**AICE Biology: Wild Bacteria and Microorganism Lab**

**Purpose:** To compare wild bacteria and other microorganisms collected from various locations at GHS.

**Materials:** Pre-poured nutrient agar plates, swabs, test tubes, incubator, marking pens

**Hypothesis:** What part of school do you think will be the germ-iest? Explain WHY in complete sentences.

**Procedure:** You and your lab partner are going to collect wild bacteria samples from around GHS campus. You will be collecting two unique samples for comparative purposes. For each sample, complete the following:  
 1. Obtain two sterile swabs and plastic test tubes.  
 2. Put each sterilized cotton swab in a tube and parafilm over it until you are ready to   
 take your sample (you will need to keep the parafilm for transport back to class)  
 3. Repeat 1-2 for other sample.  
**Sampling:**  
 1. Select locations that you think will be rich in microbial life.  
 2. Swab the location with the damp swab, and place the swab back in the tube. Try not   
 to collect a lot of debris with the sample.  
 3. Once collected, cover the swab and top of the tube with your parafilm.  
 4. You may collect ONE sample from the body (mouth/ behind the ear/ under the   
 fingernail. **No gross body places/open wounds/your throat if you’re sick PLEASE**)  
**Prepping your plate:** 1. You will be using *aseptic technique.*    
 2. Carefully label your plate with where you collected your sample and your   
 names.  
 3. Your petri dishes have been stored upside down to prevent condensation from   
 forming on the agar. Swab upside down as well, being careful not to breathe on or   
 touch the plate.  
 4. Re-cover your plates and store them upside down in the incubator.

*Paxson will keep a control plate to check how aseptic her work was as she poured the plates.*

**Wild Bacteria Lab, Day 2**

**Materials:**

Bunsen burner, hose, wire loop, prepared petri dishes, bacterial cultures

**Procedure:**

1. Remove plates from the incubator and set up a data table to record what you see. Include a detailed drawing of bacterial distribution as well as written observations on colony thickness, colour, etc.
2. Using aseptic technique, fire your loop.
3. **Allow the loop to cool**, then select one colony to isolate onto your antibiotic test plate.
4. Select two antibiotic and one control disk to place on your plate over your bacterial smear. Record which disks and code a small label beneath each disk.

**Data: Pre-Antibiotic Treatment**

|  |  |
| --- | --- |
| **Drawing** | **Description** |
|  |  |
|  |  |
|  |  |

**Wild Bacteria Lab Analysis and Conclusions**

**Data:**  
Record drawings of your plates, being sure to label them with the location sampled.

Look at the 2 prepared plates by Paxson with air sampling. Draw these plates and clearly indicate the sampling location.

**Results:**  
Describe what happened in complete sentences. Which of your locations was the “dirtiest”? What appeared on the plates that were just left in the air? What does this tell you about the transmission of microorganisms?

**Conclusion questions. Answer all in complete sentences and *explain*:**  
1. Using your textbook and any internet resources you may have access to, try to identify at least two microorganisms on your plates. What do these organisms do and do they pose any threat to humans?  
2. What about antibiotics causes them to inhibit bacterial life and why don’t antibiotics work on viral infections?  
3. What dangers are posed by antibiotic resistance? How does this resistance develop?