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PGIP2 and CesaA6 Internalization Involves a Heterogeneous Population of Golgi-independent TGNs

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PGP2 (Polygalacturonase-Inhibiting Proteins 2), a *Phaseolus vulgaris* cell wall protein, after its secretion to the apoplast, undergoes internalization in the absence of its natural fungal interactor. CesaA6 is an *Arabidopsis thaliana* subunit of the Cellulose Synthase Complex constantly recycled from the plasma membrane to MASCs. These very diverse proteins were used as markers to highlight differences at the level of TGN/EE. The mechanisms underlying endocytosis in plant cells involve several endosomal organelles whose origin and specific role need still to be clarified. The first endosome encountered on the pathway is recognized to be the TGN. A comparative approach was used to dissect the endocytic pathway of tagged variant of PGIP2 and CesaA6, testing the effect of several pharmacological drugs and evaluating the interfering effect of the t-SNARE SYP51. PGIP2- GFP internalization was specifically sensitive to tyrphostin A23, salicylic acid and Sortin 2 and SYP51 showed an interfering effect on its delivering to the vacuole. SecGFP-CesaA6 was sensitive to Endosidin 5. BFA treatment affected the intracellular compartments labelled by both proteins, but PGIP2-GFP aggregated compartments overlapped with those labelled by the endocytic dye FM4-64 while secGFP-CesaA6 filled different compartments. Furthermore, RFP-NIP1.1, a marker of direct ER-to-Vacuole traffic, seemed to contribute to the enrichment of CesaA6 membrane intracellular compartments. All the data indicate that PGIP2 and CesaA6 were internalized through distinct endosomes with different mechanism, confirming the existence of a heterogeneous population of Golgi-independent TGNs, diversified in their endocytic functions.

Biography:

Monica De Caroli is a technician at the University del Salento, Lecce, Italy. She graduated in Biological Sciences at the University del Salento and received PhD in "Biology and Biotechnology" at the University del Salento. She was awarded with the SBI (Società Botanica Italiana) prize best PhD thesis for year 2007. The research has been focused in plant cell biology, in particular on the study of the secretion mechanisms of cell wall proteins. She has a good expertise on construction of fluorescent protein, confocal scanning microscope observations and tobacco and Arabidopsis transformation techniques.