Observing Pond Water

Many tiny organisms live in pond water. Using a magnifying glass and a microscope, you will see tiny single-celled protists that are plant-like because they make their own food. You will also see some single-celled protists that are animal-like because they hunt and gather other organisms for food. You will also see algae, which look like long chains of cells that contain chloroplasts. Algae belong to the Kingdom Protista. As well, you will see small organisms, such as water fleas, insect larvae, copepods, and hydra that belong to the Kingdom Animalia. Figure 1, on the next page, shows some of the organisms you may see in pond water.

You will see that these organisms move in many ways. Some micro-organisms, such as Euglena and Volvox, move by whipping a tail called a flagellum [fluhl-JELL-um]. Paramecia are covered with tiny hairs, called cilia [sill-EE-uh], that wave back and forth to move. Other pond organisms, such as the hydra, can glide or somersault along using tentacles. Water fleas appear to hop along.

In this investigation, you will observe organisms in pond water, using different degrees of magnification. You will also observe the movements and feeding behavior of these organisms. Use Figure 1 to identify some of the organisms you see.

Question
What organisms can you observe in pond water?

Materials
- apron
- pond water in white container (such as a margarine container)
- small petri dish
- eyedropper
- microscope
- slide and cover slip
- magnifying glass
- paper towels

3.3 Conduct an Investigation

Remember to carry the microscope using both hands, and to adjust the focus and carry the slides carefully.
Procedure

1. Copy the following table in your notebook. Record all your observations in your table.

<table>
<thead>
<tr>
<th>Method of observing (naked eye, magnifying glass, microscope)</th>
<th>Drawing of organism and name</th>
<th>Description of structure</th>
<th>Movement</th>
<th>Feeding behaviour</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2. Look at the container of pond water. Draw all the organisms that you see and, if possible, write their names in your table. Record details about their structure, movement, and feeding behaviour.

3. Use an eyedropper to pick up any organisms that you cannot see clearly and transfer the organisms to a small petri dish. Put the petri dish on a piece of white paper. Use a magnifying glass to make your observations. Record your observations in your table.

Figure 1

- Hydra
- Paramecium
- Water flea
- Amoeba
- Copepod
- Mosquito larva
- Spirogyra
4 Use the eyedropper to place one drop of pond water on the centre of a slide. Touch a cover slip to the slide at a 45° angle. Gently lower the cover slip, being careful not to trap any air bubbles.

5 Place the slide on the stage of a microscope. Look for organisms using the low-power lens. If you find organisms that are too small to see clearly, try looking at them using the medium-power lens. The high-power lens is usually not useful for observing pond water organisms, but you can try it.

6 Draw all the organisms you see and write the observations in your table.

7 Wipe your slide clean with a paper towel. Repeat steps 5 and 6 to look for other organisms.

8 Dispose of your slide as directed by your teacher. Wash your hands.

**Analyze and Evaluate**

1. How many organisms were you able to identify using only your eyes? Using a magnifying glass? Using the low-power lens of a microscope? Using the medium-power lens? Did you see any organisms using the high-power lens?

2. How did the magnifying glass and microscope help you with your observations?

3. What do you think you would be able to see if you used a more powerful microscope?

**Apply and Extend**

4. Medical lab technicians use microscopes to observe blood samples. Why would a technician need to use a microscope with a high magnification?

5. Can you think of other jobs for which a microscope would be a valuable tool? Explain your thinking.

6. How has the microscope increased our understanding of the diversity of life that exists on Earth?

**CHECK YOUR UNDERSTANDING**

1. In this investigation, you had to be careful when recording your observations. How could your conclusions about magnification be affected if your observations were not accurate and detailed?