Lab1: Animal Tissue Culture

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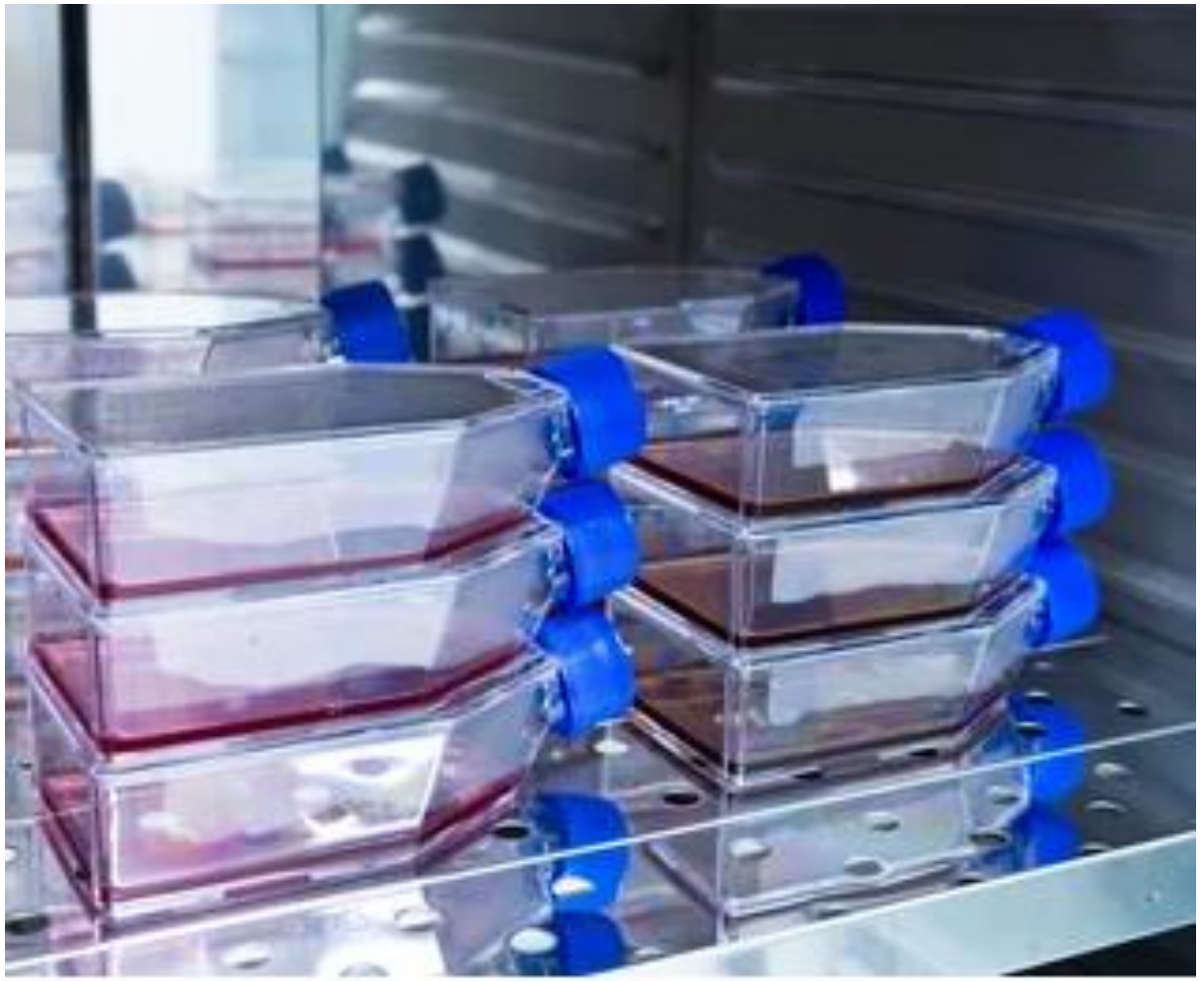
cell culture

The term "cell culture" refers to the culturing of cells derived from multicellular eukaryotes. Animal or plant cells removed from tissues will continue to grow if supplied with a favorable artificial environment of appropriate nutrients and conditions. When carried out in a laboratory, the process called Cell Culture. .

Materials and Equipmen

- Laminar Flow Hood
- CO_2 Incubator
- Inverted Microscope
- Pipettes, Flasks, Falcon tubes
- Media (DMEM + FBS + Antibiotics)



Safety Precautions

- Wear gloves, lab coat, and goggles
- Work inside laminar flow hood
- Sterilize tools before and after use
- Dispose of biohazard waste safely

Prepare culture medium

•- Add FBS + Antibiotics

•- Sterilize using filter (0.22 µm)

Observe cells under microscope

•- Wash with PBS

•- Add Trypsin- to detach cells

•- Neutralize trypsin with fresh medium

•- Transfer cells into a new flask

Monitor cell growth daily

•- Record % confluency

•- Observe cell morphology (spindle, polygonal)

•- Take microscope images

Nutrient medium

- Depends on the type of cells used.
- Contains four main components:

1 -Base medium

2-Serum

3-Additives

4- Buffering system

- Each component has a specific function.
- Concentrations are adjusted based on preliminary studies of cell requirements.

Functions of Serum

- Acts as a carrier for low–molecular-weight nutrients and essential hormones required for cell growth.
- Protects cells from mechanical damage caused by air bubbles entering the bioreactor.
- Promotes cell attachment to the surface for cells that require mechanical support.

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Expected Results

Cells grow and proliferate

•- Contamination may occur if aseptic technique fails

•- Difference between anchorage-dependent and suspension cells

Challenges Facing Commercial Animal Tissue Culture

- Sensitivity of adherent cells to impurities in water.
- High cost of the culture medium used for cell growth.
- Contamination caused by microorganisms that may grow in the culture environment.

- Advancements in tissue culture have addressed some of these issues through modern techniques such as cell fusion, chromosome transfer, and plasmid introduction

Thank you