

Name \_\_\_\_\_ Lab Section \_\_\_\_\_

**Introduction**

Life on earth is incredibly diverse. Over 1.4 million species have been described and many millions more wait to be discovered. In order to simplify this complex diversity, biologists classify each creature. Every species is given a name and grouped with other similar species. No single classification system is perfect, but the most currently recognized system places each species in one of three Domains; Archeae (ancient bacteria, prokaryotic extremophiles), Eubacteria (modern bacteria, prokaryotes), and Eukarya (eukaryotes). Eukarya includes the group Protista (unicellular) and the kingdoms Fungi, Plantae, and Animalia. This online exercise is designed to provide information about groups of organisms you will not have the opportunity to examine in lab. Additionally, you will be introduced to viruses, non-cellular entities that walk a fine line between the living and non-living world.

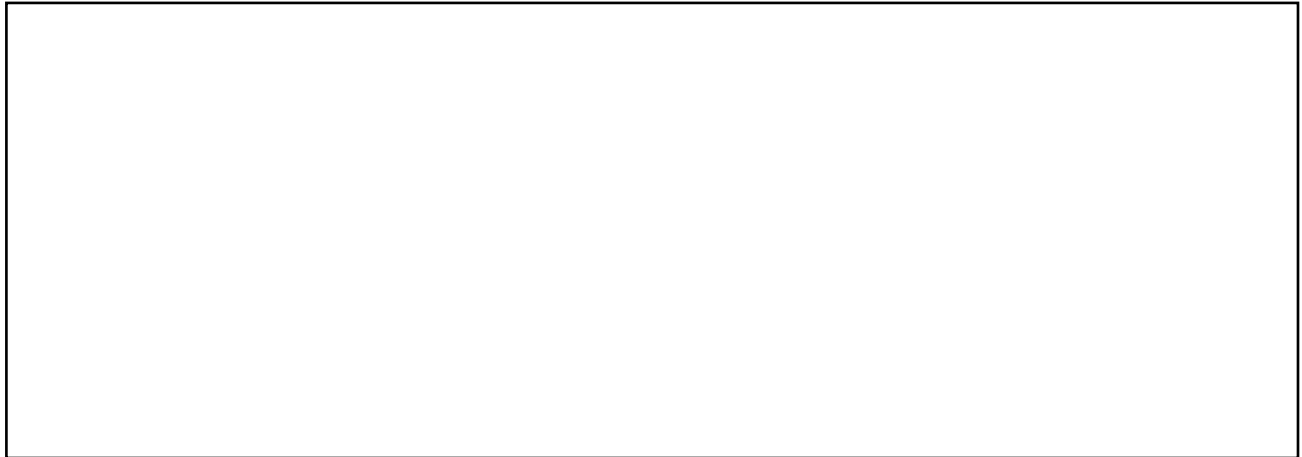
**Bacteria (Domain Eubacteria)****Procedure:**

1. Go to <http://www.ucmp.berkeley.edu/bacteria/bacteria.html>
2. You should now be looking at a web page entitled "Introduction to Bacteria". Read the introduction and answer the following questions.

**Questions**

- What are 3 ecological roles played by bacteria?
- 
6. Click the button labeled **More on Morphology**.
  7. Read the introduction and answer the following questions.
    - What structural differences make bacteria different from Eukaryotic cells?
- 
- What are peptidoglycans and where are they found in bacteria?

- In the space below, draw a typical rod-shaped bacterium, like the one pictured, and label its parts.



8. At the top of this page, click the button labeled **Life History and Ecology**.

- The majority of bacterial species are pathogenic disease-causing agents.
  - a. True
  - b. False
- Bacteria are limited to very few habitats on Earth.
  - a. True
  - b. False
- Match the following terms with the most appropriate statement by drawing a line between them.

Aerobic bacteria

Bacteria that prefer an aerobic environment, but can survive without oxygen

Facultative Anaerobes

Bacteria that derive their energy by breaking down organic compounds taken in from their environment

Heterotrophs

Bacteria that require oxygen to survive

Chemoautotrophs

Bacteria that make their own food source through photosynthesis

Photoautotrophs

Bacteria that produce their own food source through the oxidation of sulfur or nitrogen

- How do bacteria help plants to obtain nitrogen?

9. Click the button labeled **Fossil Record**  
10. Read the introduction and answer the following questions.

- How old are the oldest fossils of cyanobacteria?
  
  
  
  
  
  
  
  
  
  
- Fossilized cyanobacteria can be found in large, dome-shaped layered structures called:

**Kingdom Fungi**

11. Now go to the following web page <http://www.ucmp.berkeley.edu/fungi/fungi.html>  
12. You should now be looking at a web page entitled “Introduction to Fungi”  
13. Read the introduction and answer the following questions.

*Questions* 🐞

- What are 2 ecological roles played by fungi?
  
  
  
  
  
  
  
  
  
  
- What are 2 economic roles played by fungi?

14. Click on the button labeled **More on Morphology**  
15. Read the web page and answer the following questions.

*Questions* 🐞

- The cells of fungi are long and thread-like and connect end to end. These cells form long filaments called \_\_\_\_\_.
- The cell walls of fungi contain a carbohydrate polymer called \_\_\_\_\_, which is also found in the exoskeletons of arthropods.
- Almost all fungi lack flagella and therefore are not motile. What consequence does non-motility have on the sexual reproduction of fungi?

16. Click on the button labeled **Life History and Ecology**.

17. Read the web page and answer the following questions.

***Questions*** ↗

**Draw the life cycle of a typical fungus.** Do this by ordering the following terms in the proper chronological sequence, then arranging them in circular fashion with arrows between each term.

- **Dikaryon**
- **Haploid hyphae**
- **Haploid spores**
- **Sporangium**

- Describe the means by which fungi obtain nutrients.

- What are mycorrhizae and how do they benefit both the fungus and the plant?

**Viruses**

18. Open this site: <http://www.microbeworld.org/types-of-microbes/viruses>

19. Read the webpage and answer the following questions.

- What is a virus?
  
  
  
  
  
  
  
  
  
  
- Where are they found?
  
  
  
  
  
  
  
  
  
  
- What is the purpose of a virus?

20. Open this site: [http://viralzone.expasy.org/all\\_by\\_species/678.html](http://viralzone.expasy.org/all_by_species/678.html)

21. Choose a virus by clicking on its name. Draw the virus as clearly as you can in the space provided below.

- What disease(s) is(are) associated with this virus?
  
  
  
  
  
  
  
  
  
  
- How is this virus transmitted?
  
  
  
  
  
  
  
  
  
  
- Where is this virus found (e.g. USA, South Africa)?

22. Using your favorite search engine, search the internet for more information about this virus and its impact on the human population. You may choose to investigate the epidemiology, pathogenicity, or treatment of viral infections. **Provide the title and URL (website address) of this site.**

**Title** \_\_\_\_\_

**URL** \_\_\_\_\_

In the space below, write a short summary of your findings about the virus you chose.