PROTISTS AND FUNGI

What Is a Protist?

The protist is the most diverse Kingdom of classified organisms on Earth. They range widely in almost every physical characteristic that exists.

Protists are combined into the same Kingdom because they are all eukaryotes and they live in a liquid environment. There are protists that are unicellular and multicellular.

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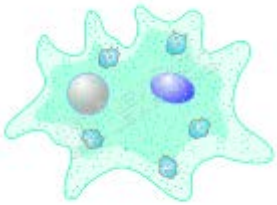
Animal-Like Protists (Protozoans)

Animals are all heterotrophs, meaning that they obtain food by eating other organisms. Animals are also able to move around in order to obtain their food. Animal-like protists are categorized for these two characteristics. Animal-like protists are known as **protozoans**.



The big difference between protozoans and animals is that protozoans are unicellular while animals are multicellular.

Types of Protozoans: Sarcodine, Ciliate, and Zooflagellate

A group of protozoans called the **sarcodines** move and feed using a pseudopod; an Amoeba is an example of a sarcodine.

A **pseudopod** is a temporary bulge of cytoplasm controlled by the sarcodine's cell membrane. The term pseudopod means "false foot."

A pseudopod is formed when the cell membrane moves forward in an area and the cytoplasm floods in. The rest of the organism will follow this pseudopod movement. The pseudopod is also used to capture and trap food. Two pseudopods will form around the food and join together trapping the food.

The cell membranes of sarcodines in fresh water have a structure in the cytoplasm that collects the excess water, called a **contractile vacuole**. This prevents the organism from bursting like a water balloon.

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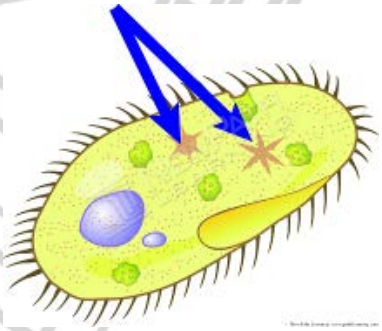


Paramecia normally reproduce asexually using binary fission, but can reproduce sexually using conjugation.

The next group of protozoans is the **zooflagellates**, which use flagella to move. The majority of zooflagellates has between one and eight flagella and lives within a host.
The symbiotic relationship between the zooflagellate and the host is normally mutual, but can be parasitic.

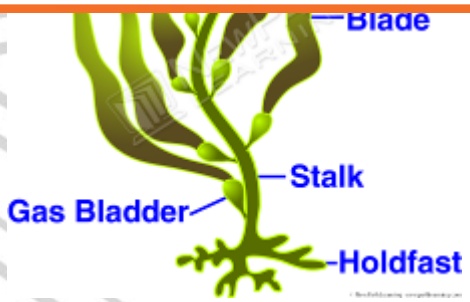
Plant-Like Protists: Algae

Plant-like protists are all autotrophs, meaning that they make their food from light energy from the sun. They are commonly known as algae and are more varied than the animal and fungus-like protists.

Scientists credit algae for the majority of the oxygen that is in the air today. They live in both fresh and salt water, are unicellular and multicellular, and vary drastically in size. Some species of algae live in colonies and can carry out a specific function in that colony. The colonies can have up to thousands of single-celled organisms. The multicellular species have specialized cells that perform specific tasks. For example, each species can contain a different type of pigment.

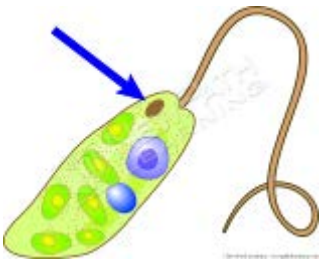
Pigments are chemicals that produce different colors of the organism. This allows the color of algae to range from green to red to black. Brown algae are brown because that is the dominant pigment. They also contain other pigments, but they show up much less than the brown.

Brown al many plantlike s ler.



The holdfast anchors the seaweed to a hard, rocky surface. The blade is a leaf-like structure. The gas bladder holds a gas and helps it to float in an upright position. The Giant Kelp species of brown algae can grow as long as 100 meters in length.

Euglenoids are freshwater green algae that are unicellular. Euglenoids are unique because under conditions where there is no light, they can be heterotrophic. If sunlight is available they will produce their own food. Euglenoids have something called an eyespot that is located near the flagellum.



This eyespot contains pigments that are sensitive to light and will help to guide the euglenoid back to light so that it can produce food.

Lesson Topic: What is an eyespot?

Diatoms are unicellular organisms that have very interesting shapes. They move by letting ooze out through a slit in its cell wall and sliding along that ooze.

Dinoflagellates are unicellular algae that are covered in plates that surround it similar to armor.

The only openings in the armor are where the two flagellum come off of the organism. The flagellum movement causes the dinoflagellates to spin like a football through the water.
Green algae are algae that contain green pigment. Green algae are unicellular or multicellular.

Red algae are almost all multicellular seaweeds. Their red pigment allows them to live deeper in the ocean because they can absorb light at that depth to make food.

Fungus-Like Protists

Fungi are organisms that have a cell wall, like a plant, and are heterotrophic, like an animal. Most species of fungi use spores to reproduce.

A **spore** is a small cell that has the ability to grow into a new organism. As you may have guessed, these are the characteristics that protists share with fungi. We will learn more about fungi later in the topic.

There are three types of fungus-like protists: **downy mildews, slime molds, and water molds.**

Most downy mildews and water molds live in moist environments and grow as thin threads that give it a fuzzy appearance. They generally attack other living organisms and cause them to die.

Slime molds live on decaying plant matter and in moist soil. They feed on unicellular or other small organisms by oozing over them and consuming them. They also produce spores to reproduce.

What Are Fungi?

Fungi drastically vary in size from a multicellular mushroom that you may eat in ny dairy products.

Almost all heterotrop t that fungi are r For multicellul ed hyphae.

Hyphae

Hyphae are threadlike tubes of branching cells that make up the bodies and roots of multicellular fungi.

The arrangement of the hyphae is what gives the fungi its body shape. As we already know, fungi are heterotrophic, but they do not eat food the way that animals do. Instead, they absorb food particles through the hyphae. The hyphae will actually grow into the source of food. Once the hyphae grow into the source of food, it will leak out digestive juices onto the food. The juices break the food down so that the hyphae are able to absorb the food particles. Fungi eat both dead organisms and living organisms.

Reproduction of Fungi

Usually, fungi reproduce by producing spores that can be carried by wind or water to a new location.

Spores are produced in a structure called the **fruiting body**. The majority of fungi can reproduce both asexually and sexually. When the environment is moist and the food supply is good, fungi will tend to reproduce asexually. This allows the fungi to produce thousands of spores within the fruiting bodies to be released into the environment. Unicellular yeast cells reproduce asexually by a process known as budding.

Budding is when a yeast cell grows from an existing parent cell. This new cell will break away from the parent cell and function on its own. Sexual reproduction occurs when the environment is not as moist and food is not available. The hyphae of two fungi will join together and exchange their genetic material and form a new organism.

Role of fu

Fungi serv s of fungi are decom breaking the chemic chemicals. eed to be healthy. S lationship with certai nts to obtain water and nutrients and in return the plants supply the fungi with food that the plant makes.

Why are fungi good for humans?

A well-known fungus by the name of *Penicillium*, penicillin, was discovered in 1928 to have the ability to kill bacteria. Since then millions of lives have been saved and scientists have discovered many other disease fighting fungi.

Other species of fungi have the ability to cause disease in both plants and animals. Fungi can cause disease in important crops that we eat on a daily basis. If you or someone that you know has Athlete's Foot, then you or they are affected by a fungal disease. This fungal disease is very contagious and easily treated.