

Tishk International University
Faculty of Applied Science
Nutrition and Dietetics Department



Plating Technique In Food Microbiology Lab

Food Microbiology /4th Lab
2nd Grade / Spring Semester

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Plating Technique

- Is laboratory methods used to isolate and grow individual colonies of microorganisms (bacteria, fungi, or other microbes) on the surface of a **solid agar medium**
- These techniques are crucial **for studying, identifying, and characterizing microorganisms.**

What is a colony?

Colony is a group of bacteria, fungi, and other microorganisms grown on a solid agar medium. The cells plated on this medium grow to form a mass, which can then be duplicated for further use in the lab.



Common plating techniques

Several plating techniques are commonly used in microbiology

In microbiology, the most popular plating procedures are:

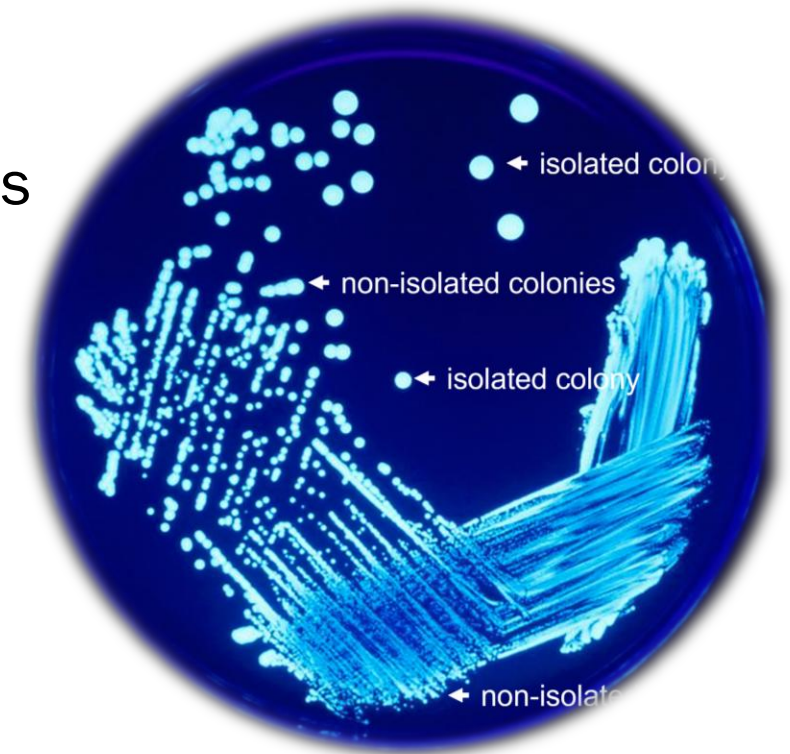
- ✓ **Streak Plate Method**
- ✓ **Spread Plate Method**
- ✓ **Pour Plate Method**

Streak plate method

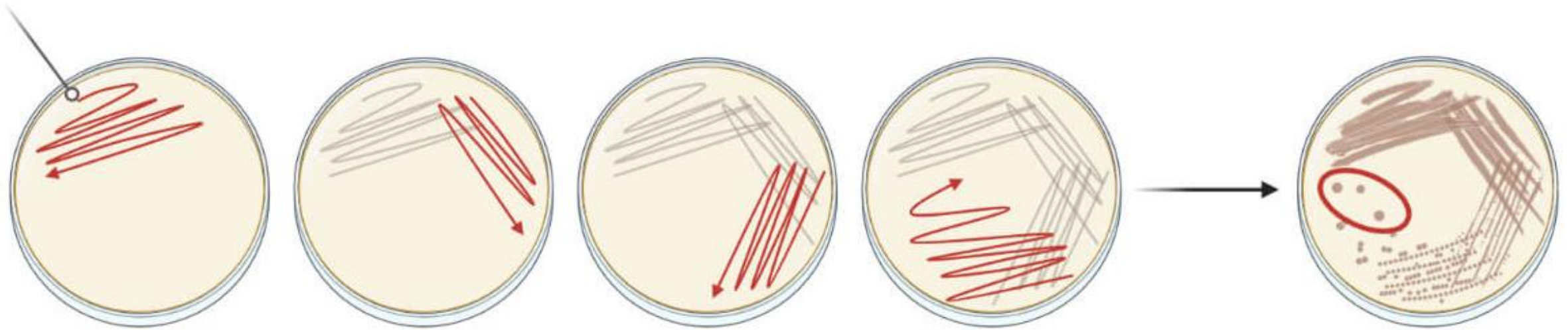
The streak plate method is a microbiological laboratory technique of isolating pure cultures and getting well-isolated colonies of bacteria from a mixed population. It is mostly used to get pure cultures of bacteria

➤ Objectives of Streak Plate Method

- To obtain a pure culture of bacteria from a mixed culture
- To obtain well-isolated colonies
- To propagate bacteria



Streak Plate Method

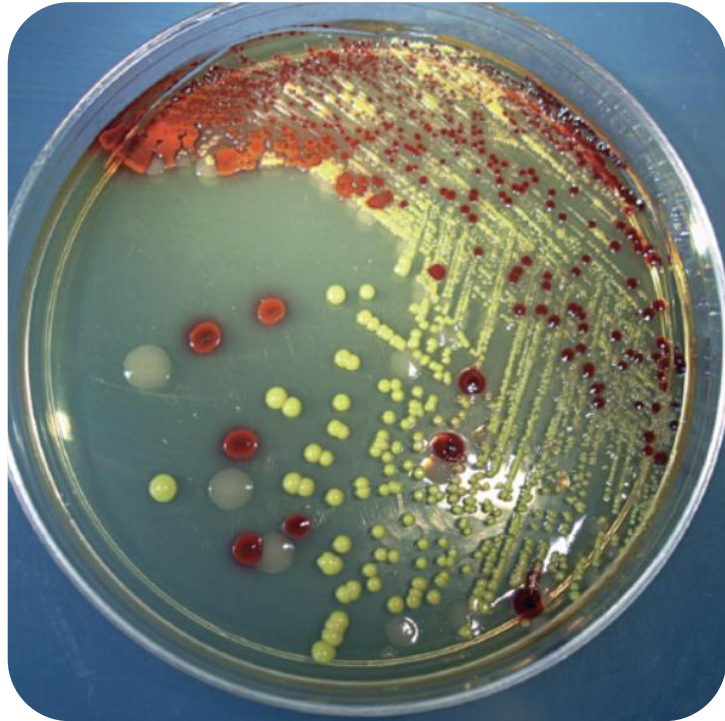


Streaking plate method is used in microbiology to isolate and differentiate individual bacterial colonies from a mixed population.

There are two types of microbial culture such as **mixed culture and pure culture**.

- **The mixed culture** contains two or more species
- **The pure culture** contains only a single species

Mixed culture



Pure culture



Types of Streak Plate Method

➤ Based on the pattern of streaking, the streak plate method can be classified into 4 types:

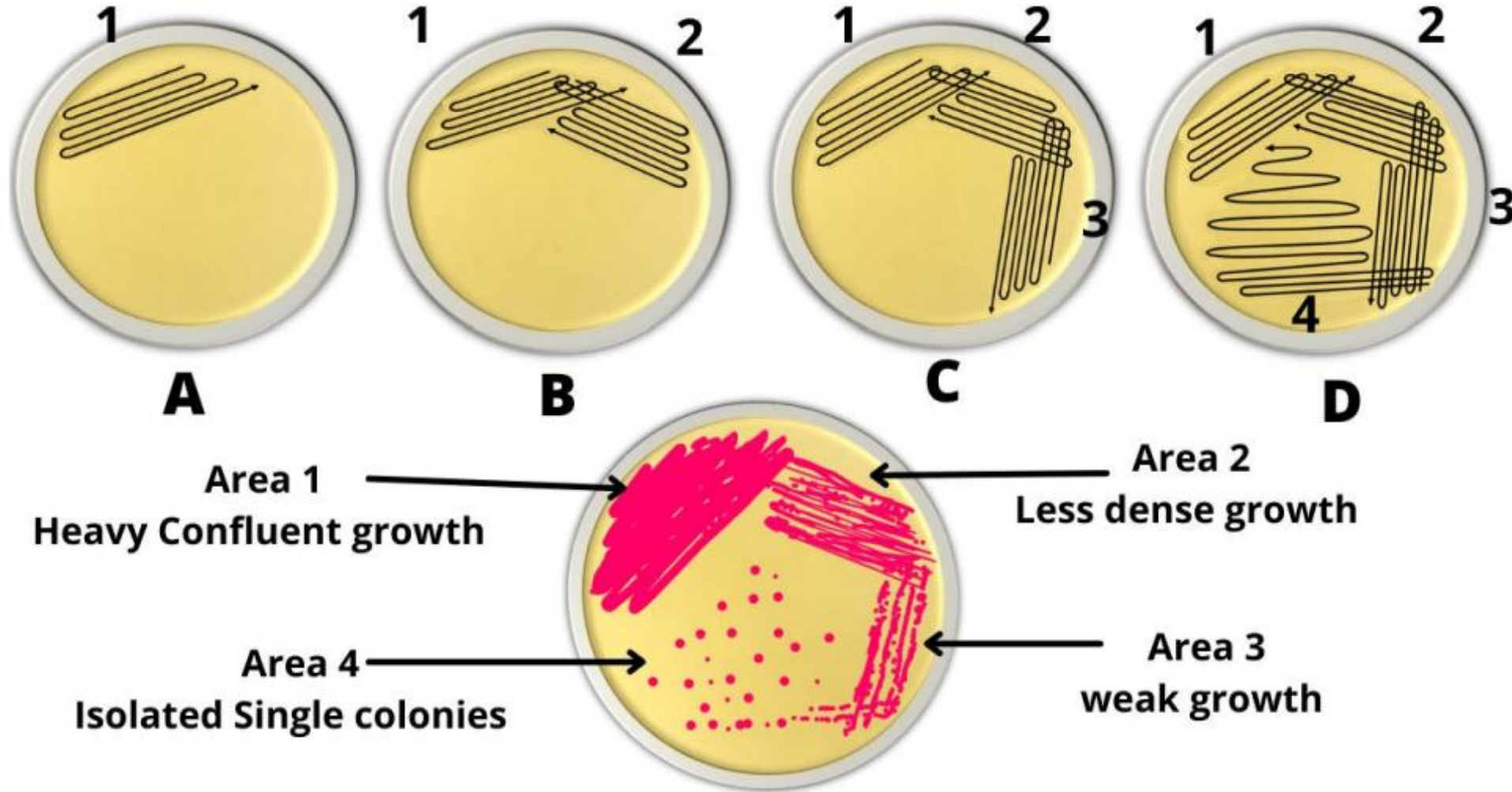
- 1) Quadrant Streaking
- 2) T-Streaking
- 3) Continuous Streaking
- 4) Radiant Streaking

1) Quadrant Streaking

It is the most used and the most preferred method where four equal-sized sections of the agar plate are streaked. It is also referred to as the “**four-quadrant streak**”

The sector which is streaked first is called the first sector or the first quadrant, and it has the **highest concentration** of inoculum. Gradually the second, third, and fourth quadrants will **have diluted inoculum**. By the time the fourth quadrant is streaked, the inoculum is highly diluted giving rise to isolated colonies following the incubation.

Quadrant Streaking



2) T-Streaking

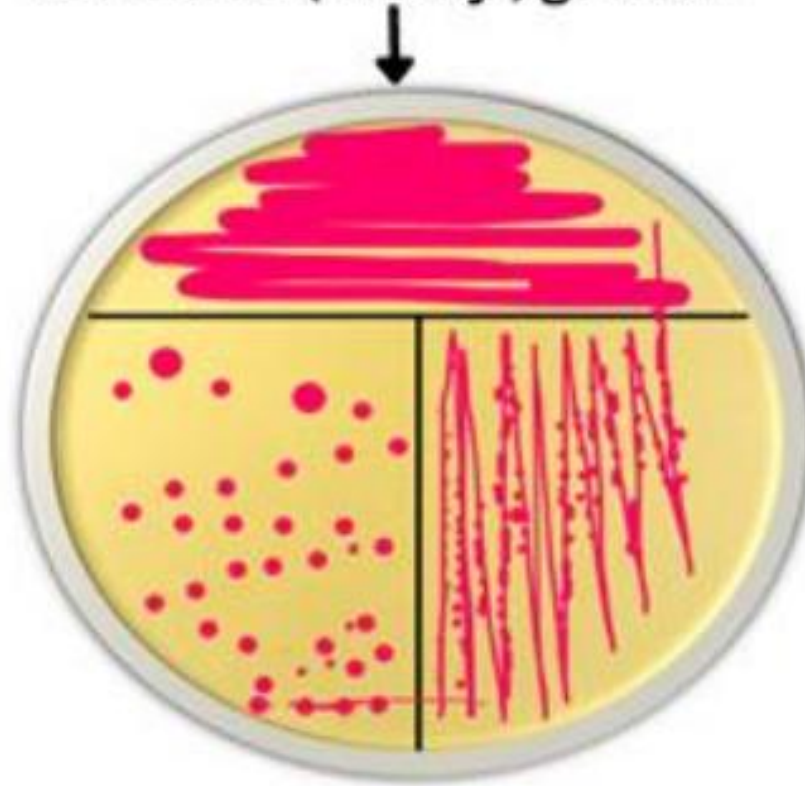
The agar petri plate is divided into three sections, and each section is streaked.

this method is also known as the **“three-sector streak”** method.

The media is divided into three sections **by drawing a letter “T”** and each adjacent section is streaked sequentially. By the time the final section is being streaked, the inoculum is diluted to the point to give rise to isolated colonies following the incubation.

T-Streaking

First Sector
Confluent (Heavy) growth



Second Sector
less heavy growth

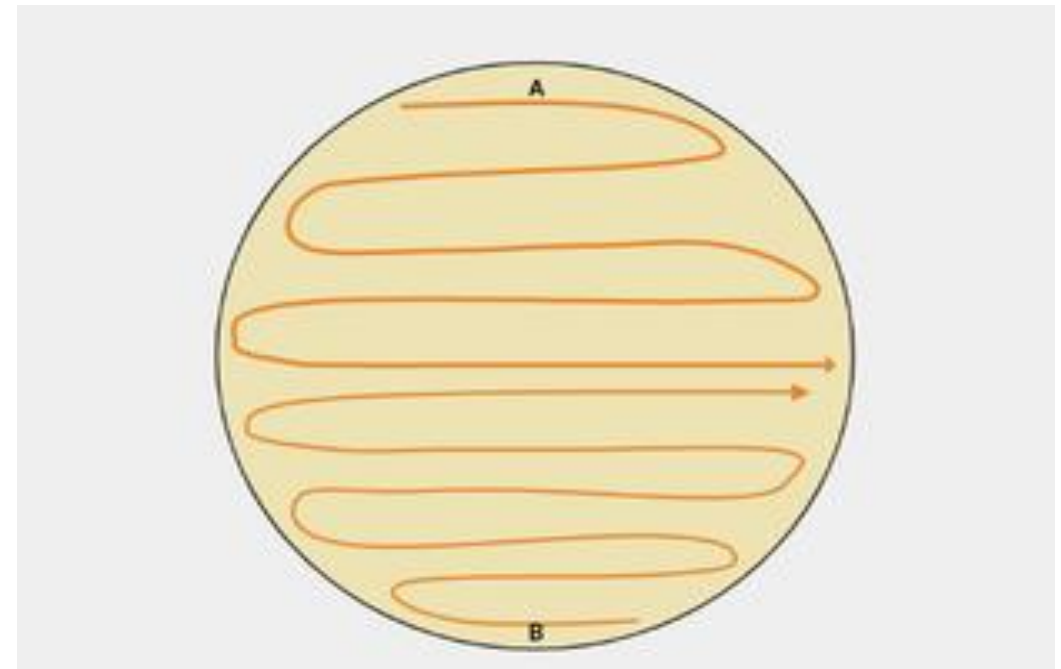
But no isolated colonies

Third Sector
isolated colonies

3) Continuous Streaking

In this type of streaking, the inoculum is spread from one edge to the center of the plate. The plate is rotated 180°, and the remaining portion is streaked without sterilizing the loop.

we can use it only if the inoculum is either very diluted or we just have to propagate pure culture rather than isolate one

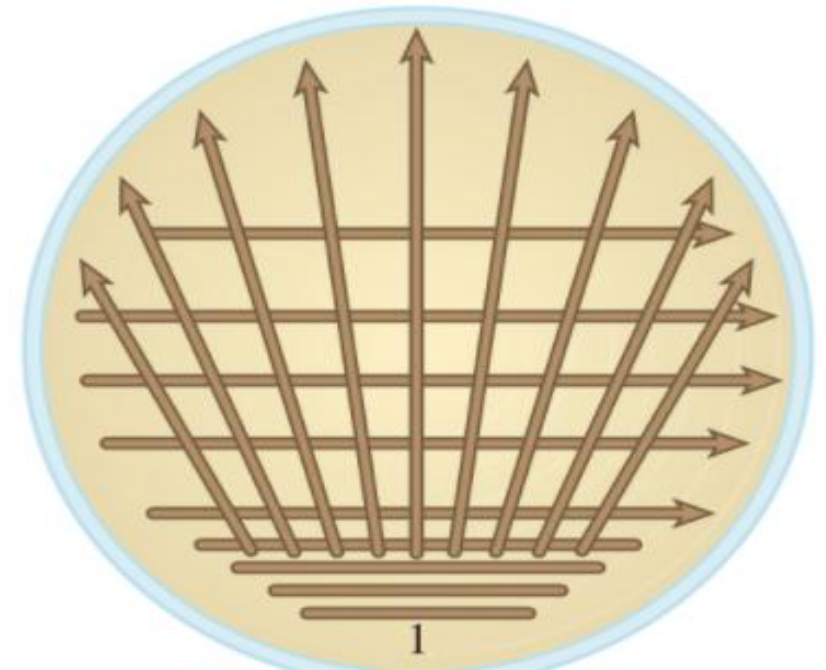


4) Radiant Streaking

It is another method of streaking where the inoculum is first streaked at one edge and spread in vertical lines above the edge. Next, the vertical lines are streaked horizontally to obtain pure isolated cultures.

This method is suitable to propagate pure culture.

Radiant Streak





Applications of Streak Plate Method:

- I. Used to obtain a pure culture from the mixed culture to perform tests to identify and for other applications.
- II. Used to define the specimen as pure or mixed species.
- III. Used to study colony characters of bacteria.
- IV. Used in inoculation of clinical specimens in diagnostic laboratories to grow isolated colonies of pathogen

Materials Required for streak plate technique:

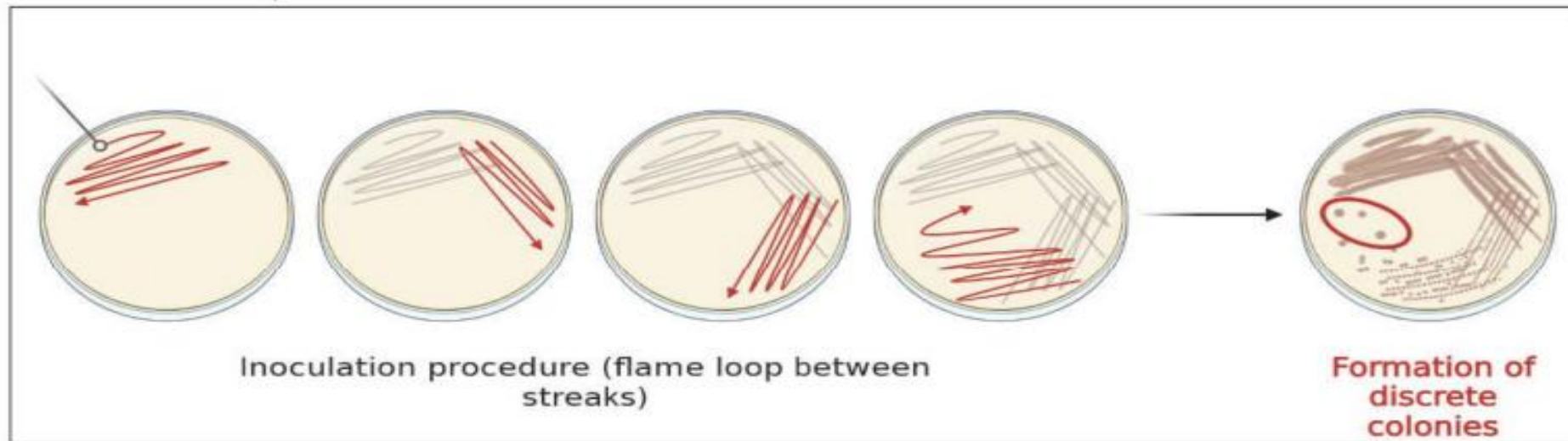
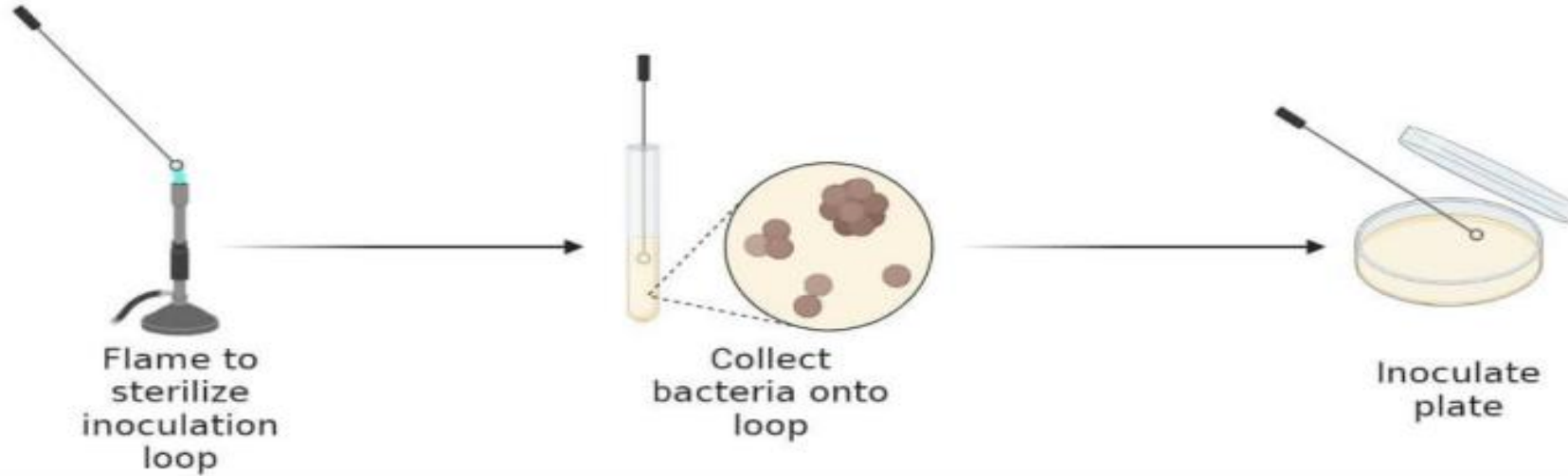
- ✓ Bunsen Burner
- ✓ Loop
- ✓ Sterile Agar plates
- ✓ Culture of bacteria



Procedure

- Sterilize all the instruments, flasks and media that are required for the streaking procedure.
- Clean your work area using a disinfectant to minimize any contamination.
- Set up the Bunsen burner in your work area carefully.
- Label the petri dish with all important information, such as your name, date, media used and the culture being inoculated.
- To pick up the sample, you can use either a metal loop or disposable plastic loops.
- A loopful of sample is streaked on the first quadrant on the agar plate.
- Sterilize the loop by heating it in the Bunsen burner if using a metal loop.
- Streak the other three quadrants by a similar method.
- Close the lid of the plate after streaking and store the dish upside down in an incubator with optimal temperature.

Streak Plate Method Procedure



Thank
you