Name: Due Date: TA:

# Life Sciences 11

## LG 10

### *Taxonomy*

**Taxonomy** (which literally means *"arrangement law"*) is the science of classifying living organisms into organized, universally accepted groups. It allows scientists around the world to communicate clearly about life on Earth by placing each organism into increasingly broad categories based on shared characteristics. A helpful way to think about taxonomy is to compare it to how a grocery store is organized. The entire store is divided into large departments such as produce, dairy, and meat. Each department is broken down into aisles, aisles into specific categories and brands, and finally down to a single product. This type of organization, moving from large, general groupings to smaller, more specific ones, is known as a **hierarchical system**.

In the eighteenth century, the scientist **Carl Linnaeus** introduced a formal hierarchical system for classifying living organisms. In his system, organisms that are most similar are grouped together in a **genus**, and closely related genera are grouped into a **family**. This pattern continues upward through increasingly broader categories until all living organisms are classified at the highest level.

Today, the modern taxonomic system includes **eight levels**, from most specific to most inclusive: **species, genus, family, order, class, phylum, kingdom, and domain**. In other words, species belong to genera, genera to families, families to orders… and so on, creating an organized framework for understanding the diversity of life. Taxonomy keeps life neatly organized… because calling everything "that weird thing with leaves" was not working for science and without taxonomy, biologists would be completely *domain*-ated by confusion.

**Instructions: Use the link below to answer questions #1–3. Then use reliable internet sources (science/education sites, not random forums) or your textbook to complete the rest. Answer all questions in full sentences. Include diagrams, labelled images, and examples where requested.**

**https://www.biologyonline.com/dictionary/binomial-nomenclature**

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**1. Explain what binomial nomenclature is.**

*(Describe the two-part naming system used for all organisms.)*

**2. Who was *Carl Linnaeus*? What is his contribution to Taxonomy?**

*(Include his role in developing the naming/classification system.)*

**3. Describe the purpose of taxonomy in biology.**

*(Explain why biologists classify and name organisms.)*

**4. Name the 8 taxons from broadest to most specific.**

*(Start with the most inclusive category and end with the most specific.)*

**5. NAME and DESCRIBE the 3 Domains of life.**

For each domain, include:

A. Its name
B. Its general characteristics
C. Example organisms

**6. NAME and DESCRIBE the 6 Kingdoms.**

For each kingdom, include:

A. Its name
B. One or two defining features
C. Example organisms

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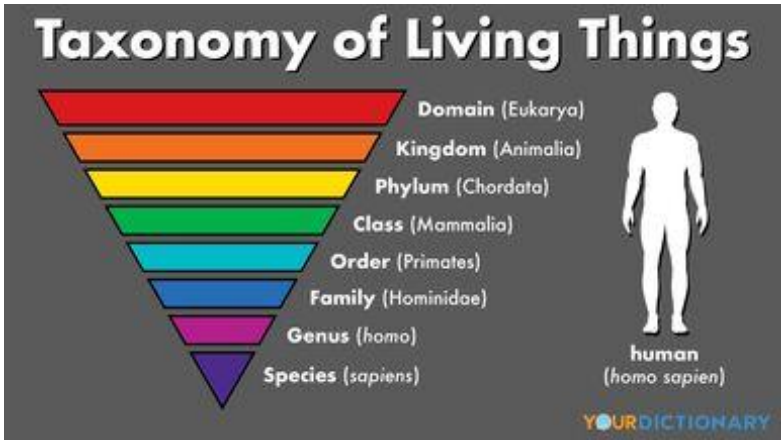
## 7. Classification Practice




- Similar to the diagram for the human, using reliable online sources (textbooks, museum/education sites), give the full scientific classification (all 8 taxons) for each of these organisms:
    A. red maple tree
    B. mushroom
    C. euglena
    D. streptococcus (pick one species)
    E. any thermophile (pick one species)

*Hint:* Scientific names are always **Genus species** and **italicized** when typed.

## 8. What is a phylogenetic tree?

A. Explain in your own words what a phylogenetic tree (or *phylogeny*) shows.

B. Find an example image online (from Google Images or another science source) that makes sense to you, **include it in your assignment**, and **explain what it shows** about how organisms are related

## 9. Watch the Crash Course video on taxonomy before completing this guide.

- **Title:** *Taxonomy: Life's Filing System – Crash Course Biology*

  https://www.youtube.com/watch?v=F38BmgPcZ_I