Winogradsky Column Protocol

1. Measure the column to the bottom of the cap (see dashed line). Use centimeters!

How tall is the column: ______ cm

Draw a line on your column 1/3 and 2/3 of the way up.

2. Fill column to 1/3 line with the sediment with the special ingredient. Use a funnel to help you fill!

3. Fill column the rest of the way with sediment to the 2/3 line. Tap the bottle on the lab bench to settle the sediment.

4. Now you need water — but you still need to leave enough air in the column for the aerobic microbes.

Measure the remaining space and divide in half — mark this line.

5. Add water to your column up to that line.

6. Cap the bottle, leaving the cap slightly loose. If your bottle does not have a cap, cover it with plastic wrap and tape it to seal.

7. Take a photo of the bottle to record its appearance.

8. Measure & describe the sediment, water and air. Count air bubbles & measure the 10 largest. Look for the presence of animals (worms, snails, larvae)
Name:

Ingredient:

Follow the Winogradsky Column protocol to set up your column.

1. **Background** (your sediment / water): Write down three facts about the microbial communities in soil / water
   
   1.1

   1.2

   1.3

2. **Background** (your ingredient) (Y/N):
   
   2.1 Can microbes use your ingredient as food?
   2.2 If yes, is this food easy or hard to decompose?
   2.3 Can your ingredient inhibit microbes?
3. Predictions: Our hypothesis is that sediment chemistry affects the microbial community, including what can grow and how much respiration there will be.

3.1 If the hypothesis is correct, what do you predict will happen to each of the following microbial communities compared to the control? Will the zone be bigger or smaller?

- (green zone 1) Aerobic photosynthetic microbes:
- (purple zone) Purple sulfur bacteria:
- (green zone 2) Green sulfur bacteria:
- (black zone) Sulfur-reducing bacteria

3.2 WHY did you make these predictions?

3.3 If the hypothesis is correct, what do you predict will happen to the respiration of the overall microbial community (indicated by the number of bubbles formed)?

4. Results (complete after recording September data):

Were your predictions supported? Why or why not? Was anything surprising about the results?
**Winogradsky Column Protocol**

<table>
<thead>
<tr>
<th>Week 0 (date = )</th>
<th>Week 1 (date = )</th>
<th>Week ___ (date = )</th>
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**Table of observations.** Measure any layers in the sediment and water *(use cm!)*. **Describe** colors of layers. Loosen the bottle caps, smell the column, and **describe** any odors. **Count** the air bubbles present in the soil (on your line). **Count** the number of air bubbles that come to the surface of the water in **1 minute**. **Measure** the largest 10 bubbles (if there are any).
Winogradsky Column Protocol

Draw your column:

Week 0 __________________ Week 1 __________________ Week ____ (date):