

Three Streaks for Bacterial Isolation:

T-, Quadrant- and Continuous-Streaks

Introduction

Bacteria, as you learned from your last experiment and your reading for class, are ubiquitous. In many cases, it is difficult to obtain a growth of **pure colonies** (growth of only one kind of bacteria) without first separating more than one kind of bacteria from a culture (**mixed culture**). This is often done by streaking the specimen on appropriate agar, followed by removing specific colonies from the newly grown colonies and then growing new colonies from the first isolate. This is most easily done by aseptically transferring a colony that has a specific color, or a specific appearance or a specific size to one agar, and the other bacteria to other agar plates. The incubation is repeated, then the bacteria are stained or grown on agar specific for growth, or inhibition of growth, of specific bacteria. Regardless, this process is a process of **isolation** of a single kind of bacteria to obtain a pure culture for identification and treatment purposes.

This isolation is the objective of the experiment, i.e., for the student to learn how to transport one kind of bacterium from a mixed culture onto sterile medium to grow a pure culture.

Materials and Methods

Materials

Mixed cultures	2 Sterile nutrient or tryptic soy agar plates	Bacteriological loop
Bunsen burner	Striker	Indelible marker
Incubator		

Method

Assemble your Bunsen burner apparatus and make a hot flame. Flame your loop as in the last experiment. Using your loop, remove **one** colony of one of the bacteria from the mixed culture and streak it onto your agar by one of the following three streak methods (all three methods will be demonstrated by your professor):

T-Streak Method

Streak one half of your agar plate with the bacteria, then flame your loop. After the loop has cooled, in one of the quadrants left, run your loop into the first region three times, then streak the quadrant. Flame your loop and let it cool, again. Run your loop through the last quadrant into the last region (quadrant) you just streaked **one time** and streak the last quadrant with your loop. Flame your loop, cover your agar plate, flip it and label as from your last experiment. Note that if you were to have drawn a "T" splitting the plate into two semicircles, then splitting one of the semicircles in half into two quadrants, that this resembles a "T" and is why this is called a "T"-streak. Perform your streaks (two plates) in this manner.

Quadrant Streak Method

Mark your agar plate into four quadrants either with your indelible marker or with your imagination. Flame your loop, let it cool, then remove one colony from the mixed culture and streak the first quadrant. Flame your loop and let it cool. Drag your loop from the second quadrant back into the first quadrant three times and streak the second quadrant. Flame your loop and let it cool. Drag your loop from the third quadrant back into the second quadrant three times and streak the third quadrant. Flame your loop and let it cool. Drag your loop from the fourth quadrant into the third quadrant **one time** and then streak the fourth quadrant with one wavy line. Flame your loop, cover your agar plate, flip it and label as from your last experiment. Perform your streaks (two plates) in this manner.

Continuous Streak Method

Mark your agar plate into two half-circles. Flame your loop and remove one colony from the mixed culture and streak one of the half-circles in a continuous back-and-forth line. Rotate the agar plate 180° and do the same thing in the second half-circle **without flaming your loop**. Flame your loop, cover your agar plate, flip it and label as from your last experiment. Perform your streaks (two plates) in this manner.

Place your inoculated agar plates in the incubator for 48 hours. After that time, draw a quick sketch of your observations and observe the other streak methods you did not perform. Draw these, as well. There is space provided for that purpose below:

T-Streak Plate	Quadrant Streak Plate	Continuous Streak Plate
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Which streak gave the best isolation -- according to your results?

REFERENCES

1. Beishir, L: **Microbiology in Practice: A Self-Instructional Laboratory Course, Fifth Edition.** (Harper Collins: New York) ©1991.
2. Claus, G.W.: **Understanding Microbes: A Laboratory Textbook for Microbiology.** (W.H. Freeman and Company: New York) ©1989.
3. Thomas, C.G.A.: **Medical Microbiology, Sixth Edition.** (Bailliere Tindall: London) ©1989.