

Moldy Jell-O Teacher Prep Notes

Equipment and Supplies:

3 oz. Dixie cups (minimum of 4 cups per group)
clean Q-tips for transferring mold
plain gelatin powder (contains protein)
orange Jell-O powder (contains similar protein plus sugar and flavoring)
sugar
aluminum foil to cover cups and keep out light
plastic wrap to cover cups
rubberbands to hold plastic wrap
mold from bread, cheese, etc. (Have students bring some from home if possible.)
Sharpies (markers for cups)
Magnifying glasses to observe mold (1 or 2 per group)
Posterboard (1 per group)
Poster Markers (several per group)

Teacher Preparations:

1. A few days before the beginning of the lab have students bring some mold from home if possible.
2. Before the first lab day prepare a sufficient number of Jell-O cups, following the directions on the package, but making double strength Jell-O to avoid excessive liquefaction at room temperature, especially as the mold grows. Fill each cup approximately 2/3 full, place them on a tray, cover the tray with plastic wrap to prevent contamination from airborne fungal spores, and place them in the refrigerator until they are needed. You will also want to have some Jell-O available as a powder in case some students want to test differences in mold growth on substances that do or do not include water. If you expect some of your students to test differences in mold growth between protein and protein with sugar prepare the appropriate number of protein only cups (plain gelatin). To make a protein only medium add two cups of boiling water to one packet of gelatin.

On Laboratory Day 1, you will need the prepared Jell-O and gelatin cups and the supplies listed, except for the last two items. In reviewing the students' experimental designs, encourage each group to include at least one condition in which mold growth is likely to occur. The students should use Q-tips to apply similar amounts of mold to each cup. Then, if appropriate, the students should cover each cup with plastic wrap secured with a rubber band. Once the students have decided how they will record mold growth, they should make an extra datasheet that should be posted in the classroom near the Jell-O cups where the students can make their measurements and record their observations over the week. When the groups reconvene on Laboratory Day 2, the data can be copied onto each student's individual data sheet.

3. Students should take data on the mold's growth daily until the second lab day, at least 5 days after the first lab day. On the second lab day, in addition to the mold growth cups and magnifying glasses, have the markers and poster board available for presentations.

Information for Interpreting Results

Molds grow best when both carbohydrates and protein are available, but this difference is not always easily observable, in part because students often transfer some sugar-containing food together with the mold when they inoculate their cups.

The Jell-O will tend to become liquid as the growing mold secretes enzymes that digest the protein matrix of the Jell-O.

Teaching Points:

Day 1

- Fungi do not photosynthesize, so they cannot make their own food.
- Molds reproduce by spores that are light enough to float in the air.
- Experimental design, including the concept of a control and why they have to plan to have a pair of experimental conditions that differ in only one characteristic, as well as why replication is needed

Day 2

- Have the students interpret results, including both similarity/difference between replicates within each condition (reminding them of the reason replicates are needed), as well as differences in mold growth related to differences in experimental conditions.
- If there is time, summarize experimental results on a succinct poster for sharing.
- Best conditions for storing food, based on their results and additional information (if possible from other groups in their class)