

# Tissue culture

March 9, 2021

## What is Tissue Culture?

- It is a method of biological research in which fragments of tissue from an animal or plant are transferred to an artificial environment in which they can continue to survive and function.
- The cultured tissue may consist of a single cell, a population of cells, or a whole or part of an organ.
- It is to be noted here that Cells in culture may multiply; change size, form, or function; exhibit specialized activity or interact with other cells.

## Types of Tissue culture

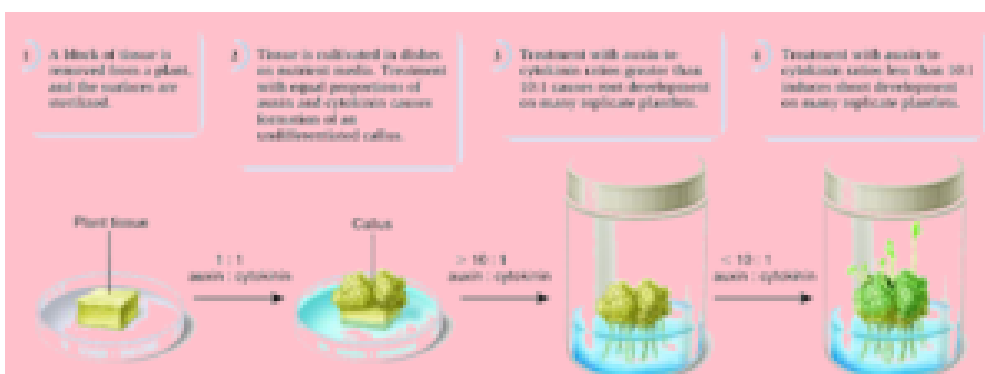
- **Embryo culture:** It is the type of tissue culture that involves the isolation of an embryo from a given organism for in vitro growth.
- **Seed Culture:** It is primarily used for plants such as orchids. Or this method, explants are obtained from an in-vitro derived plant and introduced into an artificial environment, where they get to proliferate.
- **Callus Culture:** It refers to unspecialized, unorganized and a dividing mass of cells. A callus is produced when explants (cells) are cultured in an appropriate medium
- **Organ Culture:** It involves isolating an organ for in vitro growth. Here, any organ plant can be used as an explant for the culture process. Plasma clot method, Raft method, Agar gel method and Grid method are methods that can be used for organ culture
- **Protoplast Culture:** A protoplast(naked cells) is the term used to refer to a cell (fungi, bacteria, plant cells etc) in which the cell wall has been removed. It can be cultured in the following ways:
  - Hanging-drop cultures

- Micro culture chambers
- Soft agars matrix

### Some of the other types of tissue culture are:

- Anther culture
- Pollen culture
- Somatic Embryogenesis
- Single cell culture
- Suspension culture

### Process of Tissue culture



### National Certification System for Tissue Culture Raised Plants (NCS-TCP)

Government of India established the NCS-TCP authorizing Department of Biotechnology, Ministry of Science & Technology as the Certification Agency vide the Gazette Notification dated 10th March 2006 under the "Seeds Act, 1966" for ensuring production and distribution of quality tissue culture planting materials. The purpose of NCS-TCP is to ensure production and distribution of quality tissue culture planting materials. It is a unique quality management system, first of its kind in the world which ensures recognition of Tissue Culture Production Facility for the production of quality planting material and certification of end products.