ForsythTeens

At Home Science Experiments

BIOFILM GROWTH and CONTROL

Grade Levels: Middle and High School

Biofilms are a collective of one or more microorganisms that can grow on many different surfaces. Microorganisms that form biofilms include bacteria, fungi, and protists. One common example of biofilm, dental plaque, is a slimy buildup of bacteria that forms on the surfaces of teeth. Pond scum is another.

In this experiment you will design an apparatus to collect biofilm from a body of water. Then, you will coat plastic surfaces with different substances to see if it will decrease the amount of biofilm growth.

You will need to find a body of water in which to place the apparatus you make. The apparatus will need to remain submerged for two full weeks. If you don't have a pond nearby with permission to use it you can recreate your own pond. Place two shovels full of dirt into a large plastic garbage can then fill it with water. You will need to let this sit for at least a week before starting your experiment, so the organisms in the soil have time to take up housekeeping in their new home.

Materials

- Clean empty soda bottles
- Single hole punch
- Scissors
- Twine or rope
- Rubber bands
- Weights (rocks/pebbles)
- Large plastic jug
- Substances to coat plastic; (paint, oil, red hot sauce, vaseline, etc)
- Foam brushes

Procedure

1. Write a formal hypothesis predicting what substance will inhibit the bacterial growth the best
2. Create a ladder of 5 rungs using the plastic soda bottles
3. Coat 4 of the rungs with substances chosen; 5th rung (top) should act as control
4. Draw a diagram of your ladder and document the substances used
5. Weight the ladder so it will stay submerged
6. Attach the ladder to the large plastic bottle
7. Submerge the ladder into the water
8. After two weeks remove the ladder from the water gently
9. Compare and record the amount of biofilm on each rung

Questions

1. Can biofilm be controlled?
2. Can coating a surface control biofilm growth?
3. How might the depth of the water we are using affect the design of the ladder?
4. Is it important to keep size of rungs and distance in between equal?

Inspiration from httpp://thehomeschoolscientist.com/biofilm-experiment/#.VIO2NckzCMQ