Plant

Cloning

Biology Revision Presentation

Micropropagation

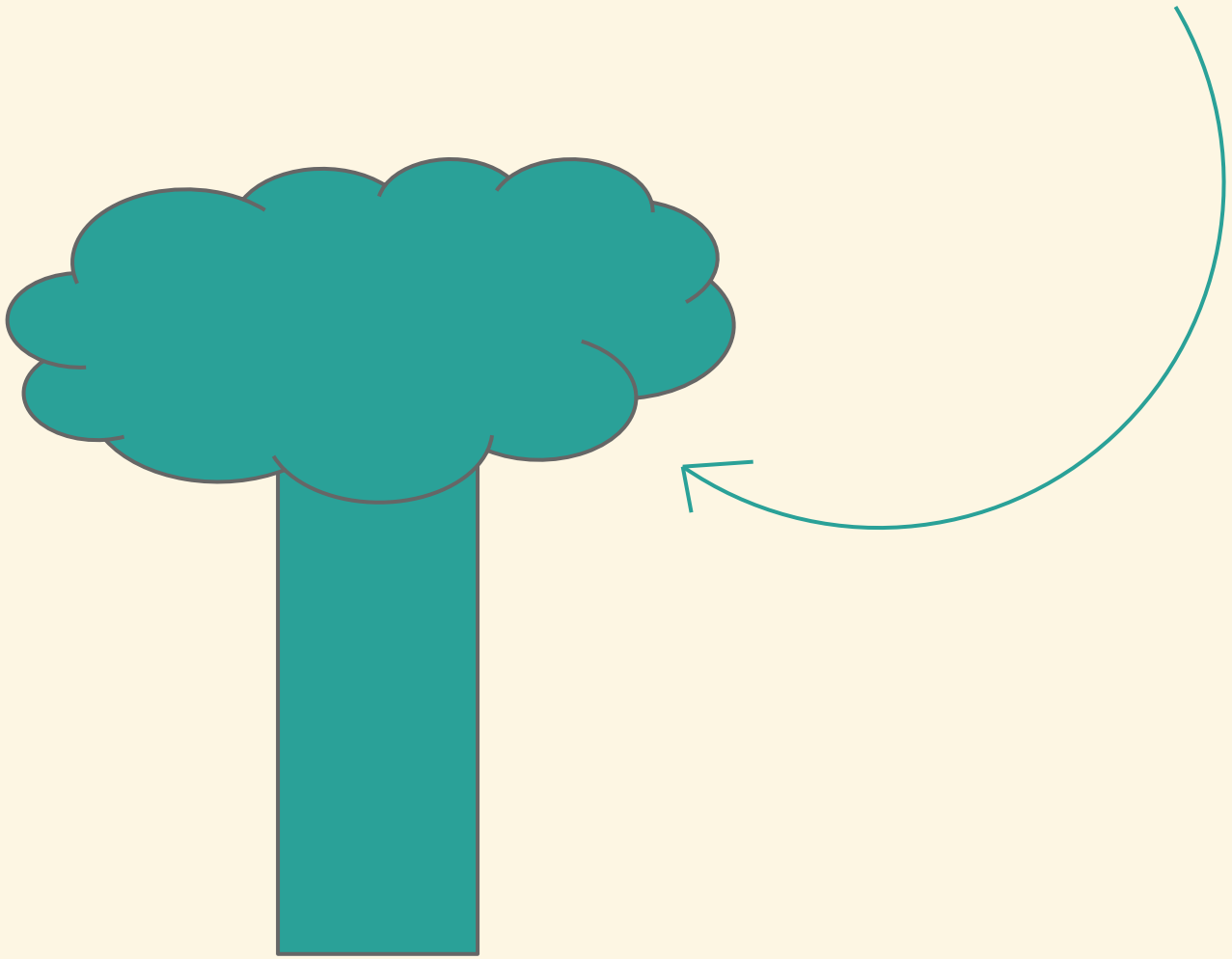
is the technique used to clone plants.

many plant cells are

totipotent

(they can develop into any other plant cell given the right conditions!)

a plant with desirable characteristics is chosen

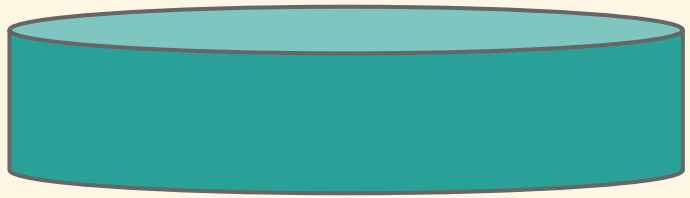


the meristem is a growing point of the plant.

Found at the tip of shoots and rounds, if removed it can develop into a genetically identical new plant.

The meristem is cut into small pieces called

explants



Explants are grown on a sterile aerated medium like

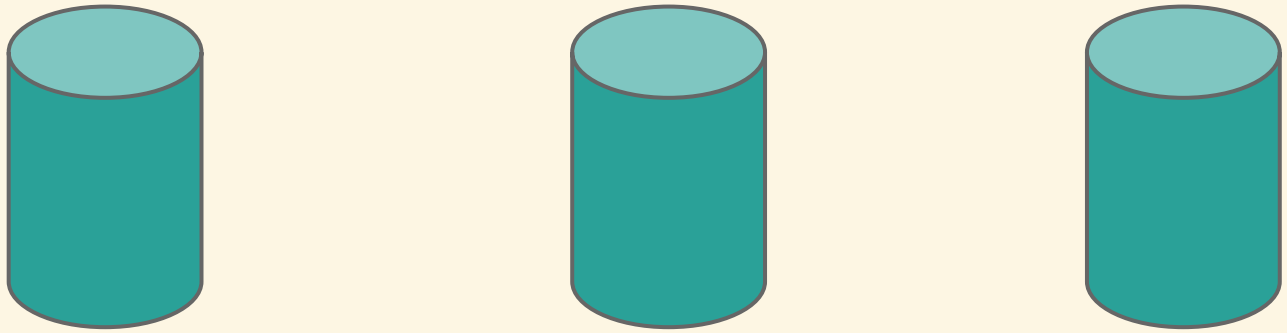
agar jelly.

The cells divide by mitosis producing a mass of undifferentiated cells...

'a callus'

Each callus is subdivided and individually allowed to develop into a

plantlet!



When the plantlets have reached a suitable size they are *transplanted into sterile soil.*

Advantages

+

Disadvantages

Advantages

The sterile conditions improve survival rate.

Stock selected to have disease resistance and other desirable attributes.

Uniform crop, good commercially.

Unique genotypes can be preserved.

Disadvantages

Sterile conditions have to be consistently maintained to prevent bacteria/fungi contamination.

The plants produced have a increased mutation rate compared with naturally breeding plants and are genetically unstable.

Labour costs are high because the plants must be inspected regularly and defective plants removed.

the end