Name Date Class

INVESTIGATE BioLab

Chapter 3

Succession in a Jar

PREPARATION

Problem

Can you observe succession in a pond water ecosystem?

Objectives

In this BioLab, you will:

- **Observe** changes in three pond water environments.
- **Count** the number of each type of organism seen.
- **Determine** if the changes observed illustrate succession.

Materials

small glass jars, 3
pasteurized spring water
pond water containing plant material
labels
glass slides and cover glasses
droppers
plastic wrap
cooked white rice
teaspoon, plastic
microscope

Safety Precautions

CAUTION: ***Use safe practices. Always wear goggles during this lab.***

Skill Handbook

Use the **Skill Handbook** if you need additional help with this lab.

PROCEDURE

1. Examine the pond water sample provided.
2. Label the jars *A*, *B*, and *C*. Add your name and today's date to each label. Fill the jars with equal amounts of sterilized spring water.
3. Add the following to each of your three jars:
   Jar *A*: Nothing else
   Jar *B*: 3 grains of cooked white rice
   Jar *C*: 3 grains of cooked white rice, one teaspoon of pond sediment, and a small amount of any plant material present in the pond water.
4. Gently swirl the contents of each jar. Record the cloudiness of each jar in the data table on the next page. Score cloudiness on a scale of 1 to 10, with 1 meaning very clear water and 10 meaning very cloudy water.
5. Label each glass slide *A*, *B*, or *C*. Using a different clean dropper for each jar, prepare a wet mount of the liquid from each jar.
   CAUTION: ***Handle glass slides, coverslips, and glassware carefully.***
6. Observe each sample under low power. Identify autotrophic and heterotrophic organisms by name and either describe their appearance, or make a sketch of each one.
7. Report the number of each type of organism.
8. Complete the data table for your first observations.
9. Cover each jar with either a lid or plastic wrap and place them in a lighted area.
10. Observe the jars every three days for several weeks, repeating steps 4–9 each time an observation is made. Collect data precisely.
11. **Cleanup and Disposal** Ahead of time, determine wise choices for disposing of these materials at the end of the investigation.
    CAUTION: ***Wash hands thoroughly with soap at the end of the lab and cleanup.***

INVESTIGATE BioLab

Succession in a Jar, *continued*

Sample Data

Date	Jar	Cloudiness	Name, description, or diagram of organism seen	Autotroph or heterotroph?	Number seen per low power field
	A				
	B				
	C				
	A				
	B				

Analyze and Conclude

1. **Applying Concepts** Which jar was a control? Explain why.

2. **Observing and Inferring** What is the role of the cooked rice?

3. **Recognizing Cause and Effect** Why was there little, if any, cloudiness in jar *A*? What caused it?

4. **Analyzing Information** Describe the changes over time in the number and type of heterotrophs. Was this succession? Primary or secondary? Explain.

5. **Observing and Inferring** Why would you say you had NOT observed a climax ecosystem during this experiment?

6. **Error Analysis** Describe other variables that could have affected the outcome and how these could be controlled.