Ch. 1 Classification

Vocabulary

- Biosphere: The part of Earth that can support living things
- Adaptation: A characteristic that enables an organism to survive and reproduce in its environment
- Species: a group of very similar organisms whose members can mate with one another and produce offspring that are able to produce offspring

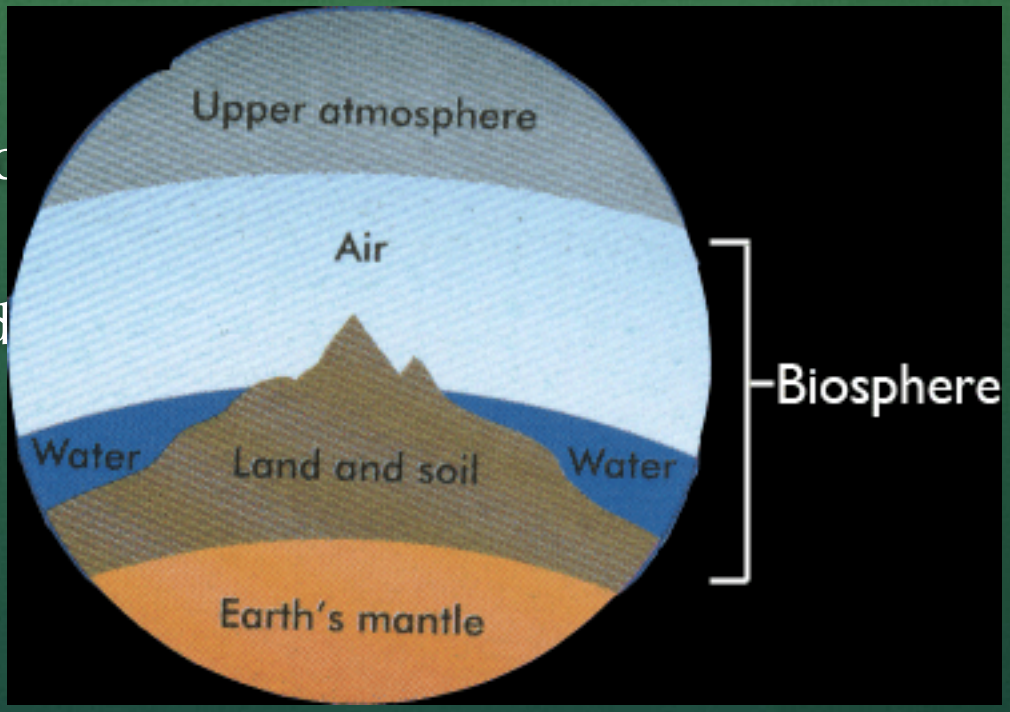
Vocab

- Classification: The grouping of things according to their similarities
- Bacteria: single-celled organisms that do not have a nucleus
- Fungi: mostly many-celled organisms that often grow in moist, dark places. Some break down other organisms
- Vascular Plants: A plant that has tubes for carrying water and nutrients throughout the organism
- Nonvascular Plants: A low growing plant that does not have tubes to carry materials

Lesson 1: Where on Earth do organisms live?

Where is the biosphere?

- The biosphere includes everything from high in the Earth's atmosphere, to way deep down in Earth's oceans
- Many different enviro biosphere
  - Deserts, oceans, field sidewalks



Organisms in the Biosphere

- Scientists have discovered and named nearly 2 million different organisms
- Believe that millions more haven't been discovered
- Deep oceans, polar regions, rain forests and deserts not yet fully explored
- All organisms in biosphere interact

Variety in Living Things

- How do different plants and animals survive in different environments?
- Over time plants and animals adapt to the environment in order to survive.
- Cacti:
  - thick skin stores a lot of water
  - Modified leaves help keep it from being eaten

  - What other adaptations can you think of?

Groups of Organisms

- Even with a great variety among organisms, some groups share many of the same characteristics
- These organisms may be members of the same species
- Species have two-part scientific names
  - Ex. Horse: Equus caballus
- Members of the same species don't look exactly alike
  - Can have different shapes, sizes and colors
  - Share similar body plans and structure

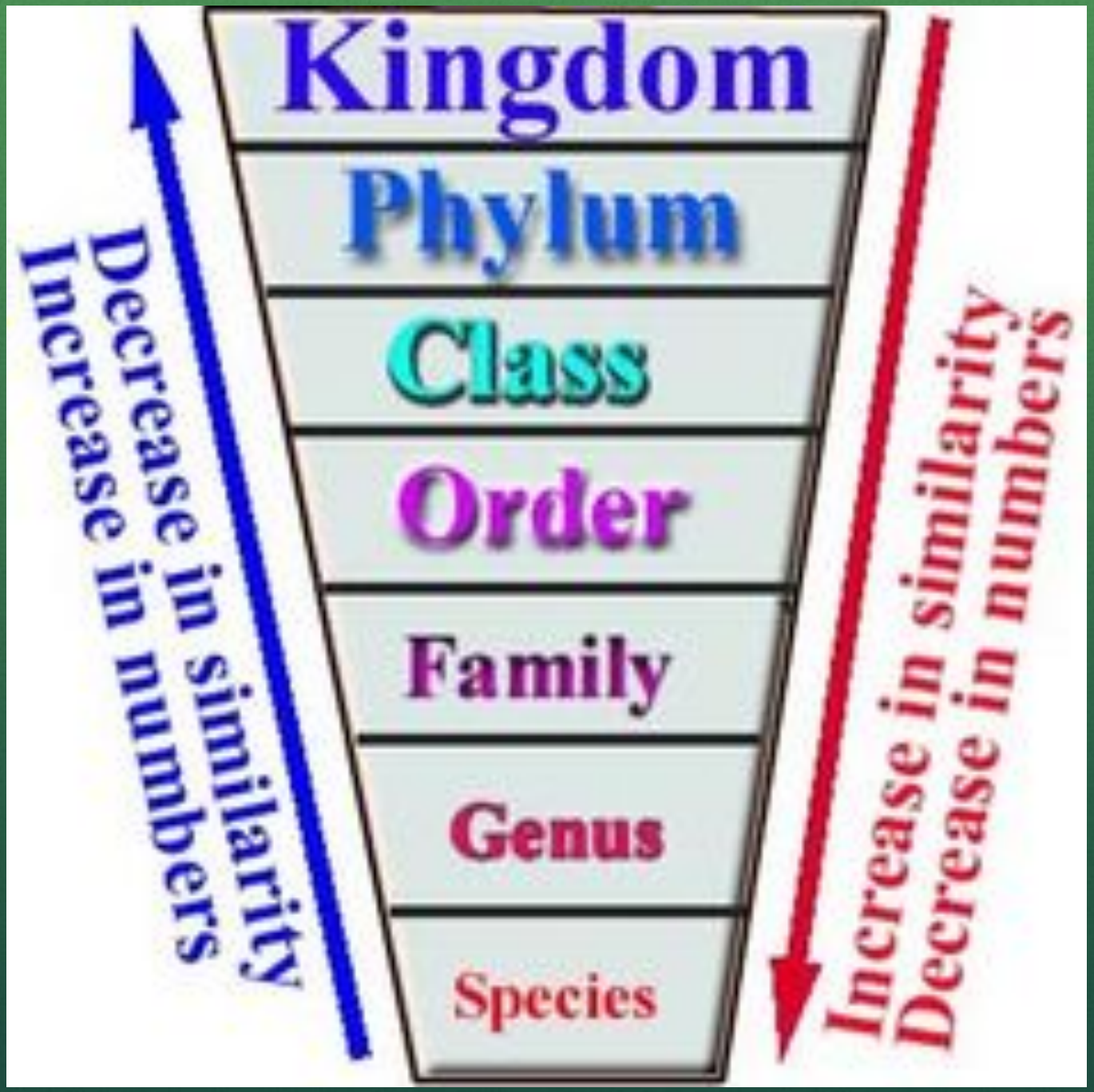
Lesson 2: How do scientists group organisms?

Classification

- Scientists group many organisms by their characteristics
- This is called classification
- Throughout history different classification systems have been used
- Even today a single system is not agreed on
- Most use a system developed by Carolus Linnaeus in the 1700s

Classification

- Linnaeus originally grouped all organisms in 2 large groups called kingdoms
  - Plant kingdom
  - Animal kingdom
- Broke each kingdom into smaller groups based on features of the organisms


Kingdom
Phylum
Class
Order
Family
Genus
Species
Decrease in similarity
Increase in numbers
Increase in similarity
Decrease in numbers

6 Kingdoms

- With new technology, scientists discovered not all organisms fit into Linnaeus' two categories
- With the discovery of bacteria, scientists began to classify organisms based on cell structure, how they get their food and reproduce
- Today scientists put organisms into 6 kingdoms

Archaebacteria

- Do not have nuclei, can be found in deep ocean vents
- All are single celled organisms (Extremophiles).
- Form yellow rings around hot springs where temperatures are 90 degrees Celsius (194 degrees F)

Eubacteria

- Do not have nuclei, some cause disease
- Escherichia coli (E. Coli)
- Prokaryotes that may be found in the human body
- All are single celled organisms

Protista

- All eukaryotes that are not plants, animals or fungi
- Most are single celled organisms (Protozoans)
- Algae
- Mostly microscopic and live in water

Fungi

- Break down materials outside their bodies and then absorb the nutrients
- Mushrooms
- Molds

Plantae

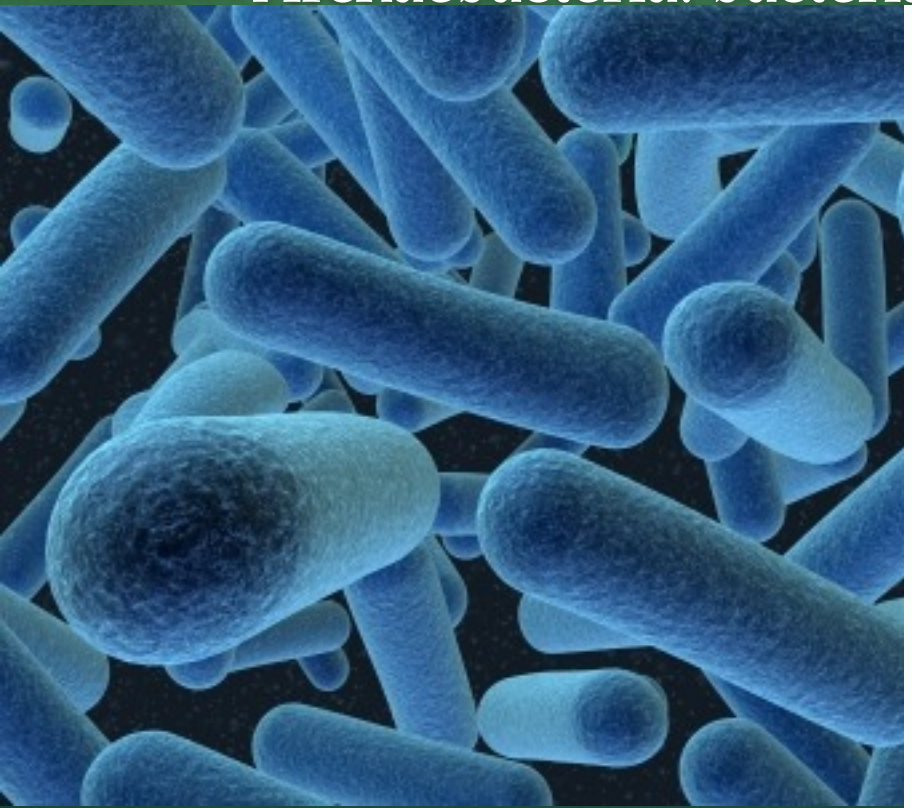
- Use sun's energy to make sugar
- Usually green
- Pine Trees

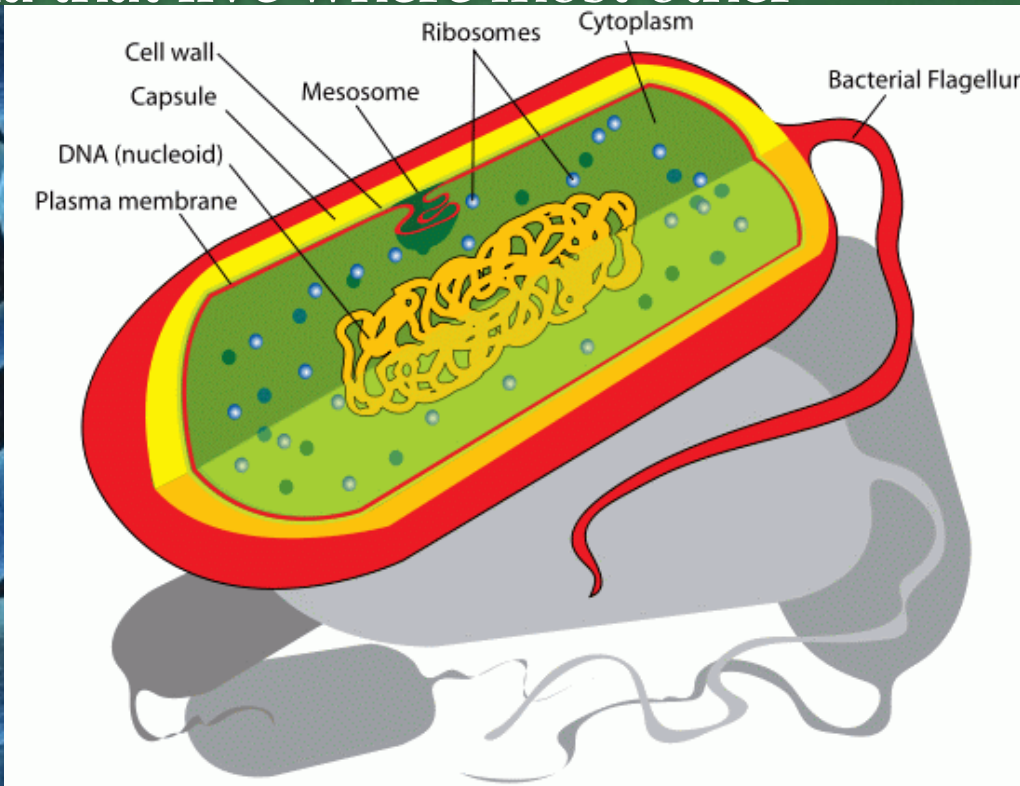
Animalia

- Complex organisms with no cell walls
- Have specialized sense organs

Bacteria

- Bacteria are broken into 2 different kingdoms
- Archaebacteria: bacteria that live where most other





Protists

- Most of the 200,000 known species of protists are one-celled organisms
- The cells of all protists contain a nucleus
- Some scientists believe this kingdom should be broken into smaller kingdoms
- Some are like animals who get energy by eating other organisms
- Some plantlike protists contain chlorophyll and produce their own food
- Some are like fungi and grow in damp, nutrient-rich environments, where they absorb food through the cell membrane
- Ex. Algae and ameba

Fungi

- Many give off chemicals that break down the organisms where they grow, which gives them the nutrients they need
- In molds and mushrooms, cells form threadlike strands called hyphae, which takes in the nutrients
- Yeast is another kind of fungus
  - Organism that helps make bread
- Many fungi look like plants but don't have chlorophyll

Ch. 1.3 How are plants and animals classified?

Plant Classification

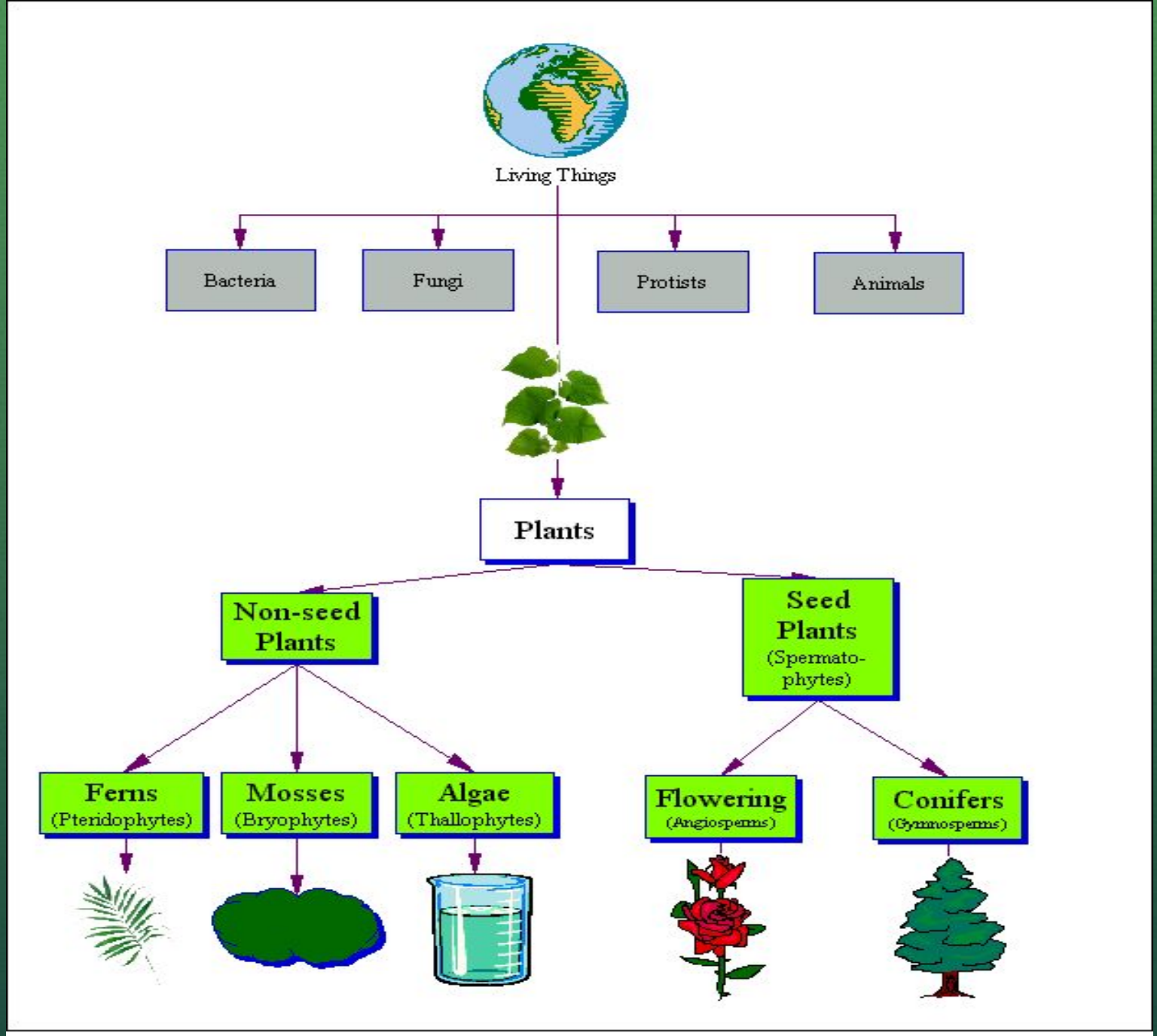
- Most living things gain energy either directly or indirectly from plants
- Plants also stabilize Earth's climate
- Plants can be divided into two groups
  - Vascular Plants
  - Nonvascular Plants

Vascular Plants

- Have tubes for carrying water and nutrients throughout the plant
- Can be divided into two groups
  - Seed plants
  - Seedless plants
- Seed producing plants can be broken into 2 groups as well
  - Gymnosperms: produce seeds in cones, no flowers
    - EX: pines, evergreens
  - Angiosperms produce flowers
    - Tulips, maple trees, tomatoes
- Examples of seedless plants are horsetails and ferns

Nonvascular Plants

- Do not have tubes
- Pass materials from cell to cell
- Most nonvascular plants are small
  - Ex: moss



Classification of Plants

Animal Classification

- The animal kingdom is broken down into about 35 different phyla
- All share certain characteristics
  - Multicellular organisms
  - Cannot make their own food
  - Cells contain a nucleus but no cell wall
- About 95% of animals are invertebrates
  - No backbone
  - Giant squid, microscopic mites
- Only the phylum Chordates contains vertebrates
  - Have a backbone
  - Reptiles, birds, mammals