

Regulation of vitamin C content in higher plants

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Ascorbic Acid (AsA, vitamin C) has multiple biological roles in plants. Although several pathways for the novo synthesis of AsA have been reported, it is the L-Gal, also known as the Smirnov-Wheeler (SW), the main pathway operating in photosynthetic tissues in plants. Although there is abundant information of how these genes are regulated at the transcriptional level, little is known about the regulation and the compartmentation of this pathway in higher plants. In order to investigate the localization and dynamics of proteins involved in AsA biosynthesis *in vivo* at the cellular level, we have generated GFP fusions using the genomic region of the last five genes of the pathway, expected to be localized in the cytoplasm. These constructs have been transformed in *Arabidopsis thaliana* (Col-0) plants and generated stable transgenic lines. Detailed localization and dynamics of the proteins are currently being investigated. In parallel, we have analyzed whether these proteins form a complex in planta using co-immunoprecipitation assays using *Nicotiana benthamiana*. Our data indicate that most proteins of the SW pathway show a nucleocytoplasmic localization and that they associate *in vivo*. Details of the results obtained will be presented.

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