NUTR 35. 210 **LABS 5 and 6**

OBJECTIVE: To collect, grow, and interpret bacterial cultures found in commonly used spaces.

Bacteria are microorganisms that grow everywhere. We can collect and grow them in specially prepared petri dishes. The agar in the petri dish is an excellent medium for supplying bacteria with nutrients and an environment in which we can see them grow. Agar is a gelatin like substance with a semi solid surface on which the bacteria can grow while they consume the added nutrients (like sheep's blood).

CAUTION. *Most bacteria collected in the environment will not be harmful. However, once they multiply into millions of colonies in a petri dish they become more of a hazard. Be sure to protect open cuts with rubber gloves and never ingest or breathe in growing bacteria. Keep growing petri dishes taped closed until your experiment is done. Then you should safely destroy the fuzzy bacteria colonies using bleach.*

Procedure:
Use a moist, sterile swab to collect bacteria from your groups designated location. Swabs can be run over doorknobs, bathroom fixtures, drinking fountains, etc. Once you have collected your sample, put your swab in a sealed, plastic bag and bring it back to lab. Here you will streak your petri dish with your sample with a zig zag pattern across the entire agar surface. Do not forget to label the outside of your petri dish with your names, date, and where you collected your sample. Samples will be incubated for 24-48 hours to allow the bacteria to grow. They will then be put in a refrigerator until the next class period.

What you need:

- Prepared petri dishes containing agar medium and nutrients.
- Bacteria collected from doorknobs, bathroom fixtures, etc. As a class we will decide where each group will make their collection.
- Wax pencil for labeling petri dishes.
- Masking tape
- Sterile swabs

What to do:

1. Moisten your swab in lab and then go out and collect bacteria from your location using one swab. Place your swab in a plastic bag to return it to lab.
2. Return to lab and inoculate each dish by streaking a pattern gently across the entire agar surface without tearing into it.
3. Replace cover on dish, tape closed, and label each dish so you know the source of the bacteria. Store upside down.
4. Let grow in undisturbed warm location for 24-48 hours, ideally in an environment around 100° F (37° C) - not in sunlight or on a heating register.
5. Your lab instructor will move the petri dishes to a refrigerator after 24-48 hours.

Lab report (Please type the final report)

Introduction:
Your introduction should include a short title for this lab.

You also need a discussion of why this lab is important, what you hope to learn from it, and what the information gathered can be used for.

Materials and Procedures:
This section should include a list of any materials or supplies you used to complete this lab.

You also need to include a Step by step description of what you did during this lab.

Results and Analysis:
You will need to draw what your petri dish looked like (Petri Dish One, see below)

You will need to draw the petri dish that you feel has the most bacteria and the least (Petri Dish Two and Three, see below).

Conclusions:
You will need to summarize the main findings and analyze what the results are telling you. Make sure to discuss the bacteria growth Petri Dishes 1-3. Describe the bacteria- comment on the amount of bacteria, color, consistency in the growth pattern, how many different types of bacteria seem to be growing, etc. Also, comment on why you think the bacteria grew as it did based on where the sample was taken from and if you were surprised by the results.

Conclusions Part 2

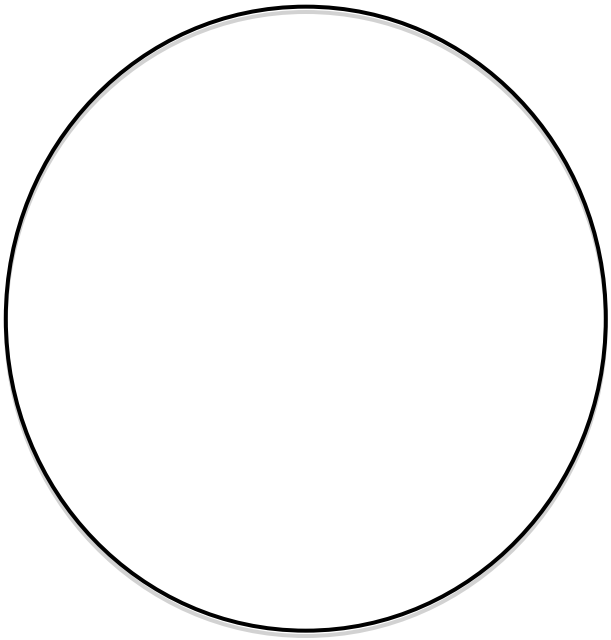
a. List one specific example of a disease caused by bacteria.

b. What bacterium is responsible for this disease?

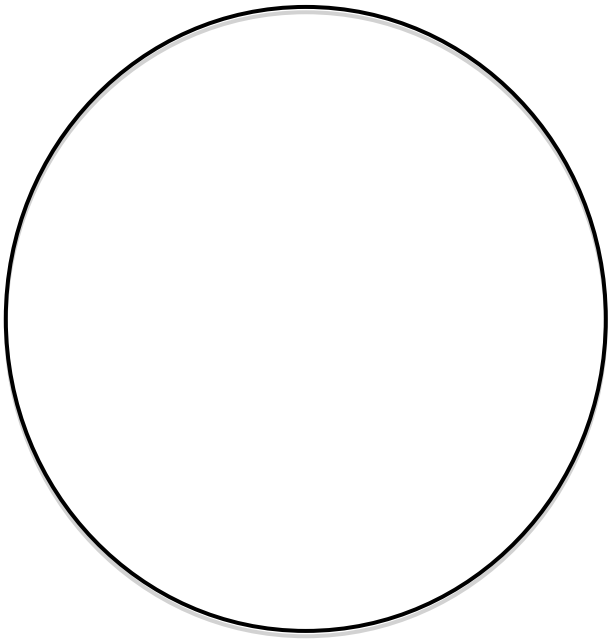
c. How is this bacteria passed from one individual to the next? (route of transmission)

d. What measures can be used to prevent the transfer of these bacteria?

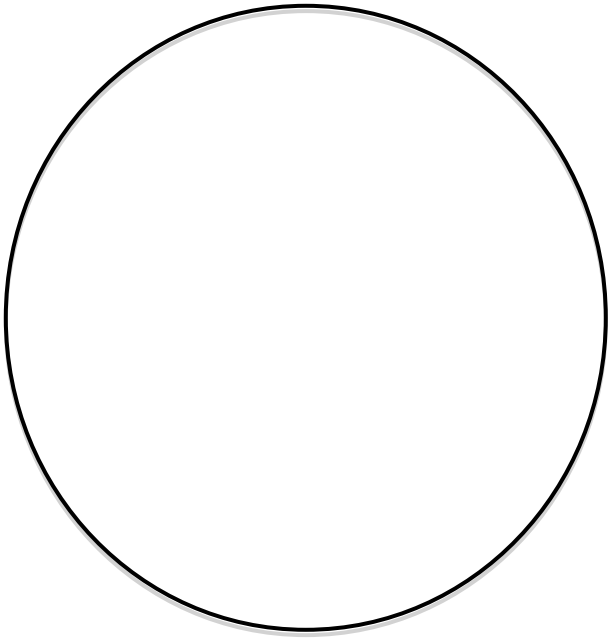
Petri Dish One (your sample): Sample taken from _____



Petri Dish Two (most bacterial growth): Sample taken from _____



Petri Dish Three (least bacterial growth): Sample taken from _____



Instructor Signature_____

	Excellent (3 pts)	Good (2 pts)	Adequate (1 pts)	Needs Work (0.5 pt)	Not attempted (0)
Introduction	Includes the question or purpose to be answered by the lab, states the reason why this is important and has a short, relevant title.	One of the "excellent" conditions is not met, two conditions met	Two of the "excellent" conditions is not met, one is met	Introduction present, no exemplary conditions met	
Materials and Procedures	Description or step-by-step process is included, could be repeated by another scientist	Description included, some steps are vague or unclear	The description gives generalities, enough for reader to understand how the lab was conducted	Would be difficult to repeat, reader must guess at how the data was gathered or lab was conducted	
Results and Analysis	Results and data are clearly recorded, organized so it is easy for the reader to see trends. All appropriate labels are included	Results are clear and labeled, trends are not obvious or there are minor errors in organization	Results are unclear, missing labels, trends are not obvious, disorganized, there is enough data to show the experiment was conducted	Results are disorganized or poorly recorded, do not make sense; not enough data was taken	
Conclusions	1. Summarizes data used to draw conclusions 2. Conclusions follow data (not wild guesses or leaps of logic), 3. Discusses applications or real world connections	2 of 3 of the "excellent" conditions is met	1 of 3 of the "excellent" conditions is met	Conclusion section is present but no conditions are met	
Conclusions part 2	Answers all additional questions required correctly.	Answers 2 or 3 additional questions correctly.	Answers 1 of 3 additional questions correctly.	Attempts to answer questions but none are correct.	