

# GETTING TO THE ROOT OF IT: CALLUS FORMATION

*In propagation, the journey of a new plant life often begins with a simple yet vital step - callus formation. When propagating plants from cuttings, one of the key stages is ensuring that your cutting develops a callus.*

## WHAT DOES A CALLUS LOOK LIKE?



## BUT WHY IS THIS SO IMPORTANT?

*Essentially, a callus is a plant's method of self-healing. It is a mass of undifferentiated cells that forms at the site of the cutting.*

*The callus acts as a protective barrier by sealing the wound against potential diseases & moisture loss. Ultimately, the callus process creates a conducive environment for new roots to emerge.*

## HOW DO YOU FORM A CALLUS?

- 1 Wound Response:** *When a plant is cut or injured, it triggers a wound response. This response leads to the division of cells near the wound site to cover & heal the exposed area.*
- 2 Cell Division:** *In response to the injury, cells near the wound start to divide rapidly. These are parenchyma cells, which are more flexible in their potential, meaning they can become various types of cells as needed by the plant.*
- 3 Hormonal Influence:** *Plant hormones, particularly auxins and cytokinins, play a crucial role in callus formation. They stimulate cell division & differentiation.*
- 4 Protection Mechanism:** *The callus serves as a protective mechanism, sealing the wound against pathogens and preventing excessive water loss.*

## INDUCING CALLUS FORMATION

*To encourage callus formation, a cutting is often left in a humid, warm environment. Some propagators use rooting hormones to accelerate this process.*

## DIFFERENTIATION IN PROPAGATION

*The parenchyma cells differentiate into new root cells. Differentiation is the process by which cells transform from a general to a specialized form. During plant propagation, parenchyma cells in a callus start off unspecialized. With suitable conditions, such as moisture & temperature, these cells differentiate into specialized root cells. Rooting hormone is sometimes applied to aid in the process.*