Case Study 1: Aseptic Technique

Part 1: This first part of your case study will introduce you to the concept of Aseptic Technique. This is the process of growing desired microbes while avoiding contamination. Each member of the group should complete the follow individually and email it to me.

When you are in the lab two important points to remember about aseptic technique are:

- Keep your workbench clean. You should disinfect it immediately upon entering the lab, as well as after you are done with all of your exercises for the day.
- If you spill samples in your work area you should always disinfect immediately following the disinfection protocol. This will typically involve spraying the lab bench with the disinfection solution (bleach, alcohol, etc), allowing it to sit for the appropriate amount of time (typically 2 - 5 minutes), and then wiping down the area.
- ALWAYS Sterilize the loop before obtaining sample and before leaving the lab.
- ALWAYS Heat the mouth of the tube after removing the cap and before replacing it.

Step 1. Click HERE to watch a live demonstration of how to perform culture media inoculation using aseptic technique. This culture medium is inoculated using the Streak Plate Method. It is the most important method for isolating bacteria and obtaining pure culture.
After you watch the video respond to the following scenarios.

1. You were supposed to obtain the results picture in Figure . However, you obtained the results featured in Figure B. Explain why what might have happened during the plate inoculation process to produce very little growth over most of the plate in Figure B? How might you correct this error? (5pts).

Figure A Figure B

Figure A

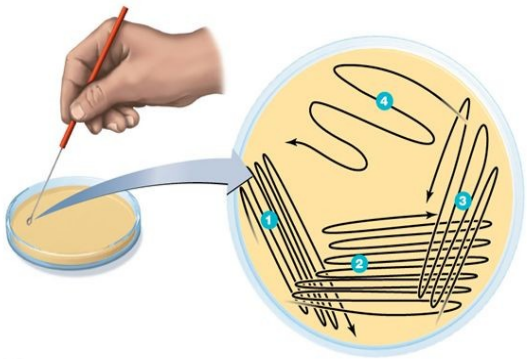
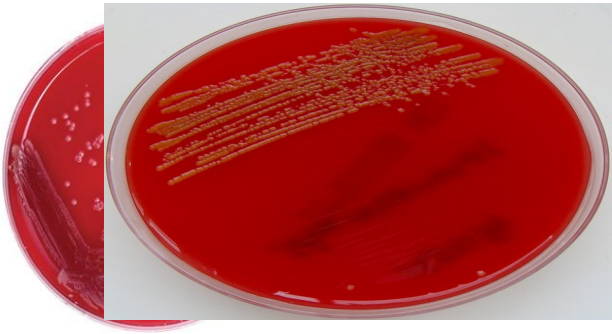


Figure B



In Figure B, it appears that the colony was never diluted. When performing the Streak Plate Method, it is

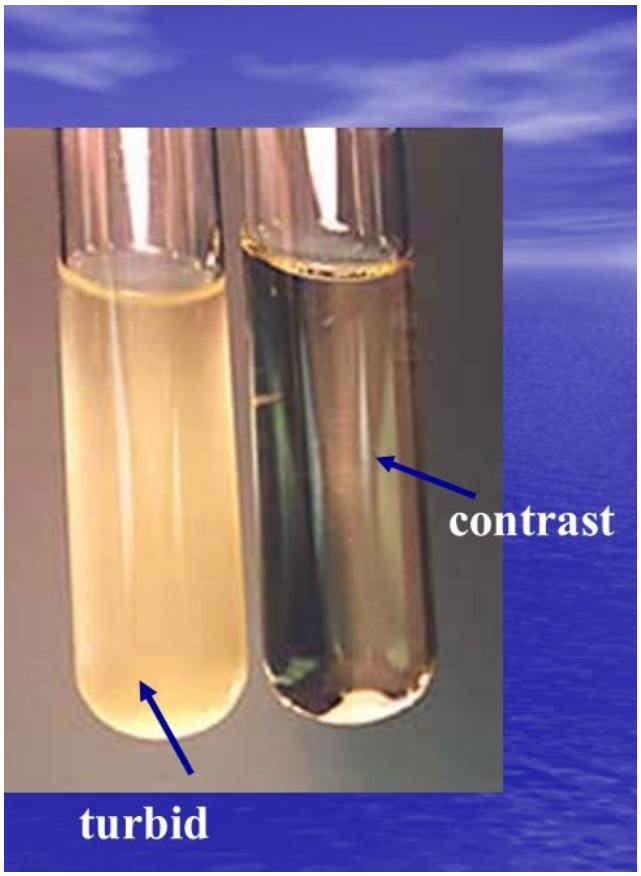
important to perform four different sets of streaks in order to best isolate the bacteria. In order to correct this mistake, it is important to make sure that the streaks are performed as illustrated in Figure A.

2. The above method is used mainly to grow and isolate bacteria. How would you typically grow bacteriophages? (5pts)

Bacteriophages are often grown in a liquid bacterial culture.

3. You are growing a liquid broth culture of *Escherichia coli*. After 4 hours of growth you check your tube and it appears that everything is going well. The tube is turbid (Left in figure below). You take a five minute coffee break. When you return to the lab your tube is completely clear (tube on the right below)! You smile and get ready to proceed with the next part of your experiment. Explain what happened in Figure D. (5pts).

When the solution is turbid, as indicated on the left, it is clear that the cells are still intact in the solution. The solution becomes clear, as seen on the right, when lysis occurs. This is because cell walls burst and all of the contents from inside the cell become mixed into the solution thereby reducing the turbidity of the solution.


contrast
turbid