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This whole process requires a 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.

The generation of a functional body from a cell, and requires the acquisition of spatial coordination number of cell identities. The study of patterns in the embryology of plants, to understand the cellular organization in growth of these and so it gives us tools for handling. During embryogenesis of plants gives rise to a structure called a seed which is the initial unit that serves as a reference for future positional modeled structures. The adult develops from the guidelines dictated by the apical meristem, which is visible in embryos that are about 100 cells. Therefore the study of these early stages to elucidate the mechanisms that generate different axes of growth and pre-structured functional patterns.

Capsella bursa-pastoris is the model used to describe the embryogenesis of dicotyledons. It was one of the first species in which we studied the process, and belongs to the family of cruciferous vegetables , like Arabidopsis thaliana , a species in which there have been numerous experimental studies on the molecular biology of embryogenesis.

The zygote , diploid cell produced by the double fertilization , is divided transversely into two cells: the cell micropylar or basal cell which is divided transversely repeatedly to form a structure of the embryo known hanger , and chalazal cell or terminal that is divided vertically.

In the suspensor can distinguish a basal cell closest to the micropyle , very large, vacuolated , with an extensive network of projections in its cell wall , which is involved in the nutrition of the embryo, and various cells calazales soon degenerate. The basal cell lives a little longer but eventually also disappears. As the suspending grows, pushes the embryo into the tissue being formed nutrient.

In cells derived from another cell division occurs chalazal vertically in a plane perpendicular to the first. Then these four cells (called quadrant) are divided transversely into eight cells (called octant). These are divided periclinalmente to form a globular structure. Divisions continue until the globular embryo consists of 64 cells. In this state differ protodermis from the surface cells.

Cells of the embryo then initiate a continuing program divisions and morphogenesis leading to the formation of meristems apical. The divisions are located side two prominences are the cotyledons . The embryo takes the form of body and heart-shaped.

Cell divisions continue and enlarge the cotyledons and hypocotyl . The embryo takes the form of torpedo . The vertical divisions outlined the procambium delimiting the fundamental meristem. Growth continues, the cotyledons reach the chalazal pole of the embryo sac and the embryo is curved.

The apical meristem, called the plumule , is located between the cotyledons. The procambium forms the center axis of hypocotyl- root and extends to the cotyledons. A suspensor cells, called the pituitary gland of a series of repeated divisions contributes to form the root cap and the root tip , thereby forming the radicle separated from the cotyledons and the plumule by the hypocotyl.

During the whole process of formation of the embryo, the endosperm state spends free nuclei to the cell state and the nucellus of the ovule is digested.

This event initiates the development of two structures are intimately interconnected multicellular embryo and endosperm, which are derivatives of the zygote and central cell has been fertilized. Most of the mature embryo is derived from the apical cell, however the root structures originating from the elementary cell. This will generate the protodermo in which cells begin to differences giving rise to the principal axes of training and regional cell differentiation. Initially all the cells have a common orientation with respect to the division of cells, where cell walls are lined by the main shaft. So that these are arranged in two main levels, increasing the number of cells in each of the levels. Thus the globular embryo remains static and is endowed with an apical to the bracket. At this stage there is a differential behavior around this axis, although the plant is still polarized. There is the generation of cells C in the center which allows subdivided radially central tissue, vascular and surrounding, besides L cells that generate a series of concentric layers. In the late globular stage the embryo has over a hundred cells, acquiring a triangular shape due to localized growth of two fronts. At this stage it is possible to discern the basic tissues provasculares, protodermo, cotyledons, hypocotyl and bark. The development of the suspensor is variable, but never vary the two terminal cells, where higher or pituitary cell undergoes successive divisions that will passed to the primary root meristem. The most elementary cell hanger dramatically expands and comes into contact with the endosperm which facilitates the delivery of nutrients to the embryo. With this series of events the embryo is taking the characteristic forms of heart or torpedo. Cells in most tissues complete their differentiation upon germination therefore the complexity in the patterns of differentiated tissues in later stages.

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