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Laboratory Activity: Mold Mechanobiology

Grade Level: 6

Time Frame: 5 Days

Objective: Students will understand how physical forces like pressure, surface texture, and airflow can affect mold growth and spore production.

Required Preparation: For demonstration, create an example of mold using bread and fruit.

Materials:

- Slices of bread and/or fruit slices (Gluten-free bread?)
- Petri dishes or paper plates
- Gallon plastic bags
- Paper towels, gelatin, and sandpaper to create different surface textures
- A small fan or straws for airflow
- Microscope
- Science Journal
- Gloves

Vocabulary: Spores, mechanical forces, mold, hyphae

Introduction (10 minutes)

Ask students to create a chart with three columns (or provide students with a pre-made chart). Label the first column “Know,” the second column “Want to Know,” and the third column “What I Learned.” Tell students the topic is Mold. Ask them to complete the first two columns by sharing what they already know about mold and what they want to learn about it.

If they have not asked the question, prompt students to consider how they think mold grows and spreads. Explain that molds are living organisms that need the right

conditions to grow and spread, including food, water, and the right environment. Introduce the idea that, similarly to how humans feel the wind or pressure, mold can “sense” mechanical changes in its environment, which affects its growth and spore production.

Demonstration (5 minutes)

Show students your pre-made example of mold and explain how it grows using hyphae (thread-like structures) to spread across surfaces and release spores to reproduce. Show an image of mold growth.

Experiment (30 minutes)

Divide the class into small groups and assign different variables for each group to test how mold grows under different mechanical conditions.

- **Group 1:** Mold growing on soft surfaces (gelatin, paper towel) vs. hard surfaces (sandpaper, plastic)
- **Group 2:** Mold growing with still air vs. a light breeze (using the small fan)
- **Group 3:** Mold exposed to gentle pressure (weight of a book) vs. no pressure
- **Group 4:** Control group; mold growing

Over the course of 5 days, students will observe the mold growth in their containers. Using a microscope, students should record the differences in growth patterns, how quickly the mold spreads, and the amount of mold spores produced under certain conditions in their journals.

They should record things like:

- How fast the mold appears in each setup
- The amount of mold growth (find the area?)
- Noticeable differences in color and texture

Students will compare the growth of their control group with their test conditions.

Reflection and Conclusion (10 minutes)

Ask students to complete the last column in their KWL chart, created on the first day. Have students share what they learned.

Optional Extension Activity:

Have students create a short presentation or poster based on their experimentation results, explaining how the mechanical forces they tested impacted mold growth and spore production.

Pose the following questions for them to include in their presentation:

- Which surface did the mold grow better on? Why do you think that happened?
- How did the airflow or pressure change the way the mold spread or the number of spores you observed?
- What other mechanical forces could we apply to this experiment to change the way mold grows or reproduces?
- What are some other living things that are influenced by mechanical forces?

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