

*Opinion Article*

## Classification of plant growth

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### DESCRIPTION

Plants are unique in that they have the ability to grow indefinitely throughout their lives. Plants have this ability due to the presence of meristems in specific parts of their bodies. These meristems' cells have the ability to divide and self-perpetuate. The product, on the other hand, quickly loses its ability to divide, and the plant body is made up of these cells. The open form of growth is defined as a process in which new cells are constantly added to the plant body as a result of the meristem's activity. The root apical meristem and the shoot apical meristem are well-known. We know that they are in charge of the plant's primary growth and that they primarily contribute to the elongation of the plant's axis. We also know that the lateral meristems, vascular cambium, and cork-cambium occur later in life in dicotyledonous plants and gymnosperms. These are the meristems that induce the thickness of the organs in which they are active to rise. This is referred to as the plant's secondary growth.

### Growth is measurable

At the cellular level, growth is mostly due to a rise in the amount of protoplasm. Because protoplasm increase is difficult to quantify directly, it is usually measured in terms of a quantity that is more or less proportional to it. As a result, growth is measured using a variety of criteria, including fresh weight, dry weight, length, area, volume, and cell number. You might be surprised to learn that a single maize root apical meristem can produce more than 17,500 new cells every hour, while watermelon cells can grow up to 3,50,000 times their original size. The former expresses growth as an increase in cell number, while the latter expresses growth as an increase in cell size. While pollen tube growth is measured in terms of length, dorsiventral leaf growth is quantified in terms of surface area.

### Phase of growth

Growth is divided into three phases: meristematic,

elongation, and maturity. Let's take a peek at the root tips to see what we're talking about. The meristematic phase of growth is represented by constantly dividing cells at both the root and shoot apex. The cells in this area have a lot of protoplasm and process huge nuclei. Their cell walls are fundamental in nature, thin and cellulose with plasmodesmatal connections in abundance. The cells closest to the meristematic zone are in the elongation phase. The cells in this phase exhibit increased vacuolation, cell expansion, and the formation of new cell walls.

### Growth rates

Growth rate refers to the amount of growth per unit of time. As a result, the rate of growth can be mathematically represented. More cells can be produced in a variety of ways by an organism or a component of an organism. The initial growth of most systems is slow. Following then, growth accelerates at an exponential rate. Following mitotic cell division, both child cells retain the ability to divide and continue to do so. However, when nutrition availability is limited, growth slows and eventually stops, resulting in a stationary phase.

### Conditions for growth

Try to write down what you believe are the necessary conditions for growth; your list can include things like water, oxygen, and nutrients, which are all vital for growth. Plant cells develop in size as a result of cell enlargement, which necessitates the use of water. Turgidity of cells aids in cell growth extension. As a result, plant growth and development are inextricably tied to the plant's water state. Water also serves as a medium for the enzymatic activities that are necessary for growth. Oxygen aids in the release of metabolic energy required for growth. Plants require nutrients in order to synthesise protoplasm and act as a source of energy.

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