**Diversity of Protists**

Some of the most complex single-celled organisms found on the entire planet are classified as protists. Protists are in essence what we call the “leftover” organisms because they include all the eukaryotic organisms, single or multi-celled, that cannot be classified as an animal, plant, or fungi. Even as early as Anton van Leeuwenhoek, who noticed these “animalcules” in pond water, we have observed their unique characteristics and been fascinated by their diversity. In this activity…see how many protists you can find.

***The microscopes for this lab have already been set up and prepared for you to view the specimens on HIGH power. You are NOT to adjust the microscopes. If the microscope is out of focus or you cannot see the specimen, let the teacher know.***

**Part 1: Become Familiar with the Protists**

1. Rotate through the stations as your teacher directs.
2. While in high power, sketch 1-3 (there may be many more but only draw 1-3 to save time) organism(s) exactly as you see them through the eyepiece. Make sure you are drawing each specimen in the correct location below. Don’t forget to include the total magnification power for each.

Euglena, \_\_\_\_\_X

Amoeba, \_\_\_\_\_X

Spirogyra, \_\_\_\_\_X

Paramecium, \_\_\_\_\_X

Volvox, \_\_\_\_\_X

1. Each of the above organisms has a unique characteristic that plays a special role for that organism. Complete the chart below using the information sheet provided by your teacher.

|  |  |  |
| --- | --- | --- |
| **Organism** | **Special Feature** | **Function** |
| Euglena | Flagellum |  |
| Paramecium | Cilia |  |
| Volvox | Colonies |  |
| Spirogyra | Chloroplast |  |
| Amoeba | Pseudopod |  |

1. In your drawings above, label one of each special feature for that particular organism. (Use a ruler to draw your line identifying the part and do not put an arrow at the end of the line.)
2. What do all of the above cells have in common?

7) Mode of Nutrition—Protists can be classified into two categories as far as their nutrition (ability to obtain energy) is concerned—AUTOTROPHS and HETEROTROPHS. The plant-like protists, predominantly referred to as algae, can create their own energy by the process of photosynthesis. Photosynthesis requires specialized organelles called chloroplasts filled with chlorophyll to trap light energy from the sun. Once that light energy is trapped, light energy can be used to break the bonds between **water** and **carbon dioxide** to convert it into **oxygen** and **glucose** (**food/energy** for the cell/organism). All algae are autotrophs because they can create their own energy.

The animal-like protists referred to as protozoa cannot create their own energy…just like you! They can only get their energy from the life process, cellular respiration, that takes place in the mitochondria of every cell. They must eat or consume other organisms and through cellular respiration, they will convert **glucose** and **oxygen** into **water**, **carbon dioxide** and **mechanical energy** that fuels all their cells. All protozoans are heterotrophs (as are you!).

Based on what you read above, create a graphic organizer or illustration to show you understand the two ways protists can obtain food/energy—be sure to include organelles, life processes and other specifics.

**Diversity of Protists Lab Quiz**

1. What did van Leeuwenhoek call protists?
   1. Amoeba
   2. Cells
   3. Animalcules
   4. Leftovers
2. Why are protists considered ‘leftovers’?
   1. Scientists didn’t know what to name them
   2. They are not really living organisms
   3. They don’t share all of the characteristics of plants, animals, or fungi
   4. They come from leftover parts of other organisms
3. What is the meaning of pseudopod?
   1. Fake parts
   2. False foot
   3. Colony
   4. Heterotroph
4. Match the special feature with its function.
   1. Pseudopod i. Used for photosynthesis
   2. Colony ii. Whip-like tail used for movement
   3. Flagella iii. Temporary foot used for movement
   4. Cilia iv. Many organisms living together for food, safety, and movement
   5. Chloroplast v. Small hairs used for movement
5. Cellular respiration refers to protozoans …..
   1. Making their own energy through photosynthesis
   2. Eating algae to get food
   3. Converting glucose (sugar) and oxygen into mechanical energy
   4. Living in water to absorb the oxygen they need

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