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AtMYB60, an R2R3-MYB transcription factor encodes a transcriptional repressor of flavonoid metabolism in lettuce (*Lactuca sativa*)

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Transcription factors are regulatory proteins that regulate the repression of specific genes through sequence-specific DNA binding and protein-protein interactions, and act as activators or repressors of gene expression, mediating an increase or decrease of messenger RNA. Since MYB-type transcription factors known to control multiple pathway steps have emerged as powerful tools for the modulation of metabolic pathways in plants.
In this study, we describe the cloning and functional characterization of different R2R3-MYB transcription factors from Arabidopsis thaliana. Analysis of Arabidopsis genome sequence reveals 125 MYB genes. To examine the regulatory function of the these genes, we isolated R2R3 MYB cDNA clones(AtMYB4, 29, 30, 34, 51, 60) which are induced by UV-B irradiation. Because of the absense of security for the T-DNA tagging mutant, the knowledge about the function is not yet characterized. Transgenic lettuce plants overexpression AtMYB60 under the control of the cauliflower mosaic virus 35S promoter, showed inhibition of anthocyanin biosynthesis. HPLC analysis and quantification indicate an inhibition of cyanidin pigment in transgenic lines. RT-PCR analysis revealed that the expression of the *dihydroflavonol 4-reductase* (DFR) which is key structrual gene for anthocyanin biosynthesis was inhibited in transgenic lettuce. Together with these data, a possible mechanism showing expression of DFR repressed by AtMYB60 will be describe in Fig.

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Increase of recombinant protein by suppression of storage protein gene using RNAi in transgenic rice seeds

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Glutelin is a major seed storage protein, accounting for 60% of total endosperm protein in rice. The low-glutelin cultivar has potential usages as low protein rice not only in diet therapy for patients with kidney disease, but also in molecular farming for accumulation of foreign protein. We have tried to augment recombinant protein by suppression of storage protein gene using RNAi and obtained transgenic glutelin RNAi rice seeds. We have investigated if the expression a transgene(RFP) in rice seeds could be enhanced by RNAi of an endogenous seed storage protein(glutelin). The seeds of transformants having RFP gene and glutelin that was suppressed by RNAi showed brighter fluorescence than the seeds transformed with RFP gene only. DNA gel blot confirmed integration of RNAi