Plant Tissue Culture Terminology

Adventitious---Developing from unusual points of origin, such as shoot or root tissues, from callus or embryos, from sources other than zygotes.
Agar---a polysaccharide powder derived from algae used to gel a medium. Agar is generally used at a concentration of 6-12 g/liter.
Aseptic---Free of microorganisms.
Aseptic Technique---Procedures used to prevent the introduction of fungi, bacteria, viruses, mycoplasma or other microorganisms into cultures.
Autoclave---A machine capable of sterilizing wet or dry items with steam under pressure. Pressure cookers are a type of autoclaves.
Auxin---A group of plant growth regulators that promotes callus growth, cell division, cell enlargement, adventitious buds, and lateral rooting. Endogenous auxins are auxins that occur naturally. Indole-3-acetic (IAA) is a naturally occurring auxin. Exogenous auxins are auxins that are man-made or synthetic. Examples of exogenous auxins included 2,4-Dichlorophenoxyacetic acid (2,4-D), Indole-3-Butyric acid (IBA), α-Naphthaleneacetic acid (NAA), and 4-Chlorophenoxyacetic acid (CPA).
Callus---An unorganized, proliferate mass of differentiated plant cells, a wound response.
Chemically Defined Medium---A nutritive solution for culturing cells in which each component is specifiable and ideally of known chemical structure.
Clone---Plants produced asexually from a single source plant.
Clonal Propagation---Asexual reproduction of plants that are considered to be genetically uniform and originated from a single individual or explant.
Contamination---Being infested with unwanted microorganisms such as bacteria or fungi.
Culture—A plant growing in vitro.
Cytokinin---A group of plant growth regulators that regulate growth and morphogenesis and stimulate cell division. Endogenous cytokinins, cytokinins that occur naturally, include zeatin and 6-γ,γ-dimethylallylaminopurine (2iP). Exogenous cytokinins, cytokinins that are man-made or synthetic, include 6-furfurylaminopurine (kinetin) and 6-benzylaminopurine (BA or BAP).
Differentiated---Cells that maintain, in culture, all or much of the specialized structure and function typical of the cell type *in vivo*. Modifications of new cells to form tissues or organs with a specific function.
Explant---Tissue taken from its original site and transferred to an artificial medium for growth or maintenance.
Gibberellins---A plant growth regulator that influences cell enlargement. Endogenous growth forms of gibberellin include Gibberellic Acid (GA_3).
Horizontal laminar flow unit---An enclosed work area that has sterile air moving across it. The air moves with uniform velocity along parallel flow lines. Room air is pulled into the unit and forced through a HEPA (High Energy Particulate Air) filter, which removes particles 0.3 μm and larger.

***Phyto*Technology Laboratories, Inc.**
P.O. Box 13481; Shawnee Mission, KS 66282-3481
Phone: 1-888-749-8682 or 913-341-5343; Fax: 1-888-449-8682 or 913-341-5442
Web Site: www.phytotechlab.com
© 2003 PhytoTechnology Laboratories, Inc.

Hormones---Growth regulators, generally synthetic in occurrence, that strongly affects growth (i.e. cytokinins, auxins, and gibberellins).
Internode---The space between two nodes on a stem
In vitro---To be grown in glass (Latin). Propagation of plants in a controlled, artificial environment using plastic or glass culture vessels, aseptic techniques, and a defined growing medium.
In vivo---To be grown naturally (Latin)
Media---Plural of medium
Medium---A nutritive solution, solid or liquid, for culturing cells.
Micropropagation---*In vitro* Clonal propagation of plants from shoot tips or nodal explants, usually with an accelerated proliferation of shoots during subcultures.
Node—A part of the plant stem from which a leaf, shoot or flower originates.
Passage---The transfer or transplantation of cells or tissues with or without dilution or division, form one culture vessel to another.
Passage Number---The number of times the cells or tissues in culture have been subcultured or passaged.
Pathogen---A disease-causing organism.
Pathogenic---Capable of causing a disease.
Petiole---A leaf stalk; the portion of the plant that attaches the leaf blade to the node of the stem.
Plant Tissue Culture---The growth or maintenance of plant cells, tissues, organs or whole plants *in vitro.*
Regeneration---In plant cultures, a morphogenetic response to a stimulus that results in the products of organs, embryos, or whole plants.
Shoot Apical Meristem---Undifferentiated tissue, located within the shoot tip, generally appearing as a shiny dome-like structure, distal to the youngest leaf primordium and measuring less that 0.1 mm in length when excised.
Somaclonal Variation---Phenotypic variation, either genetic or epigenetic in origin, displayed among somaclones.
Somaclones---Plants derived from any form of cell culture involving the use of somatic plant cells.
Stage I---A step in *in vitro* propagation characterized by the establishment of an aseptic tissue culture of a plant.
Stage II---A step in *in vitro* propagation characterized by the rapid numerical increase of organs or other structures.
Stage III---A step in *in vitro* propagation characterized by preparation of propagules for successful transfer to soil, a process involving rooting of shoot cuttings, hardening of plants, and initiating the change from the heterotrophic to the autotropic state.
Stage IV---A step in *in vitro* plant propagation characterized by the establishment in soil of a tissue culture derived plant, either after undergoing a Stage III pretransplant treatment, or in certain species, after the direct transfer of plants from Stage II into soil.

***Phyto*Technology Laboratories, Inc.**
P.O. Box 13481; Shawnee Mission, KS 66282-3481
Phone: 1-888-749-8682 or 913-341-5343; Fax: 1-888-449-8682 or 913-341-5442
Web Site: www.phytotechlab.com
© 2003 PhytoTechnology Laboratories, Inc.

Sterile--- (A) Without life. (B) Inability of an organism to produce functional gametes. (C) A culture that is free of viable microorganisms.
Sterile Techniques---The practice of working with cultures in an environment free from microorganisms.
Subculture---See "Passage". With plant cultures, this is the process by which the tissue or explant is first subdivide, then transferred into fresh culture medium.
Tissue Culture---The maintenance or growth of tissue, *in vitro*, in a way that may allow differentiation and preservation of their function.
Totipotency---A cell characteristic in which the potential for forming all the cell types in the adult organism are retained.
Undifferentiated---With plant cells, existing in a state of cell development characterized by isodiametric cell shape, very little or no vacuole, a large nucleus, and exemplified by cells comprising an apical meristem or embryo.

***Phyto*Technology Laboratories, Inc.**
P.O. Box 13481; Shawnee Mission, KS 66282-3481
Phone: 1-888-749-8682 or 913-341-5343; Fax: 1-888-449-8682 or 913-341-5442
Web Site: www.phytotechlab.com
© 2003 PhytoTechnology Laboratories, Inc.