

Shoot Architecture

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Abstract Title: CHARACTERIZATION OF REM GENES INVOLVED IN THE REPRODUCTIVE DEVELOPMENT OF ARABIDOPSIS THALIANA

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Abstract

The REM transcriptional factor family belongs to the plant-specific B3 DNA binding domain superfamily, in *Arabidopsis thaliana* this family is composed of 45 genes preferentially expressed during flower and seed development among which only a few members have been associated to a function. We focused our attention on three homologous members of this family, REM34 , REM35 and REM36, which are expressed in the inflorescence meristem and in the earliest stages of flower development. To uncover their role RNA interference lines for the simultaneous silencing of these three genes were analysed. At the same time, a CRISPR/Cas9 approach was chosen in order to generate single and multiple mutants. The RNAi lines and the CRISPR/Cas9 mutants showed an aberrant phyllotaxis, a higher rate of flower production and, only in the RNAi lines, an arrest in the female gametophyte in the FG1/FG2 phase.

YUCCA1 , which is coexpressed with REM34 and its closest homologs YUC4 , and YUC6 were found to be downregulated in these RNAi lines. These genes code for flavin monooxygenase proteins involved in auxin biosynthesis and their mutation or misregulation phenocopies RNAi lines. All these evidence suggest that REM34 , REM35 and REM36 could be involved in the regulation of auxin biosynthesis at the level of the inflorescence and flower meristem.