

The Living Cell

How can microscopic protists and fungi be characterized?

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 value. 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 the most diverse of the six kingdoms of life. The protist kingdom is made up of more than 200,000 species. Some protists are one-celled organisms, while others are many-celled. Some protists have a means of locomotion, 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 (have a nucleus). Protists can be organized into three general groups: animal-like protists, plantlike protists, and funguslike protists.

Like protists, all fungi are eukaryotic and may be one-celled or many-celled. Only some fungi are able to move from place to place, and all fungi obtain food 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 spore forms 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; 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 protist and fungi kingdoms. 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, plantlike protist, funguslike protist, or fungus.

Objectives:

- Classify microscopic protists and fungi.
- Compare and contrast animal-like, plantlike, and funguslike protists as well as sac and zygote fungi.

Procedure:

1. Click the Microscopic 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 in the Table.
2. Click the Habitat button to gather information about the organism's habitat. Record the habitat information in the Table.

The Living Cell
How can microscopic protists and fungi be characterized?

| | Scientific Name | Classification Group | Habitat | Nutrition | Locomotion |
|------------|-----------------|----------------------|---------|-----------|------------|
| Organism A | | | | | |
| Organism B | | | | | |
| Organism C | | | | | |
| Organism D | | | | | |
| Organism E | | | | | |

The Living Cell

How can microscopic protists and fungi be characterized?

Question 1 :Different type of protists moves in different ways. Describe how one of the protists you observed moves?

Question 2 :Why are so many other living things dependent on plantlike protists?

Question 3 :Which organisms could not move? Why?

Question 4 :Which of the protists you observed had both plantlike and animal-like characteristics? Why?

Question 5 :Explain why algae are plantlike.

Question 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?

Question 7 :How do the fungi you identified obtain food?

Question 8 :How are fungi important to the environment?

Question 9 :If an imperfect fungus were found to produce spores in sexual reproduction, What would you need to look at to reclassify the fungus?