

## Bacteria Lab

### Part I. Bacteria and Environments

In this lab you will take two sample containers and inoculate each dish with two samples of *Streptococcus* bacteria. One strain is the wild type of *Streptococcus* the other is a penicillin antibiotic resistant strain. Results of this will compare the genetic variation, mutations, adaptation, and natural selection of microbes in their environment.

#### Steps:

FOLLOW STERILE TECHNIQUES AND DISPOSE OF THE BACTERIAL CONTAMINATED MATERIALS IN THE BIOHAZARD BAGS.

Select 4 dishes (two with penicillin, two with regular media agar). Label initials for your group. Label with a grease pencil.

Two plates, one normal media, one penicillin with the wild strain of *Streptococcus* (or other available bacterium).

Two plates, one normal media, one penicillin with the Penicillin resistant strain of *Streptococcus*.

Place in incubator container (upside down).

2 Days later: Examine the results and record these in your notebook.

Draw the plates for each bacteria.

Which containers did the wild strain colonies grow in?

Which containers did the Penicillin resistant strains grow in?

What is the distinction between the two strains (genetically)?

How did the penicillin resistance arise in the resistant strain? Was it due to the penicillin or was it from a mutation that pre-adapted it to penicillin via random genetic mutations?

In a non penicillin environment, which bacteria strain will be favored by natural selection?

In a penicillin environment, which bacteria strain will be favored by natural selection?

Part II.

Examine the prokaryotic samples (prepared slides) under the microscope and draw and label each one (indicate magnification level).

What are the distinguishing features of each bacteria?

Estimate the size of the largest ones.

Don't forget to clean up the oil on the microscope lenses.