In microbiology, **streaking** is a technique used to isolate a pure strain from a single species of microorganism, often bacteria. Samples can then be taken from the resulting colonies and a microbiological culture can be grown on a new plate so that the organism can be identified, studied, or tested.

History:

The modern streak plate method has progressed from the efforts of Robert Koch and other microbiologists to obtain microbiological cultures of bacteria in order to study them. The dilution or isolation by streaking method was first developed by Loeffler and Gaffky in Koch's laboratory, which involves the dilution of bacteria by systematically streaking them over the exterior of the agar in a petri dish to obtain isolated colonies which will then grow into quantity of cells, or isolated colonies. If the agar surface grows microorganisms which are all genetically same, the culture is then considered as a microbiological culture.

Technique

Streaking is rapid and ideally a simple process of isolation dilution. The technique is done by diluting a comparatively large concentration of bacteria to a smaller concentration. The decrease of bacteria should show that colonies are sufficiently spread apart to effect the separation of the different types of microbes. Streaking is done using a sterile tool, such as acotton swab or commonly an inoculation loop. Aseptic techniques are used to maintain microbiological cultures and to prevent contamination of the growth medium.There are many different types of methods used to streak a plate. Picking a technique is a matter of individual preference and

can also depend on how large the number of microbes the sample contains.

The three-phase streaking pattern, known as the T-Streak, is recommended for beginners .The streaking is done using a sterile tool, such as a cotton swab or commonly an inoculation loop. The inoculation loop is first sterilized by passing it through a flame. When the loop is cool, it is dipped into an inoculum such as a broth or patient specimen containing many species of bacteria. The inoculation loop is then dragged across the surface of the agar back and forth in a zigzag motion until approximately 30% of the plate has been covered. The loop then is re-sterilized. Starting in the previously streaked section, the loop is dragged through it two to three times continuing the zigzag pattern. The procedure is then repeated once more. Each time the loop gathers fewer and fewer bacteria until it gathers just single bacterial cells that can grow into a colony. The plate should show the heaviest growth in the first section. The second section will have less growth and a few isolated colonies, while the final section will have the least amount of growth and many isolated colonies.

Different labs have different standards as to the direction and style of the streaking.

Incubation

Dependent on the strain, the plate may then be incubated, usually for 24 to 36 hours, to allow the bacteria to reproduce. At the end of incubation

there should be enough bacteria to form visible colonies in the areas touched by the inoculation loop. From these mixed colonies, single bacterial or fungal species can be identified based on their morphological (size/shape/colour) differences, and then sub-cultured to a new media plate to yield a pure culture for further analysis.