

BIOLOGY IN ENGLISH

Plants are cloned from a single cell

Theoretically, any cell, whether plant or animal, is **totipotent**, which means it has the ability to give rise to an entire organism. Totipotency in plants has been demonstrated for many years. For example, it is possible to grow a complete carrot plant from a tiny

piece of phloem (**figure 1**), part of conduction tissue. Today, plants can even be grown from a single cell.

First, plant cell walls are removed by digestive enzyme action, resulting in naked cells, or *protoplasts*. The cell wall regenerates as cell division produces aggregates of cells called a *callus*. With proper stimulation, the callus differentiates into shoots and roots. Embryonic plants make their appearance and develop into plantlets. The new plants have the same characteristics as the one that donated the

$2n$ nuclei, and therefore they are **clones** of this plant; the process is called **clonation**. One advantage of propagating plants in the laboratory is the ability to grow a number of identical commercial plants in a small area.

ANSWER

Could agriculture take advantage of plant cloning?

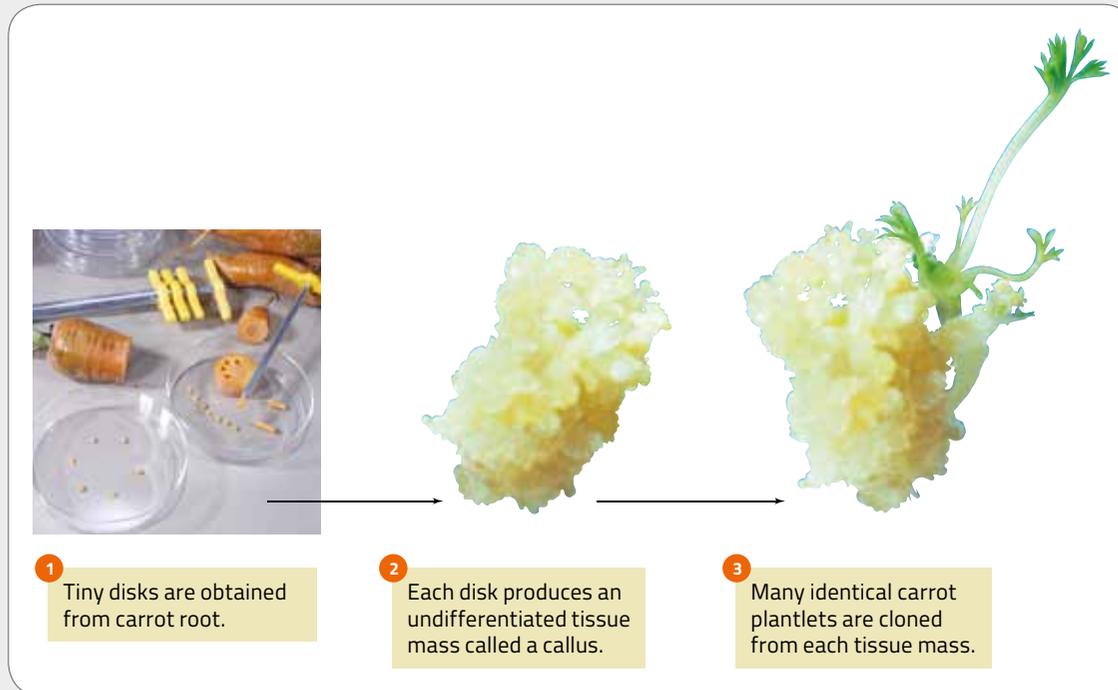


Figure 1
Cloning carrots.