

Protists

Notes 8.3

It's The Last Notes Of Unit 8!

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Objectives

- * Describe protists and why they're classified in their own kingdom
- * Describe the different groups of protists
- * Diagram and define the parts of different protists

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Questions to think about

- * How do scientists define protists?
- * In which environment are protists most likely to be found? Why?
- * What cell parts to protists have in common with other cell types?

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Protists are a diverse group of organisms

- * Protists include all organisms that have nuclei (are eukaryotic) and do not belong to the other kingdoms.
- * Most protists are microscopic, unicellular eukaryotes that live in water or moist environments.
- * However, there are protists that include organisms with many cells. They have simpler cell structures than other organisms and also have fewer types of cells. This means they are not as specialized as plants, animals, or fungi.

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Protists are a diverse group of organisms

- * When we examine protists, we see that they share many characteristics with organisms in other kingdoms.
- * As a result, scientists group protists into three categories based on how they obtain their energy.
- * Each group is given a common name based on the kingdom it most resembles.

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Protists are a diverse group of organisms

- * (Groups of protists con't)
 - * The animal-like group is known as protozoa
 - * The plant-like group is known as algae
 - * The fungus-like group is known as decomposers

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There are four types of animal-like protists

- * Protozoa are organisms that obtain their energy by eating other organisms.
- * They include many forms, but they are unicellular.
- * Because they are heterotrophs, they must be able to move to obtain their energy. This is how animals obtain their energy and why protozoa are classified as animal-like protists
- * There are four types of protozoa and they are classified by how they move.

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There are four types of animal-like protists

- * **Pseudopods as Movement**
 - * Pseudopods are temporary bulges in the cell membrane that fill with cytosol.
 - * Pseudopods are used for two reasons: to move and to capture food.
 - * This group of protozoa are called sarcodines.
 - * An example of this protozoa is the amoeba.

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There are four types of animal-like protists

* **Cilia as Movement**

- * These protozoa are called ciliates because they have a structure called cilia.
- * Cilia are hair-like projections from that cell that move in wavelike patterns.
- * Ciliates use cilia to move, obtain food, and to sense the environment.

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There are four types of animal-like protists

* **Cilia as Movement (cont.)**

- * Ciliates have very complex cells because they have two nuclei.
 - * The large nucleus controls the everyday tasks of the cell.
 - * The small nucleus controls reproduction.
- * Ciliates reproduce asexually through binary fission but have been known to reproduce through conjugation.
- * A common ciliate is the paramecium.

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There are four types of animal-like protists

* **Flagella as Movement**

- * This group of protozoa are known as zooflagellates.
- * Zooflagellates have up to eight flagella to help them move.
- * Many zooflagellates live in other organisms as a form of mutualistic symbiosis.

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There are four types of animal-like protists

* **Classification by how it lives**

- * The fourth group of protozoa are classified by how they live, not by how they move. This is because they move in a variety of ways and are not easily classified as sarcodines, ciliates, or zooflagellates.
- * An example of this group are the sporozoans. Sporozoans live by feeding on their host's cells and body fluids.
- * All sporozoans are parasites to animals.
- * An example of a sporozoan is the genus *Plasmodia*. It is the cause of malaria.

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There are six types of plant-like protists

- * Plant-like protists, called algae, obtain their energy from sunlight.
- * Algae contain chlorophyll (and chloroplasts) and are considered autotrophs.
- * Algae include organisms that are unicellular, unicellular and live in colonies, and multicellular.
 - * In colonies, individual algae become specialized.
- * Algae come in a variety of colors because their cells contain pigments.

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There are six types of plant-like protists

- * **Euglenoids**
 - * Euglenoids are green, unicellular algae that are found in fresh water.
 - * Even though they are autotrophs, they can be heterotrophs in the right circumstances; that is, in the absence of sunlight.
 - * Euglena, an example of a euglenoid, is able to detect light through the use of its stigma (eyespot).
 - * This is not an actual eye, but a photoreceptor.

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There are six types of plant-like protists

- * **Dinoflagellates**
 - * Dinoflagellates are like the knights of the protist kingdom.
 - * Dinoflagellates are unicellular algae that have two flagella. This causes them to twirl in water.
 - * Their name comes from Greek. Dino: meaning whirling.
 - * They are covered in a protective plate of silica and live in saltwater.

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There are six types of plant-like protists

- * **Diatoms**
 - * Diatoms are unicellular algae that have glasslike cell walls.
 - * They are known to drift in water. If an organism drifts in water it is called plankton.
 - * If they can carry out photosynthesis then they are called phytoplankton.

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There are six types of plant-like protists

* Diatoms (cont)

- * Some diatoms are able to move. To do this they shoot out chemicals in a fashion similar to jet propulsion.
- * When they die, their cells walls collect at the sea floor bottom called diatomaceous earth.
 - * This substance is used as an abrasive often found in toothpaste.

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There are six types of plant-like protists

* Green, Red, and Brown Algae

- * This is seaweed.
- * The major differences between these different types of seaweed are their color and where they live.
 - * Green algae can be found in both fresh and saltwater.
 - * They can be unicellular or multicellular.
 - * They are also known to live on land but must be in a moist environment.

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There are six types of plant-like protists

* Green, Red, and Brown Algae

* Red Algae

- * Red algae are mostly multicellular seaweeds.
- * Their red color helps them absorb light deep in the ocean.
- * This is an adaptation that allows them to grow deeper in the ocean where there is less competition for food.

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There are six types of plant-like protists

* Green, Red, and Brown Algae (cont.)

* Brown Algae

- * Brown algae is most commonly referred to as seaweed.
- * Even though they are brown, they come in a variety of colors due to a variety of pigments.
- * The most well-known brown algae are the kelp forests in the Pacific coastal waters.

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There are three types of fungus-like protists

- * Fungus-like protists are named so because they obtain energy like a fungus would.
- * These protists take in materials from the soil or from other organisms and break down materials in order to obtain energy.
- * Each of the fungus-like protists we will study are molds. *Most molds are actually fungi but include many organisms that produce a fuzzy-looking growth.*
- * These molds have structures that are too simple to be called fungi and they are unicellular for a portion of their lives.

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There are three types of fungus-like protists

* Water Molds

- * Water molds living mainly in fresh water.
- * They are found on decaying animal or plant tissue or a living organism.

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There are three types of fungus-like protists

* Slime Molds

- * Slime molds live on decaying plants on the forest floor. One kind of slime mold consists of microscope single cells that eat bacteria.
- * When their food is scarce, many of the cells group together to produce a multicellular colony.
- * The colony eventually produces a reproductive structure to release spores.
 - * This is so the organism can find a new food source.

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There are three types of fungus-like protists

* Plasmodial Slime Molds

- * Looking like a fine, slimy net, these organism can be brightly colored and grow up to several centimeters across.
- * Even though they are large and macroscopic, they are not multicellular. They are actually unicellular with many nuclei.
- * The form when many different cells fuse together to form one large cell.

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