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FUNCTIONAL ANALYSIS OF THE *ZmMYB94* GENE INVOLVED IN CUTICULAR WAX DEPOSITION IN MAIZE

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The *fdl1-1* mutation, caused by an *Enhancer*/*Suppressor mutator* (*En*/*Spm*) element insertion located in the third exon of the gene, identifies a novel gene encoding ZmMYB94, a transcription factor of the R2R3-MYB subfamily. The *fdl1* gene was isolated through co-segregation analysis, whereas proof of gene identity has been obtained using an RNAi strategy that conferred less severe, but clearly recognizable specific mutant traits on seedlings.

Lack of *Fdl1* action correlates with developmental defects, such as delayed germination and seedling growth, abnormal coleoptile opening and presence of curly leaves showing areas of fusion between the coleoptile and the first leaf or between the first and the second leaf.

The expression profile of *ZmMYB94* mRNA was determined by quantitative RT-PCR. High expression was observed in the embryo, in the seedling coleoptile and in the first two leaves, whereas RNA level decreases at the third leaf stage. Interestingly the expression profile and the pattern of mutant phenotypic expression overlap and are confined to a narrow developmental window.

Data will be presented showing that this transcription factor is involved in the establishment of a regular pattern of cuticular wax deposition on the epidermis of young leaves. In the absence of its action, the amount of cuticular waxes is lower in the earlier phases while gradually increased later on during development, thus accounting for the mutant phenotypic profile observed.

Cuticular wax accumulation has been correlated with the response to drought conditions in many plant species. In this work, the expression of *fdl1* was analysed following administration of water stress to young seedlings and an increase in the level of gene transcript was observed starting from 24 hours of treatment. Moreover, mutant young leaves exhibited higher water loss if compared with wild-types. On this basis, our hypothesis is that *ZmMYB94* contributes to increase drought tolerance in the early phases of maize seedling growth, by modulating cuticular waxes biosynthesis.