BIO FAX!

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Glue Monsters—Are They Alive?

Characteristics of Life Activity

Introduction

Create a "critter" in an instant by adding modeling glue to water. Feed the glue monster, watch it move, and observe its behavior!

Biological Concepts

- Characteristics of life

Materials

Petri dish (top or bottom)
Modeling glue (Duco® cement modeling glue)
Wood pencil
Pencil sharpener or knife to make shavings
Construction paper
Overhead projector
Tap water

Safety Precautions

Vapors from modeling glues are very caustic and breathing the vapors should be completely avoided. Most modeling glues are extremely flammable; keep away from open flames. Please follow all laboratory safety rules and also review relevant Material Safety Data Sheets before beginning the activity.

Procedure

1. Place one-half of a Petri dish on an overhead projector.
2. Fill the Petri dish about one-half full with tap water.
3. Release a "critter" into the Petri dish by adding one small drop of modeling glue to the surface of the water. (Using a pipet to dispense the glue will hide the source of the "critters" from the students.)
4. Prepare some "critter food" ahead of time so that students will not be aware of the actual source of the food. Make the food by shaving small particles of wood and graphite from the tip of a wood pencil. Sprinkle a small amount near the "critter" during the demonstration.
5. The "critter" should start to move in an amoeboid fashion. It will move toward the wood shavings and "eat" them.
6. Add additional "critters" and watch them interact with each other.
7. When the "critters" stop moving and "die," shut off the projector and discuss what has been observed. Consider all the behaviors that made the glue monsters seem alive.

Disposal

Flush the glue and water mixture down the drain with an excess of water according to Flinn Suggested Disposal Method #26b. Wash glass Petri dishes with soap and water. Disposable plastic Petri dishes may become etched from the glue and may be disposed of in the garbage. Please consult your current *Flinn Scientific Catalog/Reference Manual* for proper disposal procedures.

Teacher's Notes *continued*

Tips

- It is important to practice all demonstrations prior to doing them for an audience. Rehearse your movements and timing. Determine a way to hide the starting materials from students so they believe the "critters" are actually living organisms. Consider wrapping tape or paper around the glue container. Ham it up and be dramatic as you release your "baby" organisms into the Petri dish.
- The glue needs to be dispensed at the beginning of the demo—it cannot be set up ahead of time. The reaction only lasts a few minutes.
- Fresh glue will work much better than old glue since it tends to be less tacky and therefore forms small droplets with ease. We found that the Duco cement modeling glue, Flinn Catalog No. AP6851, was the only glue that worked for this activity.

Discussion

Since biology is literally the study of life, the first day of biology class is often spent considering very basic questions. What are the characteristics of life? What does it mean to be alive? How do you know if something is alive? Typical properties or behaviors often considered when analyzing for the presence of life include:

1. the presence or absence of movement, i.e., independent motion.
2. a changing shape or other interactions with the surrounding environment.
3. growth, an increase in size, or the assimilation of materials.
4. response to a variety of outside stimuli.
5. breathing, eating, or other evidence of interactions for accumulating materials from the environment.
6. excretion of waste materials into the environment.
7. reproduction or replication of the organism. Of course, no one visual observation can serve as proof of a living system. Defining life in a precise fashion can become a philosophical issue as well.

The "glue monsters" demonstration is a terrific attention-getter on the first day of class. It can also be a very effective demonstration leading to a lively discussion of the characteristics of living organisms. Class discussion should center on the characteristics we attribute to living things and how many of the attributes were displayed by the "glue monster."

Connecting to the National Standards

This laboratory activity relates to the following National Science Education Standards (1996):

Unifying Concepts and Processes: Grades K–12
Evidence, models, and explanation
Constancy, change, and measurement
Content Standards: Grades 5– 8
Content Standard A: Science as Inquiry
Content Standard C: Life Science, structure and function in living systems, regulation and behavior
Content Standards: Grades 9–12
Content Standard A: Science as Inquiry
Content Standard C: Life Science, behavior of organisms

Materials for *Glue Monsters—Are They Alive?* are available from Flinn Scientific, Inc.

Catalog No.	Description
GP3019	Dish, Culture Petri, Borosilicate Glass
AP1718	Beral-type Pipets
AP6851	Duco® Cement

Consult your *Flinn Scientific Catalog/Reference Manual* for current prices.

