PMD-AraTom

Characterization of Plant Mobile Domain proteins at the interface between tomato and Arabidopsis plants

ABSTRACT

Plant mobile domain (PMD) proteins are important factors involved in several development al processes such as meristem integrity, genomestability, regulation of gene expression and silencing of transposable elements. In a recent article published in PLOS Genetics, we showed that the Arabidopsis thaliana PMD proteins MAINTENANCE OF MERISTEMS (MAIN) and MAIN- LIKE1 (MAIL1) physically interact together to ensure the proper expression of a common set of genes. In this research proposal, we propose to transferour knowledge of Arabidopsis PMDsto study the role of their homologs in Solanumlycopersicum (tomato), which have never been explored. We will investigate their function throughout plant development, with a focus during the complex process of fruit ripening that involvess everal molecular pathways. Using different approaches combining experiments in tomato and A. thaliana, this research proposal will give more insights into the role of PMD proteins in plants, and especially, in the model fruit-bearing crop tomato.

Keywords : Plant Mobile Domain, Arabidopsis, Tomato

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GOAL

The general objective of this research proposal is to investigate further the role of PMD proteins in plants. From the results we obtained in A. thaliana, showing that PMD are important proteins required for normal plant development and regulation of gene expression, we hypothesize that these protein functions are conserved in other plant species, including crops. We propose to translate our finding into the model fruit bearing crop tomato, by studying the role of PMD proteins at different stages of the plant development. As we hypothe size that PMD proteins could act as TF-like proteins or recruit specific TFs to regulate gene expression, and because SLPMD1 and SlPMD2 are expressed in fruit tissues (see task1.1), we will particularly analyze their function during the process of fruit ripening that involves complex TF-driven molecular cascades.