**How Can Protists & Fungi Be Characterized?**

**I. Introduction**

 Protists and fungi are vital in nearly every ecosystem on Earth. Protists release large amounts of oxygen into the atmosphere. They also absorb large amounts of carbon dioxide. Some protists have important medicinal values. Both protists and fungi serve as important links in the food chains of various ecosystems. Fungi play crucial roles as decomposers, breaking down decaying organisms and wastes.

 The protist kingdom is most diverse of the six kingdoms of life. The protist kingdom is made up of more than 200,000 species. Some protists are single-celled organisms, while others are multicellular organisms. Some protists have a means of locomotion (such pseudopods, cilia, or flagella), while others are not able to move from place to place. The one characteristic that all protists have in common is that they all are eukaryotic. Protists can be organized into three general groups : animal-like protists, plant-like protists, and fungus-like protists.

 Like protists, all fungi are eukaryotic and may be single-celled or multicellular. Only some fungi are able to move from place to place, and all fungi are heterotrophic (obtain energy from other organisms). Most fungi feed on dead or decaying plant and animal tissues. Organisms that obtain food in this way are called saprophytes. Fungi that obtain food directly from living organisms are called parasites.

 Most fungi produce spores (reproductive cells that form new organisms without fertilization). When a spore is released and lands in a place that has all the conditions necessary for growth, the spores form a new fungus. The structures in which fungi produce spores are used to classify fungi into one of four divisions : zygote fungi produce spores in round spore cases on the tips of the body of a fungus, sac fungi produce spores in a small sac called an ascus, club fungi produce spores in a club-shaped structure, and imperfect fungi are those for which no sexual spore stage has been observed.

 In this virtual lab, you will investigate different types of microscopic organisms from the Kingdom Protists and Kingdom Fungi. You will examine magnified views of these organisms. Using information about their habitats, nutrition, and locomotion, you will classify each organism as an animal-like protist, plant-like protist, fungus-like protist, or fungus.

**II. Procedure**

 1. Go to the following website :

 <http://www.glencoe.com/sites/common_assets/science/virtual_labs/LS09/LS09.html>

 2. Click the Microscope Slide Box to get a magnified view of a protist or fungus. Read the

 field notes to gather general information about the organism. Record the name of the

 organism.

 3. Click the Habitat button to gather information about the organism’s habitat. Record the

 habitat information.

 4. Click the Nutrition button to find out if the organism makes its own food or obtains it from

 another source. Record the nutrition information.

 5. Click the Locomotion button to determine if the organism is able to move from place to

 place. Record the locomotion information.

6. If necessary, click the Reference button to examine information about animal-like protists, plant-like protists, fungus-like protists, and fungi.

7. Determine to which of the four groups the organism belongs. Click the appropriate button :

 Animal-like Protist, Plant-like Protist, Fungus-like Protist, or Fungus.

 If you correctly classified the organism, circle the name of the group.

 If you incorrectly classified the organism, review information and try again.

8. Repeat the procedure until five organisms are classified.

**III. Data**

 **Organism #1 :** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (name)

 **Habitat :** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 **Nutrition :** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 **Locomotion :** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 **Classification** (Circle One) **:** Animal-like Protist Plant-like Protist

 Fungus-like Protist Fungus

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 **Organism #2 :** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (name)

 **Habitat :** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 **Nutrition :** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 **Locomotion :** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 **Classification** (Circle One) **:** Animal-like Protist Plant-like Protist

 Fungus-like Protist Fungus

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**Organism #3 :** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (name)

 **Habitat :** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 **Nutrition :** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 **Locomotion :** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 **Classification** (Circle One) **:** Animal-like Protist Plant-like Protist

 Fungus-like Protist Fungus

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**Organism #4 :** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (name)

 **Habitat :** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 **Nutrition :** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 **Locomotion :** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 **Classification** (Circle One) **:** Animal-like Protist Plant-like Protist

 Fungus-like Protist Fungus

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**Organism #5 :** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (name)

 **Habitat :** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 **Nutrition :** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 **Locomotion :** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 **Classification** (Circle One) **:** Animal-like Protist Plant-like Protist

 Fungus-like Protist Fungus

**IV. Analysis & Conclusions**

 **1. Different type of protists moves in different ways. Describe how one of the protists**

 **you observed moves?**

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 **2. Why are so many other living things dependent on plantlike protists?**

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 **3. Which organisms could not move? Why?**

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 **4. Which of the protists you observed had both plantlike and animal-like characteristics?**

 **Why?**

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 **5. Explain why algae are plantlike.**

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 **6. Locomotion is generally a characteristic of animals. However, some plantlike protists**

 **move about by means of flagella. What is the adaptive advantage of a photosynthetic**

 **organism that is able to move from place to place?**

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 **7. How do the fungi you identified obtain food?**

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 **8. How are fungi important to the environment?**

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 **9. If an imperfect fungus were found to produce spores in sexual reproduction, what**

 **would you need to look at to reclassify the fungus?**

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