Medical laboratories instruments

Microbiology equipment's

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Laboratory: 5

First stage

INTRODUCTION TO MICROBIOLOGY LAB

- **Personal Protective Equipment (PPE):** Is the effective use of protective gloves, eye and mouth protection, and laboratory coats, all considered to be personal protective devices.
- **Bacteriostatic:** definition Inhibits the growth and reproduction of bacteria without directly killing them.
- **Bactericidal:** definition Kills bacteria directly Action destroys the bacterial cell, leading to death of the microorganism.

MICROBIOLOGY LABORATORY

- A **microbiology laboratory:** is a specialized lab where scientists and students **study microscopic organisms** such as:
- **Bacteria**
- **Viruses**
- **Fungi**
- **Protozoa**
- **Algae**

PURPOSE OF A MICROBIOLOGY LAB

- To isolate, culture, and identify microorganisms
- To perform diagnostic tests for diseases
- To conduct research in health, environment, agriculture, and food
- To study antibiotic resistance and develop new treatments

PERSONAL PROTECTIVE EQUIPMENT (PPE)

- Lab coat
- Gloves
- Safety goggles
- Face masks

PERSONAL PROTECTIVE EQUIPMENT (PPE)

Safety goggles

Face masks

Gloves

Lab coat

PERSONAL PROTECTIVE EQUIPMENT (PPE)

PERSONAL PROTECTIVE EQUIPMENT (PPE) IN A MICROBIOLOGY LAB

PERSONAL PROTECTIVE EQUIPMENT (PPE) IN A MICROBIOLOGY LAB

1. Lab Coat

Protects skin and clothing from chemical spills and microbial contamination Prevents cross-contamination between lab and outside Can be quickly removed in emergencies.

2. Gloves

Protective gloves must be worn whenever there is potential for direct contact with infections materials and should be discarded in a special waste container when removed.

PERSONAL PROTECTIVE EQUIPMENT (PPE) IN A MICROBIOLOGY LAB

3. Safety Goggles

Protects eyes from splashes of chemicals, stains, or biological materials

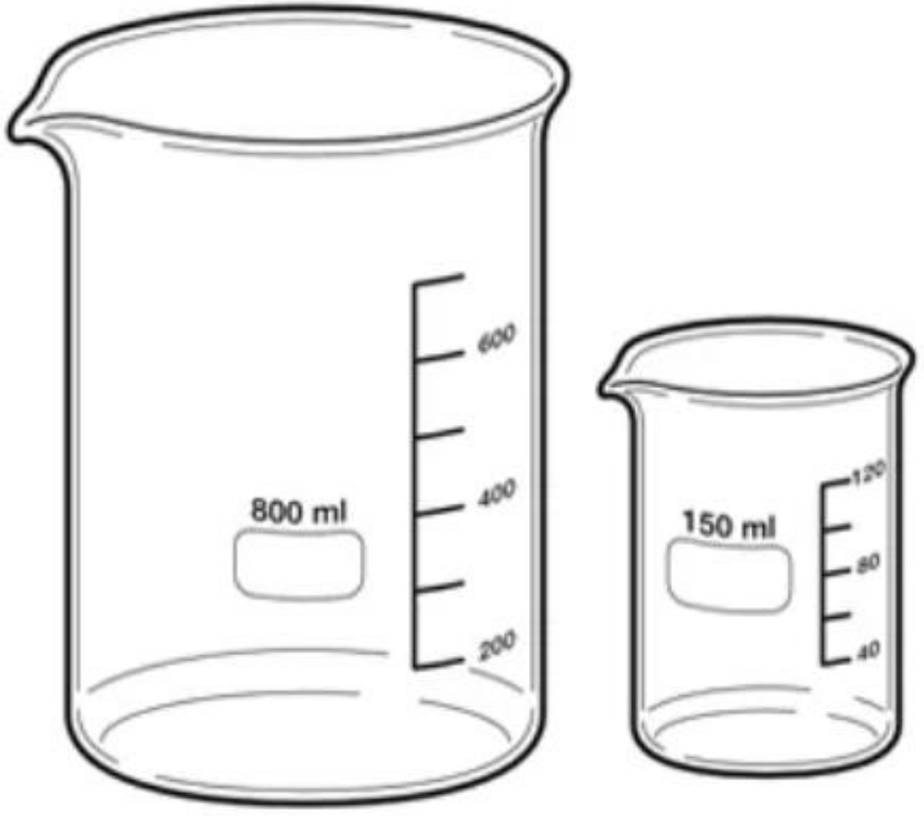
Crucial when handling corrosive or infectious agents

4. Face Mask

Prevents inhalation of aerosols or droplets containing harmful microorganisms

Reduces spread of contamination from the user (especially during close lab work)

GLASS WARES



Beaker

Volumetric flask

- **Beaker:** is a cylindrical container used to store, mix and heat liquids in laboratories. Most are made of glass.
- **Volumetric flask:** are used for precise dilutions and preparation of standard solutions

PIPETTE

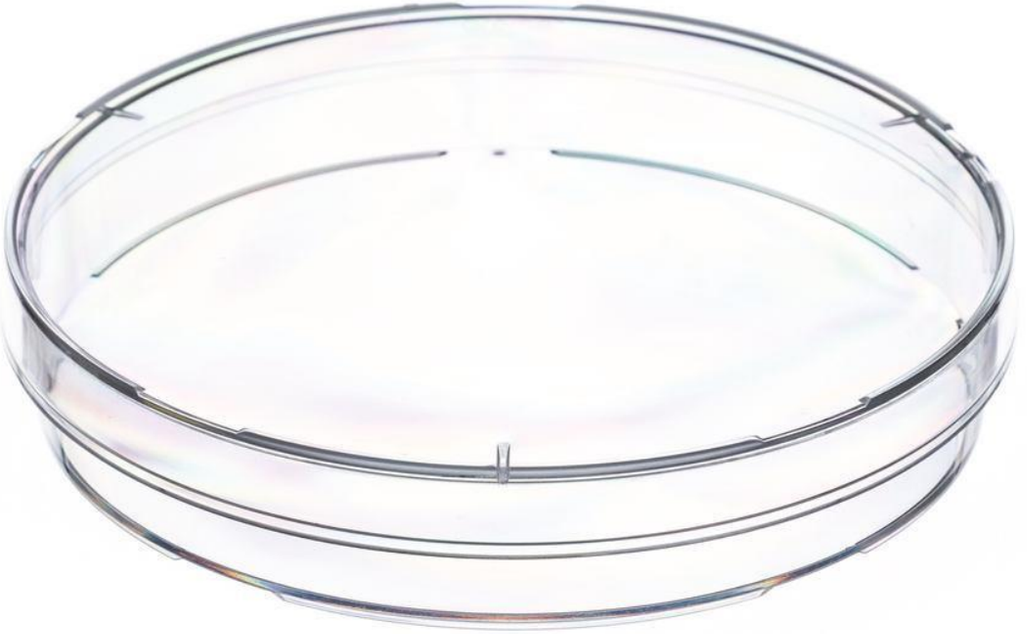
Pipette: laboratory tool used to transfer measured small amounts of liquids commonly used in biology, chemistry and medical labs.

tip

PETRI DISHES

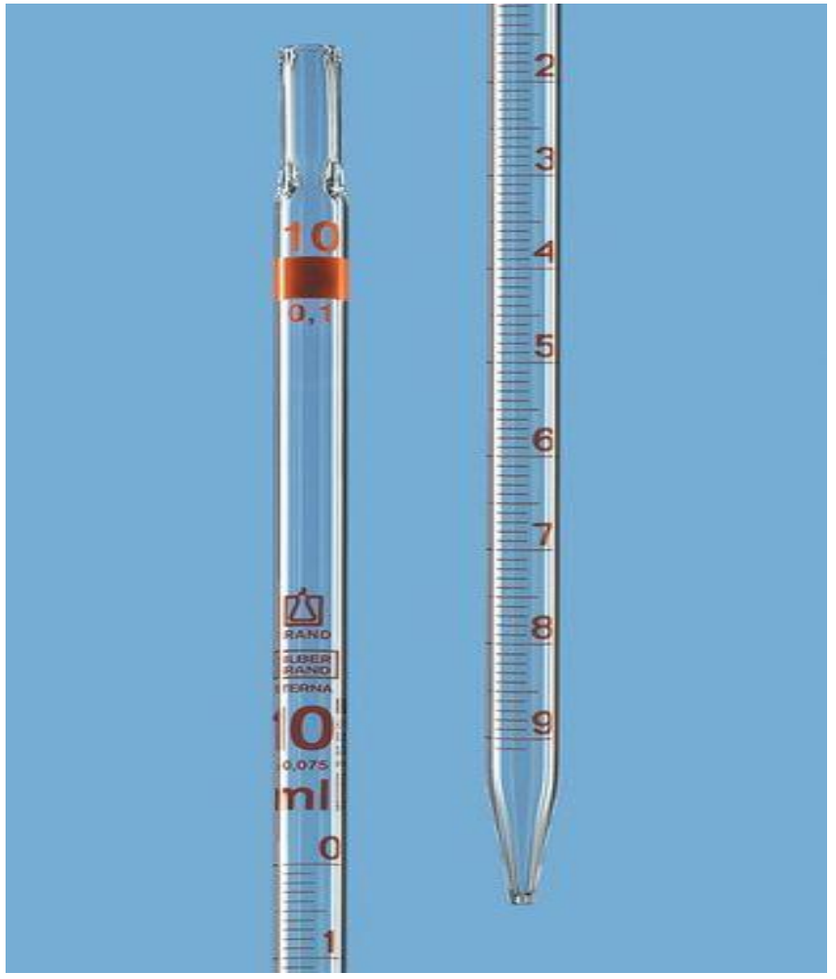
Petri Dishes: shallow, flat and circular containers with lids commonly made of glass used to grow culture media of different organisms
Example: bacteria and fungus.

Petri Dishes



GLASS PIPETTES

Glass pipettes: are laboratory tools used to measure and transfer precise volumes of liquids. They are made of borosilicate glass, which is resistant to chemicals and heat.



HOOD

Hood:

Use in Bacterial Culture:

•Used when preparing media, inoculating plates, or transferring cultures where no biohazard risk is involved.

INCUBATOR

Incubator: in a laboratory setting is a device used to maintain controlled environmental conditions to support the growth of microorganisms, cells, or small organisms. It typically controls:

Temperature (commonly 37°C for human-related cultures)

Humidity

CO_2 levels (for specific cell cultures)

BUNSEN BURNER

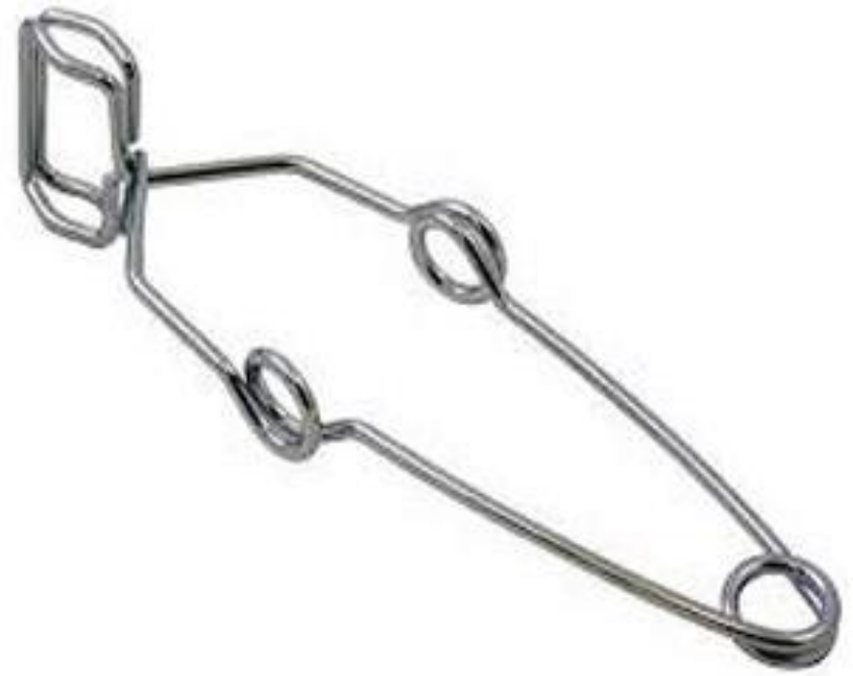
Bunsen burner: is common piece of laboratory equipment that produce single open gas flame used for heating, sterilization, and combustion

INOCULATING LOOP

Inoculating loop: is a small, handheld tool used to transfer bacteria from one medium to another for example, from a broth culture to an agar plate and Streaking agar plates to isolate colonies.

TEST TUBES

Test Tubes: Clamp used to hold test tubes when they are hot

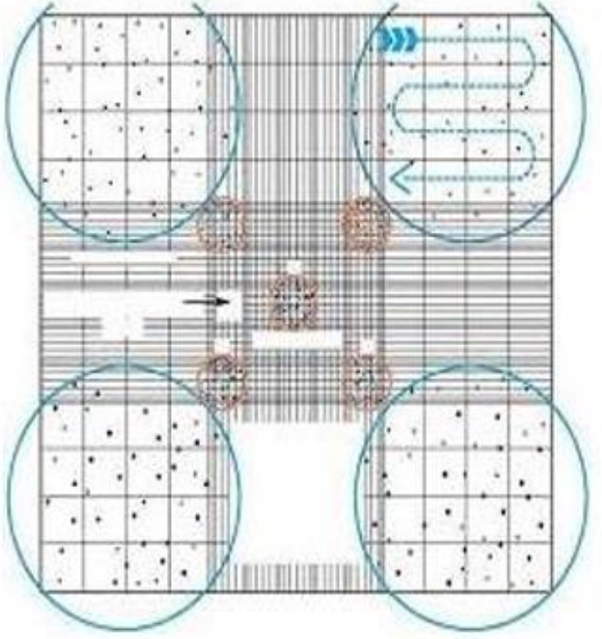


TEST TUBE RACK

Test Tube Rack: for safe storage of test tubes, and to ease the transport of multiple tubes.

HEMCYTOMETER

Hemcytometer: for performing red blood cell counts and whit blood cell count



Hemocytometer

Microscopic slides: thin, flat piece of glass or plastic used to hold specimens for observation under a microscope.

Slides

Cover Slide

COVER SLIP

cover slip (also called **cover glass**): is a thin, square or rectangular piece of glass or plastic placed over a specimen on a microscope slide.

Purpose of a Cover Slip

Protects the specimen and the microscope lens.
Flattens the sample for even focusing.
Prevents drying of the sample (especially in wet mounts).
Reduces air bubbles and provides a clearer image.

COTTON SWABS

Cotton Swabs: used collection samples (oral, Nasal, throat, vaginal, wound, skin)

TEST TUBE

- **Test tube:** also known as a culture tube or sample tube, Test tubes are widely used by chemists to handle chemicals, especially for qualitative experiments and assays.
- Blood Collection Tubes (with or without anticoagulants)
- Sterile Containers Used for (Urine, stool, sputum, biopsy specimens)

GEL TEST TUBE

Gel test tube: Without anticoagulant used to serum samples

EDTA TEST TUBES

EDTA test tubes: contain an anticoagulant this tube obtain on plasma samples.

REFRIGERATOR/FREEZER

- **Refrigerator/Freezer**
- Stores microbial cultures of bacteria and samples and reagents, and media at low temperatures.

Thank You