

Session: Interactions Within Cells – Ubiquitin

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The secretory system of plants has many features of the well known systems of animal and yeast cells, but also very specific aspects. The Golgi elements travel along the ER, i.e. along actin microfilaments and obtain cargo directly from the ER exit sites. At cell division the traffic from Golgi elements is reoriented to form the cell plate, a new plasma membrane. The vacuolar system of plants is a key element of plant growth and development and fulfills many other functions such as storage of nutrients, pigments, toxins, etc. Plant cells can have up to three different vacuolar sorting systems, with different signals, receptors, transport vesicles, etc. In addition, hybrid vacuoles and vacuoles within vacuoles have been described. These systems give the plants a very flexible choice of compartments which can be attributed varying functions. Recent results suggest that the biogenesis of vacuoles must be distinguished from their function, which may be attributed differently in different plants or tissues.

The vacuolar systems of higher plants have evolved from simpler ancestors, which might have been preserved in lower plants. The study of gene families involved in these systems may allow to understand the evolution of higher plants and their capacity to adapt to their environment.