Article published on March 8th 2012 | Business

Requires fine regulation of many elements of development , leading to the development of basic morphologies (morphogenesis), the establishment of functionally organized structures (organogenesis) and differentiation tissue. Furthermore, it must generate the elementary structures of active growth in modular systems that are plants, ie, meristems , and the functions necessary for the subsequent survival of the embryos , such as quiescence and germination .

During embryogenesis, the plant has to overcome several stages. One is to establish the body plan basic sporophyte , which is restructured when it breaks dormancy. To set this plan, initially given radial divisions are 3 basic tissue systems, the dermal, the vascular basement and then proceed to the axial divisions that form the apical (shoot)-basal (root). The second is to reserve for meristematic tissue postembrionarias structure formation and finally to establish food reserves for the embryo until it becomes autotrophic.

The brown algae are a model system that is used because unlike angiosperms have external fertilization and does not have the multiple layers of fabric. With the first asymmetrical division of the embryo from brown algae polarity is set, this division produces a smaller cell which forms the rhizoid which is the counterpart to the root and is the structure that anchors the rest of the plant, the other cell is generates the largest and Tallus which is the main body of the sporophyte. The sperm entry point sets the polarity of the plant, so this is where the fixed input terminal rhizoid apical-basal axis, which is perpendicular to the plane of the first division of the plant. The F-Auxin accumulates in the terminal rhizoid. However, the polarity setting can be overridden by gravity or light stimuli that would establish a new position for cell division. After the establishment of polarity, secretory vesicles move toward the rhizoid end of the zygote, which contains material for which the rhizoid will begin to develop and form a cell wall with a different composition of macromolecules. Maintaining the original polarity depends on information in the cell wall.

In angiosperms, the establishment of body plan also begins with an asymmetric division. The first division gives rise to a basal cell and a terminal, the terminal gives rise to cell and basal cell embryo, which is formed nearer the micropyle, gives rise to the hanger, which will serve as a conduit for nutrients. Pituitary occurs at the interface between the embryo and suspensor .

As a model organism of plant physiologists have used the small crucifer Arabidopsis thaliana , which has been widely studied embryogenesis and compartmentalized in conceptual stages:

1. State of the zygote. Initial results from the fusion of oosphere with one of the generative nuclei of the pollen grain .

2. Globular state. Status of eight cells generated after the first zygotic division asymmetrical.

3. State cordate. The one where they differentiate actively dividing two places, which will be the future cotyledons.

4. State torpedo. Because cell elongation in the longitudinal axis of the embryo and by expansion of the cotyledons.

5. Mature state. After the loss of water and initiation of a quiescent state.

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Flower shop hamilton, flower delivery hamilton

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