Micro-Scale Transfer of Microbes

Introduction

Microbes are present in and/or on all things in our environment unless those items are sterile. There are numerous bacteria on our skin, in our throats, in our noses and in our bowel; there are numerous fungi on our skin; there are a variety of microbes which are found on inanimate objects **(fomites)** as well as in dirt and on bugs.

Laboratories where students are taught about microbes are cleaner and safer than are our own homes. This is because of legislation such as DOT regulations, OSHA regulations and/or EPA requirements and due to oversight by institutional Environmental Health and Safety committees. It is also because stringent safety precautions must be observed and practiced on a daily basis in the lab. No one person is immune to those practices, i.e., every person must participate 100% in keeping the laboratory safe regardless of "position".

For the most part, our immune systems help protect us from the majority of pathogenic (disease-causing) microbes found in nature. There are times, however, when the fragile balance between health and disease, i.e., resistance and susceptibility to microorganisms, is shifted in favor of the microbes. When this balance is shifted in this manner, it is necessary to accomplish two tasks:

1) Identify the pathogen causing the disease and then treat it appropriately, and/or

2) Identify the source of the "beast" causing the problem and clean it up.

The objective of this experiment is to teach you, the student, exactly how transfer microbes from media to another piece of media using aseptic technique.

Materials and Methods

Materials

Inoculated agar plate	Sterile agar plate	Bacteriological loop
Bunsen burner	Striker	Indelible marker
Incubator	Disinfectant	Paper towels

Method

Wash your hands with soap and water and wipe down your lab bench with disinfectant as demonstrated by your professor.

As an individual, obtain an agar plate with bacteria, a sterile agar plate, a Bunsen burner, a striker, a bacteriological wire loop and an indelible marker. Perform this section as follows:

Light your Bunsen burner and add enough air to make a hot flame (as demonstrated by your professor).

Flame your loop by heating the loop end (FIRST!) until it is red, then continuing up the wire until you reach the handle, keeping the wire red in the flame (your instructor will demonstrate both of these techniques to you).

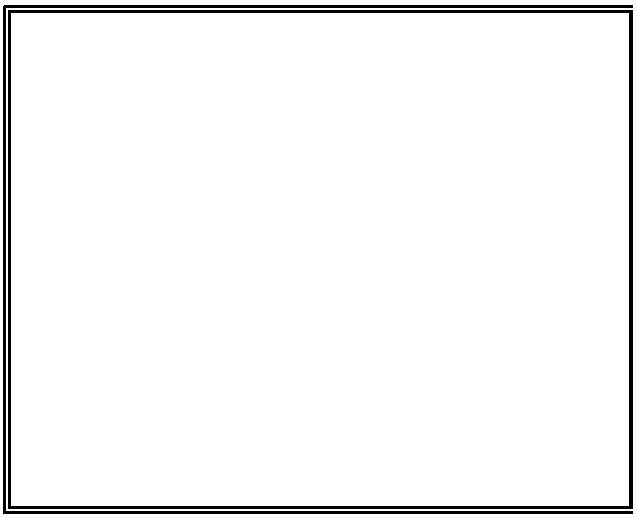
Allow the loop to cool (other wise, bacteria will spatter when you touch the hot loop to the bacterial colonies and bacteria will also be killed by the hot loop), then remove the lid of the bacterial plate and remove **1 colony**, or about the amount of pus that "pops" from a pimple, from the agar plate containing bacteria. Close the cover.

Streak the loop of bacteria onto the surface of your now open sterile nutrient agar. Remember to streak it lightly: if your wire bends, you are streaking with too heavy a hand. Cover the streaked agar plate and turn it upside down. Label the plate with your initials, the date and the name of the bacterium.

Place the inoculated plate in the incubator for 48 hours.

At that time, observe the plates for the kind of bacterial growth, i.e., color of colonies, consistency of colonies.

In the provided space below, label and draw a quick sketch of your plate after the 48 hour incubation (use colored pencils to best illustrate your observations):



REFERENCES

1.Beishir, L.: **Microbiology in Practice: A Self-Instructional Laboratory Course, Fifth Edition**. (Harper Collins: New York) ©1991.

2.Thomas, C.G.A.: **Medical Microbiology, Sixth Edition**. (Bailliere Tindall: London) ©1988.