

## Pond Water Zoology

### Purpose

Students will observe and be able to describe that some organisms consist of a single cell and some are made of a collection of similar cells that benefit from cooperating and that whether an organism is one cell or many, it needs food, water, air, a way to dispose of waste, and an environment in which to live.

### Materials

*For the teacher:* plastic cups, pond water, chalk, chalkboard  
*For each pair of students:* copy of Black Line Master (BLM) *Pond Water Zoology* or field guide, microscope, microscope slide, eyedropper, notebook paper, pencil

### Activity

#### A. Pre-Activity Preparation

1. Collect water samples from a local pond (still body of water) or order them from a biological supply company.
2. Divide water samples into cups so that each pair of students has its own water sample.

#### B. Cell Chatting

1. Ask students what their bodies are made up of and allow students to brainstorm. (Good answers include: atoms, molecules, cells, tissues, organs, etc.)
2. Explain to students that the basic unit of life is the cell and that some organisms are made up of only a single cell.
3. Ask students if they can name any single-celled organisms (e.g., bacteria, yeast, amoeba, euglena, etc.). List student responses on the board in a column titled "Single-Celled Organisms."
4. Ask students if they can name some organisms that are made up of many cells. Create a column for multicellular organisms and list the organisms that students name.
5. Ask students what they think bacteria or other unicellular organisms need to survive. Record the students' ideas beneath the list of unicellular organisms.
6. Explain to students that multicellular organisms need the same kinds of things as single-celled organisms but their cells cooperate in order to fulfill their needs. Ask students what a multicellular organism needs to survive and record the ideas under the list of multicellular organisms.

(continued)



#### INCORPORATING TECHNOLOGY

Have students use the Internet to locate pictures of their organisms and create a slide presentation about their "pond water zoo."



#### MEETING INDIVIDUAL NEEDS

Have students who need a challenge research the various organisms they have observed and prepare a presentation for the class about how their specific organisms obtain their food, what types of environment they are found in, etc.

Standards Links  
5.1.4, 5.4.4

**Activity (continued)** 

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**C. Pond Water Zoology**

1. Review how to use a microscope with the students.
2. Show students how to prepare a slide by placing the slide on the microscope and adding a drop of pond water to the slide. Explain to students that they may need to move their slides or look at more than one drop of water to find organisms.
3. Instruct students to pair up and have each pair of students collect a microscope, microscope slide, cup of pond water, and an eyedropper.
4. Direct students to read the directions on the BLM *Pond Water Zoology* and answer any questions students may have.
5. Instruct students to carry out the activity according to the BLM's instructions. Assist students as they prepare their slides.
6. Explain to students that they may be able to observe many of the pond organisms fulfilling their needs by eating, moving about in search of food, or moving water in order to obtain oxygen.

**D. Class Discussion**

1. Ask students what organisms they saw.
2. Invite students to draw an organism they saw on the board. Using the BLM *Pond Water Zoology* or a local field guide, have the class identify the organisms on the board.
3. Have students describe how they think the identified organisms obtain food and air.
4. Ask: "Are all of the cells in a multicellular organism the same?" Explain that not all of the cells of a multicellular organism do the same thing. Instead, some are responsible for acquiring food, some for digesting the food, some for disposing of wastes, etc. A unicellular organism must do everything with just its single cell.

**Questions for Review** 

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**Basic Concepts and Processes**

During the discussion and while students are observing their pond water samples, ask students the following questions:

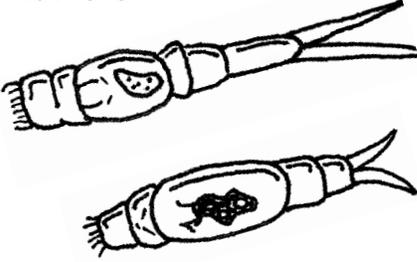
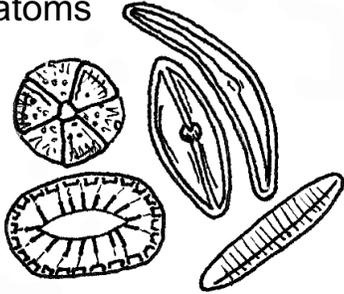
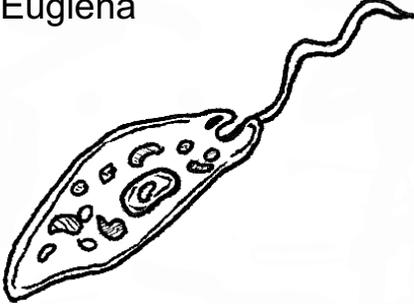
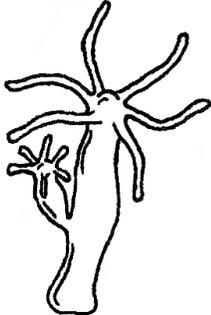
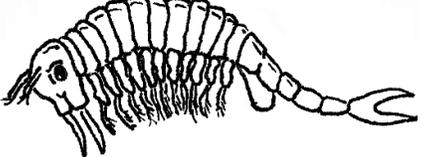
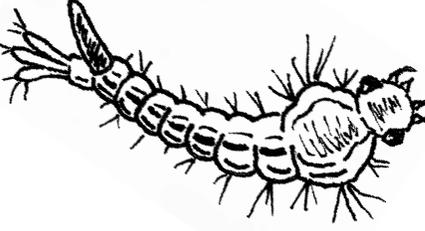
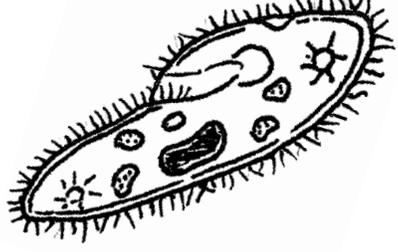
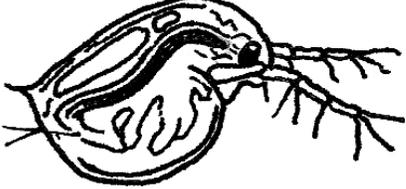
-  What is the basic unit of life?
-  What do all organisms need to survive?
-  Is that organism single-celled or multicellular?
-  How can you tell?
-  Do unicellular and multicellular organisms need the same things?
-  How do you know?

Name: \_\_\_\_\_

# Pond Water Zoology

Directions: Record the following information on a separate sheet of paper.

- 1) Study the diagrams below of organisms you might see in the pond water.
- 2) Locate, observe, and draw five different organisms you see in the pond water.
- 3) Label each organism as unicellular or multicellular.
- 4) List how you think each organism obtains its food, water, and air.

<p>Amoeba</p> 	<p>Rotifers</p> 	<p>Diatoms</p> 
<p>Euglena</p> 	<p>Hydra</p> 	<p>Fairy Shrimp</p> 
<p>Spirogyra</p> 	<p>Mosquito Larvae</p> 	<p>Paramecium</p> 
<p>Water Flea</p> 		

# Pond Water Zoology

## Teacher Directions

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1. Review how to use a microscope with the students.
2. Model preparing slides of pond water.
3. Direct students to read through the BLM. Answer any questions students may have.
4. Assist students as they prepare their slides.
5. Allow students sufficient time to look at their pond water samples and record their data.
6. Explain that students may be able to observe many of the pond organisms fulfilling their needs by eating, moving about in search of food, or moving water in order to obtain oxygen.

## Answer Key

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Answers will vary depending on the organisms students find in their water samples. Some of the organisms students might see are described below.

<b>Amoeba</b> Unicellular, engulfs other smaller unicellular organisms, obtains oxygen directly from the water by diffusion.	<b>Rotifers</b> Multicellular, uses “halo” of fine hairs to wave food particles into mouth.	<b>Diatoms</b> Unicellular, photosynthesizes to make food, obtains oxygen directly from the water by diffusion.
<b>Euglena</b> Unicellular, photosynthesizes to make food, obtains oxygen directly from the water by diffusion.	<b>Hydra</b> Multicellular, uses tentacles and stinging cells to catch smaller organisms, obtains oxygen directly from the water by diffusion.	<b>Fairy Shrimp</b> Multicellular, eats algae and bacteria in the water, breathes by pumping water over its gills.
<b>Spirogyra</b> Unicellular but may form long chains, photosynthesizes to make food, obtains oxygen directly from the water by diffusion.	<b>Mosquito Larvae</b> Multicellular, eats smaller organisms, obtains oxygen directly from the water by diffusion.	<b>Paramecium</b> Unicellular, engulfs other smaller unicellular organisms, obtains oxygen directly from the water by diffusion.
	<b>Water Flea</b> Multicellular, eats algae and bacteria in the water, breathes by pumping water over its gills.	