

BSCS Biology An Ecological Approach

Chapter 12 Eukaryotes: Protists and Fungi

"You knew I was a lowlife ..."

Paramecium husband to his wife in a Gary Larson cartoon.

Introduction

Eukaryotes are the more advanced of this mostly single-celled organism group. **Protists** and **fungi** are included in this group. Their structure is more organized than the **prokaryotes** as they have **nuclei** and cellular organization and specialization. Many of these simple organisms absorb their food directly from their environment, while others are actually predatory hunters. This is the group that most people consider relatively simple, although they are complex in some of their life cycles and related life processes.

The Autotrophic Protists

This group consists of such primitive organisms as various **algae** groups. The **green algae** are thought to be the ancestors of plants as we know them today. Some of these primitive organisms can move about making use of a **flagellum** (plural flagella) which is a whip-like hair that moves. **Diatoms** are very numerous in the world's seas and are thought to be a primary source of the earth's oxygen supply. Other members of this group include the **red** and **brown algae** groups, commonly referred to as "seaweed." They are multicellular organisms living in the marine environment.

Protozoans

This group consists of small animal-like creatures, many of which move about with the aid of **cilia** and flagella. Others such as the **amoeba** move about making use of **pseudopodia** or "false feet" which they extend and then fill with bodily fluid.

Sporozoans are parasitic while **ciliates** are characterized by their cilia which allow them rapid movement in their liquid environments. **Slime molds** are a primitive group of organisms with a rather complex life cycle which has allowed them to be successful for many eons. Part of this life cycle consists of a **plasmodium** or slimy sheet used for acquisition of food.

Fungi

These organisms are all **heterotrophic**. That is, they obtain their food from their environment. They are classified by their various reproductive structures such as **zygospores**, **asci**, and **basidia** which are all specialized for reproduction of the species. Many fungi are edible and useful to humans in food production. On the other hand, fungi are also the source of many diseases especially in plants. Understanding the life cycles of fungi is important in controlling and managing such diseases. This is also important for the food industry.

Complex Fungal Relationships

Decomposers are everywhere and help return basic nutrients to the soil. Some fungi act like **predators** in that they can capture some small organisms. **Mycorrhizae** is an association (**symbiotic**) between fungus and plant roots in which both the plants and fungus gain from the relationship. **Lichens** can grow just about anywhere on land and can go **dormant** until they receive moisture again. Reindeer moss is a type of lichen growing in the Arctic and is a good indicator of toxic materials in the environment as they are often concentrated in this organism.