



محاضرة رقم: 8

¹ Lecture No 8:

Practical

Advanced laboratory technique

CELL LINE

Sawa University

College of health and medical techniques

Department of Medical Laboratories

. Stage third

جامعة ساوة الاهلية

كلية التقنيات الصحية والطبية

قسم تقنيات المختبرات الطبية

المرحلة / الثالثة

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Cell Line – Definition

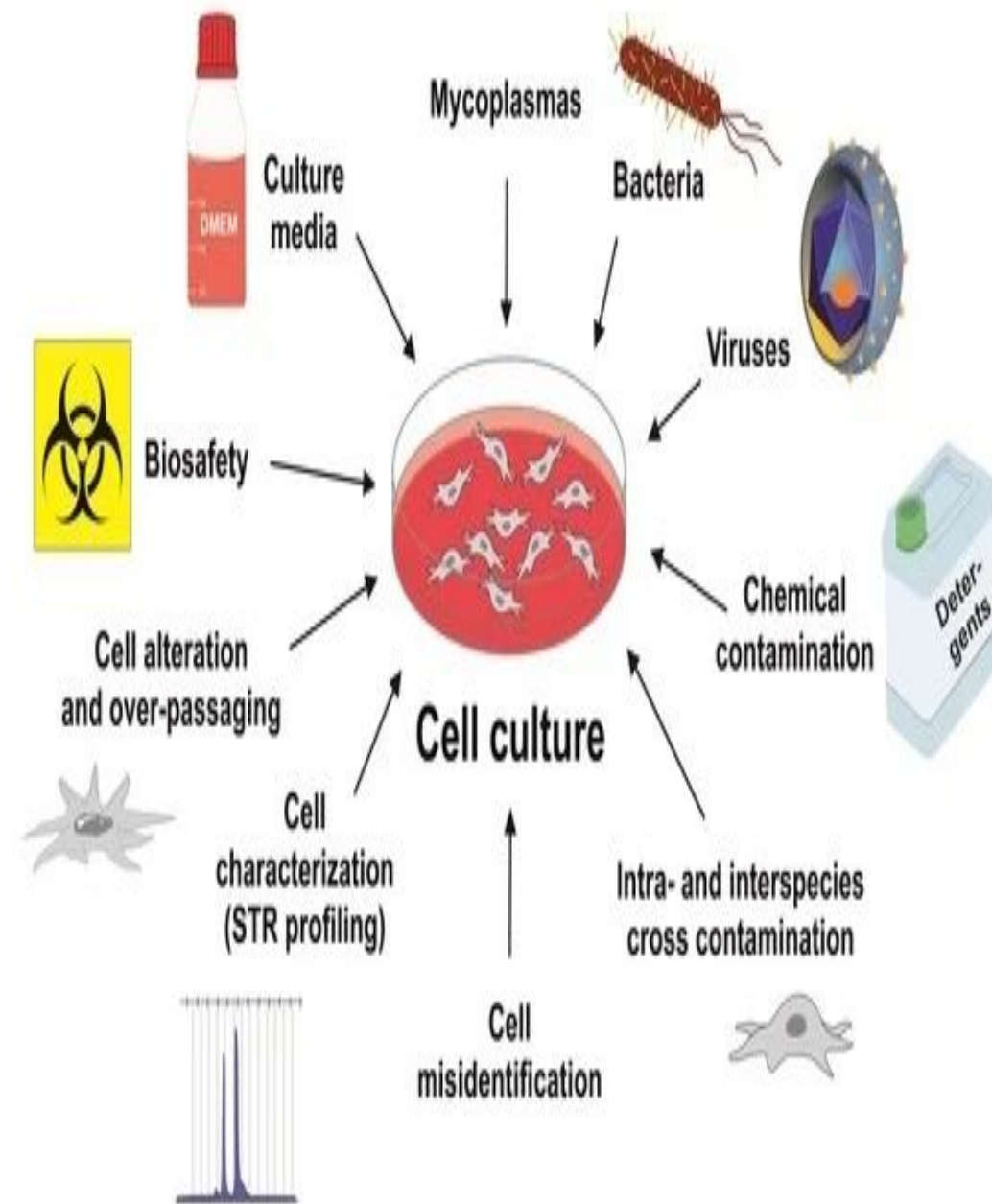
A cell line is a population of cells that has been isolated from a living organism and adapted to grow continuously under laboratory conditions. These cells can divide and proliferate over many generations, making them useful for research, medical studies, and biotechnology applications.

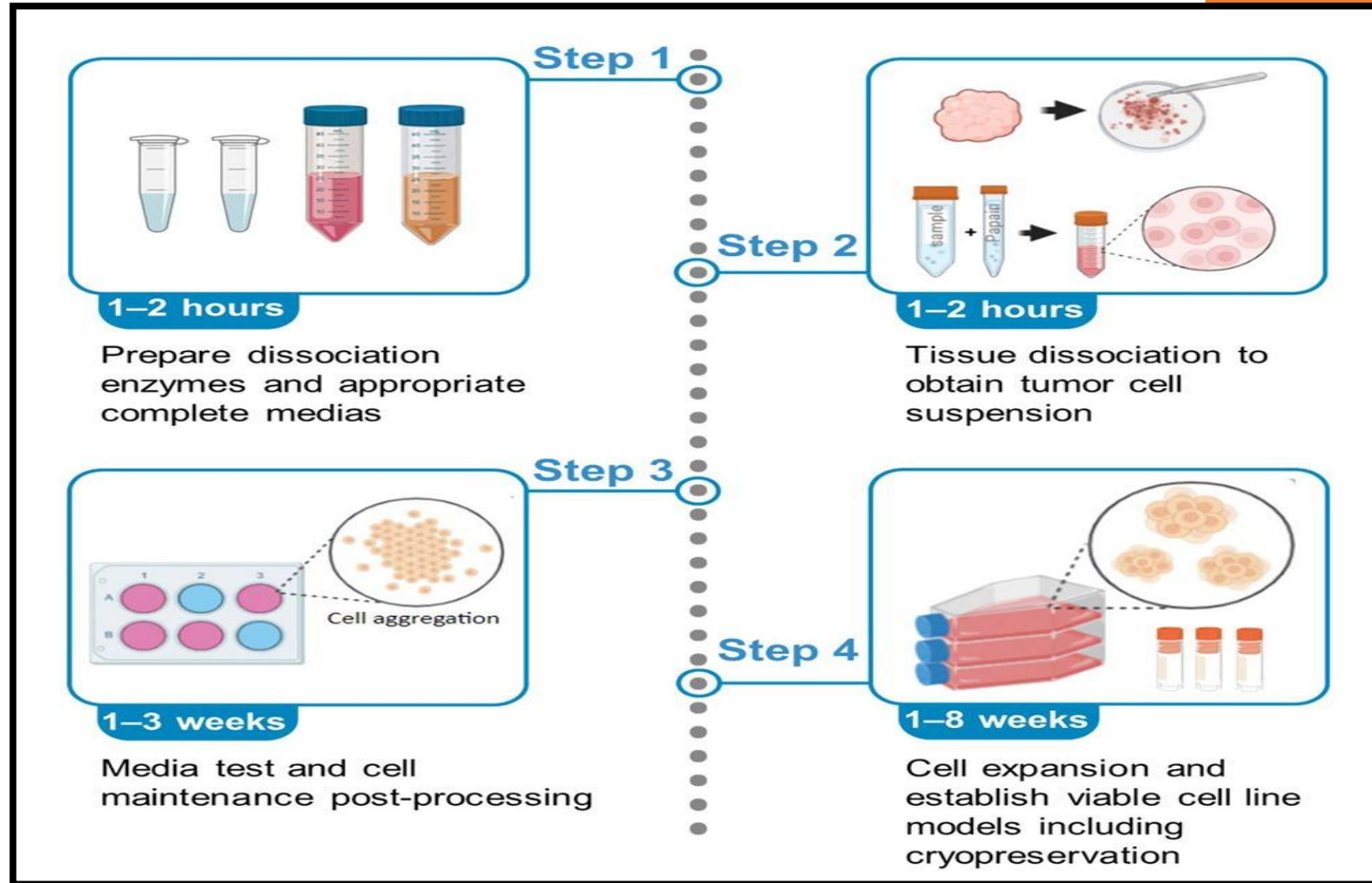
Types of Cell Lines

Cell lines refer to cell populations isolated and cultured over multiple generations in laboratories.

They are divided into several types:

- **Primary Cell Lines:** Cells directly isolated from tissues and maintained for a short period.
- **Continuous (Immortal) Cell Lines:** Cells that can divide indefinitely under laboratory conditions.
- **Finite Cell Lines:** Cells with a limited number of divisions before senescence.
- **Stem Cell Lines:** Undifferentiated cells capable of differentiating into specialized cell types.
- **Genetically Engineered Cell Lines:** Cells modified to express specific genes or proteins





The scheme of establishing tumor cell line model

Applications of Tissue Culture in Medical Research

- **Drug Development:** Testing the efficacy and toxicity of new drugs.
- **Vaccine Production:** Culturing viruses in specific cells to develop vaccines.
- **Stem Cell Therapy:** Growing stem cells for regenerative treatments.
- **Cancer Research:** Studying behavior of cancer cells and testing therapies.
- **Genetic Testing & Diagnosis:** Identifying genetic disorders through cultured biopsies or prenatal tests.

Advantages & Limitations Advantages:

- Cell lines provide a stable and controlled environment, making experiments repeatable.
- They reduce the need for animal testing.
- They can be stored, shared, and used for many experiments.

Limitations:

- Cell lines can become contaminated easily, which destroys the culture.
- Over time, they may develop genetic changes that make them different from the original tissue.
- Their behavior is not always identical to real human cells inside the body.

Any questions?



*Thank
You*

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- What are cell lines? Discuss their types and explain one application of cell lines in medical research.