**Distribution of Bacteria Lab**

Date: Name:

Bacteria are everywhere! Unless you get an infection or grow them on a specially prepared medium, such as an agar plate, you might not be aware of them. When grown on an agar plate, they produce colonies. These eventually become large enough to see with the unaided eye. The nature of these colonies can help you to identify certain kinds of bacteria. In this investigation, you will be observing some of the growth forms of various bacteria and noting their presence on various surfaces. You will then perform a Gram staining procedure. When culturing bacteria from unknown sources, do not open the culture dish once the colonies are apparent.

**Objectives**: - To observe the distribution and variety of bacteria in the environment.

 - To determine if your bacteria is Gram positive or Gram negative.

**Materials**: 2 sterile dishes with nutrient agar glass marking pencil distilled water

 coin beaker cotton swabs

 incubator (optional) eraser 50 mL beaker

**Procedure and Observations**:

1. Obtain two sterile dishes with agar. With the wax pencil divide the bottom of each culture dish into quarters. On one plate, label sections A through D. Label the sections of the other plate E through H.
2. Turn the dishes right side up. Remove the lid of the first dish. Softly touch your finger to section A. Lightly rub a pencil eraser across the surface of section B. Lightly press a coin to section C. Leave section D blank. Close the lid. Tape the lid shut and invert the dish.
3. Clean a 50 mL beaker and fill it half full with distilled water. Use a sterile end of a cotton swab to dip in the distilled water then rub the surface of your choice (your cell phone screen, your desk, your belly button, door handle, toilet flush handle, your friend's beard, etc) and then gently rub the cotton swab onto section E of your plate. Repeat using a different surface (and different cotton swab) on sections F and G. For section H, use the cotton swab in the distilled water only. Tape the lid shut and invert the dish.
4. Tape both dishes together, write your names on it, and place them together UPSIDE DOWN in the incubator. Incubate for two to four days.
5. Observe the results of your bacteria cultures and complete table 1. Answer discussion questions #1-5.
6. Perform a **Gram stain** on your most obvious bacterial colony. Answer discussion question #6.

Table 1. Bacterial Cultures.

|  |  |  |
| --- | --- | --- |
| Section | Source | Description |
| A |  |  |
| B |  |  |
| C |  |  |
| D |  |  |
| Section | Source | Description |
| E |  |  |
| F |  |  |
| G |  |  |
| H |  |  |

**Discussion Questions: (You must answer in COMPLETE sentences!)**

1. What was the function of sections D and H in the two culture dishes? Explain why it is important that no bacteria should grow in these sections.
2. Describe any evidence that organisms other than bacteria were present on your plates. Explain.
3. When looking at your plate, how many different types of bacteria did you detect? What evidence did you use to determine that these were different from each other?
4. What surfaces seemed to have the most bacteria on them?
5. If some of the bacteria on various surfaces happened to be pathogenic (disease causing), how might their spread be reduced?
6. Describe the form of your bacteria sample on your microscope slide. Was your bacteria Gram positive or Gram negative? How do you know?