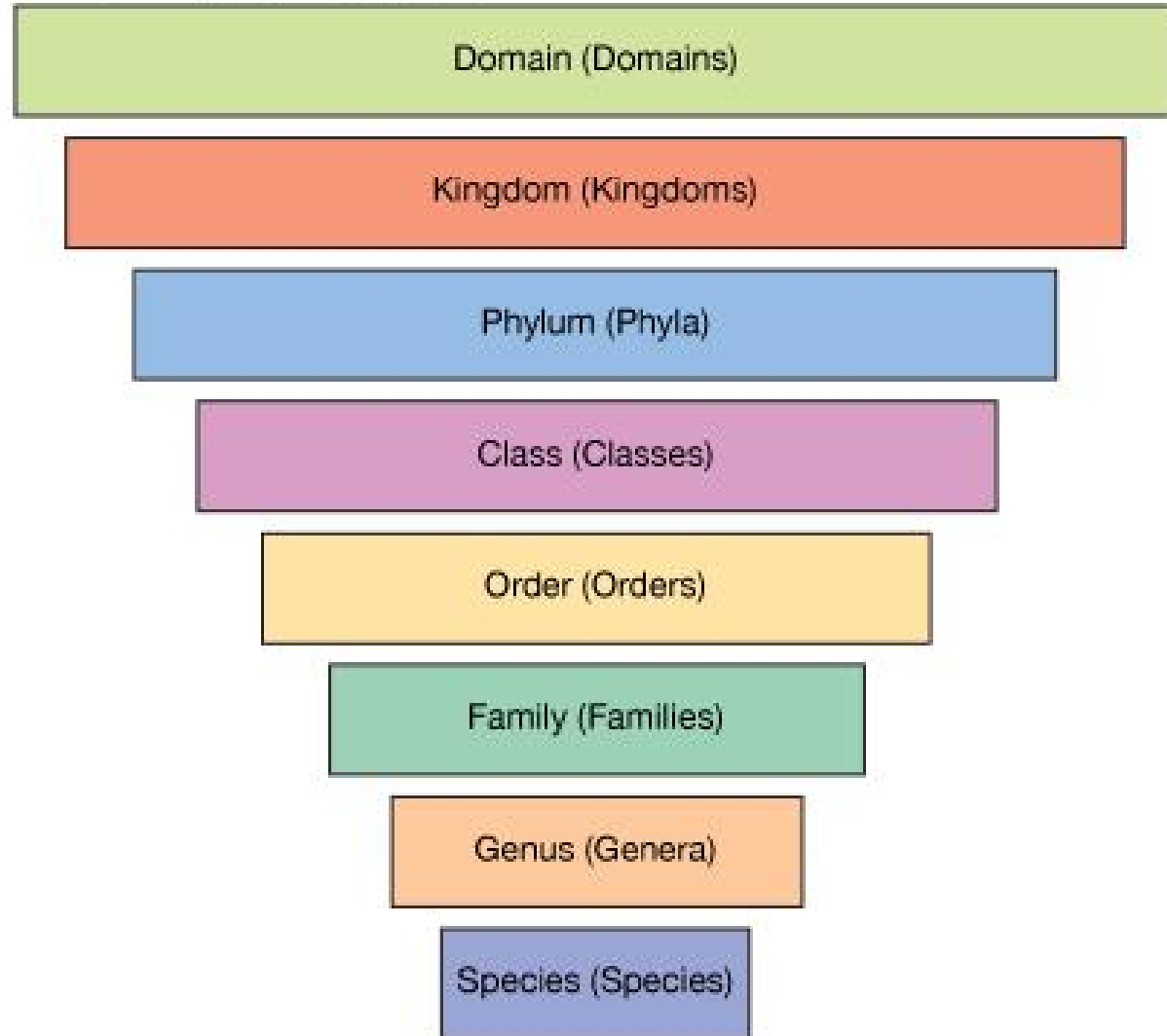
Animals

- ① The **animal** kingdom is the largest kingdom with over ***1 million known species (not # of organisms)***.
- ① All animals consist of many complex cells.

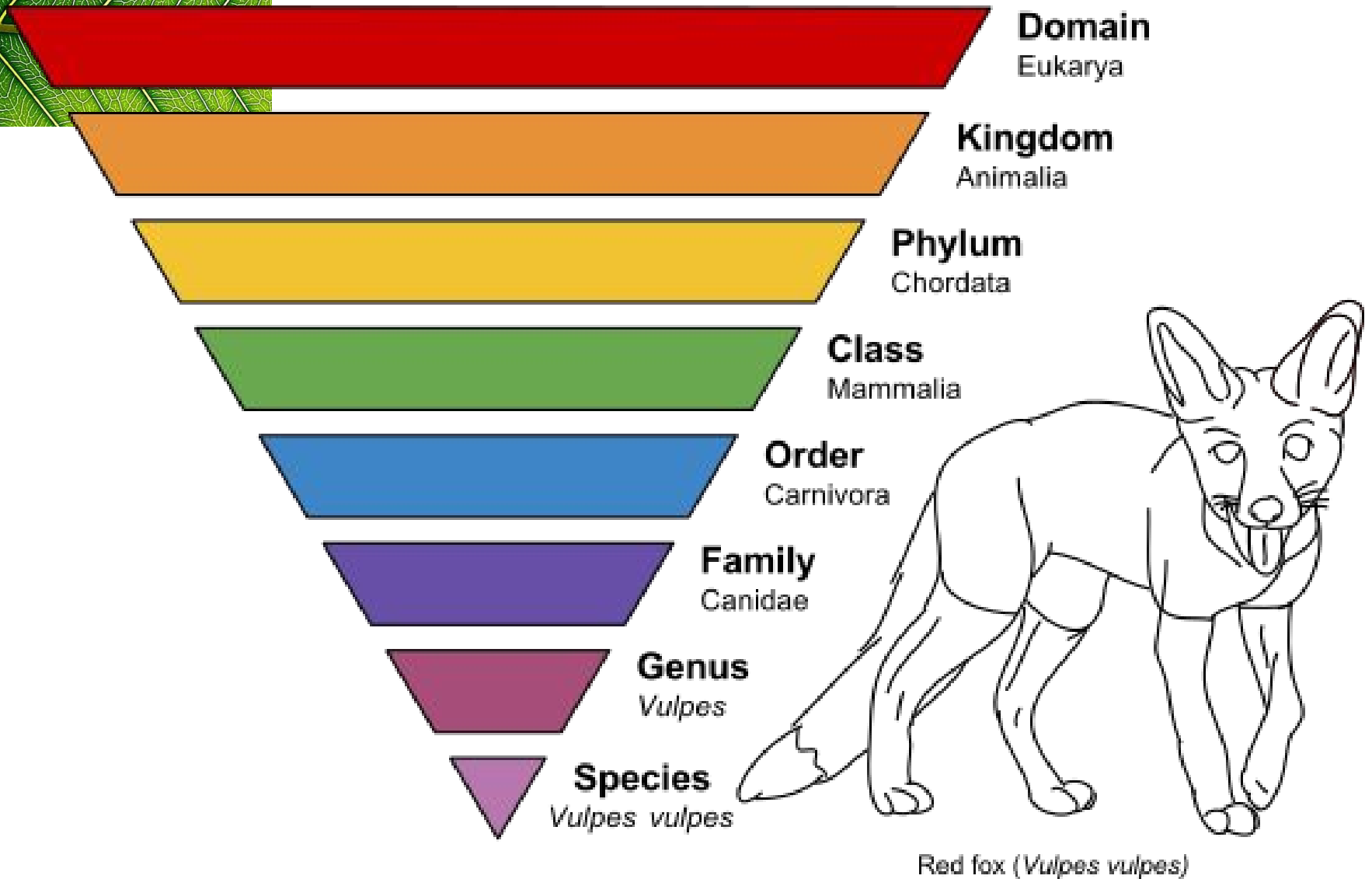


How Animals are Classified

How animals are classified



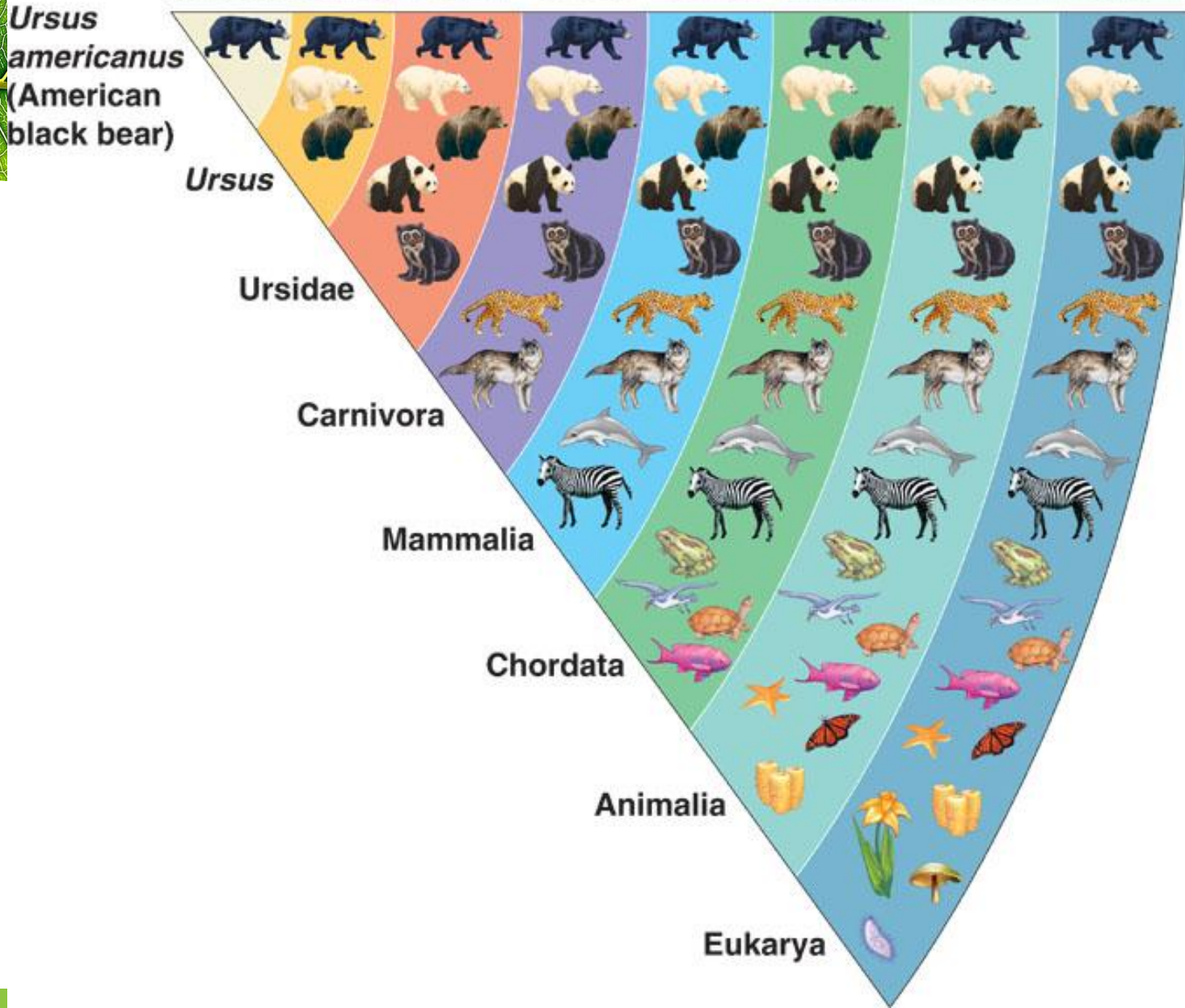
How Animals are Classified



How Animals are Classified



Species Genus Family Order Class Phylum Kingdom Domain



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Parasites

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Parasites



Parasites are plants or animals that live on, or in, another organism (the host), getting their nutrients from that host.

Sometimes the host is harmed by the parasite and sometimes the relationship is neutral, but the host never benefits from the arrangement.

Ectoparasites are parasites that live outside the body. In animals, they live on the skin and can cause itching and rashes.

Endoparasites are parasites that live inside the body. For instance, they may live in the blood system, muscles, liver, brain, or digestive systems of animals.

Parasites



Parasites are typically the Cinderella species of natural communities. They can play crucial roles in maintaining biodiversity and energy flow through ecosystems. Yet they are often overlooked in studies of community organization and trophic structure.

Parasites are an important indicator of ecosystem health — that is, the ability of the system to maintain:

- vigor (productivity)
- organization (biodiversity and predictability)
- resilience (time to recovery following a disturbance)



Parasites



The researchers support their argument with examples of systems where parasites have been shown to affect host population dynamics, interspecies competition, and ecosystem productivity.

They point out that host diversity is reflected in parasite diversity, and that it can sometimes be easier and cheaper to sample parasites than hosts.

