

Milestones in Plant Tissue Culture

Haberlandt (1902)

cultured plant cells in artificial condition called *in vitro* (inside glass) in culture medium (Knop's salt solution) containing glucose and peptone and developed callus (unorganized growth of cells and tissue) and proposed the concept Totipotency, it means the development of whole plant from isolated cells or tissue in *in vitro* condition.

P.R.White (1934)

developed root cultures, used Knop's solution along with three vitamins like pyridoxine, thiamine and nicotinic acid

F.C. Steward (1948)

used coconut water in plant tissue culture work and obtained cell proliferation from carrot explants (Cellular totipotency).

Morel and Martin (1952, 1955)

developed virus-free *Dahlia* and potato plants using shoot meristem culture.

Murashige and Skoog (1962)

formulated tissue culture medium, a landmark in plant tissue culture and it is the most frequently used medium for all kinds of tissue culture work.

Kanta *et al.* (1962)

produced test-tube fertilization in flowering plants.

Yamada *et al.* (1963)

produced *calli* and free cells in tissue culture of *Tradescantia reflexa*.

Guha and Maheshwari (1964)

developed *in vitro* production of haploid embryos from anthers of *Datura*.

Vasil and Hildbrandt (1965)

achieved differentiation of tobacco plants from single, isolated cells in micro propagation.

Takebe *et al.* (1971)

regenerated tobacco plants from isolated mesophyll protoplasts.

Carlson

and co-workers obtained protoplast fusion between *Nicotiana glauca* and *Nicotiana longsdorffii* and developed first interspecific somatic hybrid in 1971.

Melchers and co-workers in 1978

developed intergenic hybrid between potato and tomato called pomato.

Chilton (1983)

produced transformed tobacco plants from single cell transformation and gene insertion.

Horsh *et al.* (1984)

developed transgenic tobacco by *Agrobacterium* mediated gene transfer.

Knop's solution: Nutrient solution used in growth experiments of plants which contains:

Calcium nitrate 3.0 g

Potassium nitrate 1.0 g

Sucrose 50.0 g (optimal)

Magnesium sulfate 1.0 g

Dibasic Potassium phosphate 1.0 g

Deionized water 1000.0 ml